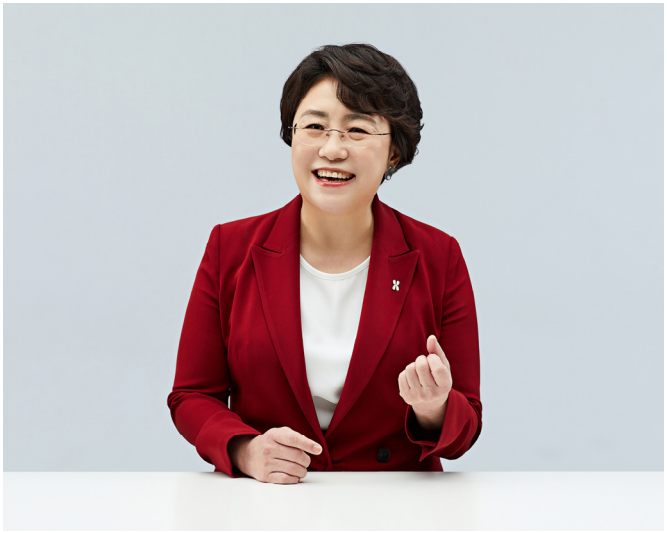
Publication number
G000DY7-2022-64

2020
HIRA Healthcare Quality Indicators

HIRA
HEALTH INSURANCE REVIEW & ASSESSMENT SERVICE

2020
HIRA Healthcare Quality Indicators



In 2000, the Health Insurance Review and Assessment Service (HIRA) was established following the comprehensive revisions to the National Health Insurance Act. As prescribed in the Act, HIRA has begun and continued quality assessment of health services of all providers in Korea since its inception. The results of the quality assessment have been shared with the public to help them make informed decisions and, at the same time, have been used for performance scheme.

As all healthcare providers were subject to quality assessment on a mandatory basis, development of objective and standardized quality indicators was required. The indicators consist of diverse healthcare quality domains and a wide spectrum of diseases. In terms of domain, quality assessment includes elements of quality of care, such as safety, efficiency, effectiveness, and patient-centeredness. The area of assessment has been expanded to cover acute diseases, chronic diseases, cancer, and long term care.

As the quality assessment evolved, HIRA has required to develop a clear formula for each indicator and criteria for inclusion and exclusion. A wide range of stakeholders, including medical fields and academia, were invited to participate to offer insights. This process and outcomes are invaluable intellectual assets, accumulated throughout the history of HIRA.

Preface

In December 2020, HIRA launched the Quality Assessment Information Bank system to manage its healthcare quality indicators in a systematic and integrated manner. This system compiled information of quality assessment indicators, including descriptions (name, definition, calculation formula, selection background, etc.), classification system information (types, domain, source of data, etc.), quality assessment results, and indicator life cycle. In 2022, HIRA published an English edition of the archive.

This book encapsulated 319 quality indicators for 34 items which were assessed in December 2020 so that readers can understand and utilize quality indicators more conveniently. We hope that this book will reach audience both in Korea and abroad who attempts to assess healthcare service quality and be of help.

As Universal Health Coverage (UHC) emerges as a global topic, there is a growing attention towards health security more than ever. It is our sincere hope that the information presented here will contribute to the global efforts towards UHC and better quality of care.

I would like to thank everyone involved in the history of quality assessment to date, including HIRA staff, healthcare providers, the Ministry of Health and Welfare, and other relevant government agencies for their endeavor and participation.

June, 2022

Sun Min Kim

President
Health Insurance Review and Assessment Service
Republic of Korea

2020

HIRA Healthcare Quality Indicators

HIRA

HEALTH INSURANCE REVIEW & ASSESSMENT SERVICE

CONTENTS

PART

I

Overview

1. Detailed description of assessment indicator

□ It consists of an assessment indicator classification system that can identify the description of the indicator (definition, calculation method, assessment target, etc.) and the purpose, utilization, and characteristics of the indicator (quality components, indicator type, etc.)

※ For detailed definitions, please refer to '(attachment) The assessment indicator classification system and detailed classification items'.

Items	Description
Indicator number	Indicator identifier for systematic management of assessment indicators - Consists of the following: '2-digit assessment agency number' + '3-letter quality assessment item' + '4-digit indicator number'
Indicator Name	Indicator identifier that can identify indicator content at a glance - Consists of '(assessment item) indicator name'
Indicator Definition	Summary of major content such as criteria and methods for calculating indicator values
Status of indicator use	Classified into the status of the indicator according to the purpose and use of the indicator - Preliminary indicator, Regular indicator, Pilot indicator, Terminated indicator
Quality components	Classified into areas of quality improvement according to the purpose of the indicator results - Patient safety, Effectiveness, Patient-centeredness, Efficiency, Coordination, Equity
Indicator type	Classified into by type according to whether the environment is suitable for the provision of medical services, whether an appropriate process for treatment has been performed, and whether the treatment result is desirable - Structure, Process, Outcome, Composite, Patient experience
Types of health care services*	Classified into according to treatment period and method considering the urgency of disease treatment - Prevention and Health promotion, Primary care and Chronic disease management, Acute treatment, Rehabilitation treatment, Long-term care, Hospice and Palliative care
Types of service provision*	Types of medical services provided by medical institutions - Inpatient, Outpatient, Emergency, Others

* multi-select

Items		Description
Calculation formula	Numerator	Definition of the calculation target
	Inclusion criteria	Details of the numerator (subject of calculation, type of assessment tool, facility standard, etc.)
	Exclusion criteria	Exceptions not included in the numerator
	Denominator	Definition of the assessment coverage
	Inclusion criteria	Details of the denominator (subject of assessment, type of assessment tool, facility standard, etc.)
	Exclusion criteria	Exceptions not included in the denominator
Things to be considered for calculation		Supplementary information that can be referred to when calculating the result value
Institutions subject to assessment*		Classified into medical institutions according to the classification criteria set by the Medical Act and the Regional Health Act - General hospital, Hospital, Clinic, Long-term care hospital, Mental hospital, Dentistry, Korean medicine, Public health institution
Assessment Period		Assessment data collection period
Assessment Cycle		Assessment data calculation cycle
Assessment Data source*		Classified into assessment data used to calculate the indicator values according to the collection method - Medical record data (survey form), Administrative data, Survey data, Others
Risk Adjustment		Whether the severity of the patient by a health care institution was taken into account when calculating the indicator result - Y: When the actual value is adjusted - N: No actual value adjustment
Risk Adjustment Variable		When the risk adjustment is "Y," the variable used for adjustment
Interpretation of output		Output of the calculation has been specified in compliance with its own methodology and the goal of the indicator. - (Quantity) either the higher the better, or the lower the better (type of calculation: percentage, number of days or times, and patients, etc.) - (Criteria) articulates the result as yes when the criteria has been met (type of calculation: whether the standard has been satisfied or not, etc.) - (Relative index) defines if the providers show higher or lower figures than average (type of calculation: costliness, lengthness, survival index, etc.)
Population subject to assessment*		Classified into the total population subject to assessment by age - Newborns, children and adolescents, adults, the elderly
Clinical subject*		Classified into diseases and injuries by grouping them by body part and disease characteristics - 23 categories including diseases and disorders of the Nervous system

Items	Description
Background and reason for selection	The background of the introduction of the indicator or the reason for its selection
Evidence and References	Evidence for selection of indicators, and literature referred when selecting (including laws and regulations)

* multi-select

2. Number of indicators by assessment item

Assessment items (34)		Wave	Number of indicators*				Total
			Structure	Process	Outcome	Patient experience	
Total			37 (13)	134 (49)	37 (40)	6 (3)	214 (105)
Cancer	Colorectal cancer	7th	1 (0)	9 (0)	2 (1)	-	12 (1)
	Breast cancer	7th	1 (0)	7 (0)	0 (2)	-	8 (2)
	Lung cancer	5th	1 (0)	8 (0)	1 (1)	-	10 (1)
	Stomach cancer	5th	1 (0)	9 (0)	2 (1)	-	12 (1)
	Liver cancer treatment results	3th	-	-	0 (1)	-	0 (1)
Acute disease	CABG	8th	1 (2)	2 (2)	4 (3)	-	7 (7)
	Ischemic heart disease (AMI)	1st	1 (2)	2 (7)	3 (1)	-	6 (10)
	Ischemic heart disease (PCI)	1st	1 (3)	2 (1)	1 (4)	-	4 (8)
	Acute stroke	9th	2 (2)	6 (5)	1 (4)	-	9 (11)
	Pneumonia	4th	-	6 (3)	0 (4)	-	6 (7)
Chronic disease	Hypertension	15th	-	5 (5)	0 (2)	-	5 (7)
	Diabetes	9th	-	7 (2)	0 (2)	-	7 (4)
	Asthma	7th	-	7 (1)	0 (2)	-	7 (3)
	COPD	7th	-	3 (1)	0 (2)	-	3 (3)
Infectious disease	Tuberculosis	3th	-	7 (0)	-	-	7 (0)
Mental health	Psychiatric care for Medical Aid beneficiaries	1st of the 2nd cycle	-	4 (1)	5 (1)	0 (2)	9 (4)
	Psychiatric hospitalization	1st	-	6 (0)	2 (1)	0 (1)	8 (2)
	Depression outpatient	1st	-	4 (2)	-	-	4 (2)
Drugs	Pharmaceutical benefit (antibiotic prescription rate)	53th	-	3 (7)	-	-	3 (7)
	Pharmaceutical benefit (injection prescription rate)	53th	-	1 (0)	-	-	1 (0)
	Pharmaceutical benefit (number of pharmaceutical products)	53th	-	5 (0)	-	-	5 (0)
	Pharmaceutical benefit (pharmaceutical cost)	53th	-	-	1 (0)	-	1 (0)
Medical institution	Use of prophylactic antibiotics for surgery	9th	-	4 (2)	-	-	4 (2)
	Hemodialysis	6th	7 (0)	3 (0)	2 (1)	-	12 (1)
	Hospital standardized mortality ratio	3th	-	-	1 (0)	-	1 (0)
	Risk-standardized readmission ratio	3th	-	-	1 (0)	-	1 (0)
	Long-term care hospital	2nd of the 2nd cycle	4 (0)	3 (1)	7 (1)	-	14 (2)
	ICU	3th	4 (1)	2 (2)	1 (4)	-	7 (7)
	Neonatal ICU	2nd	4 (1)	6 (0)	1 (2)	-	11 (3)
	Small & medium hospital	1st	5 (0)	3 (0)	-	-	8 (0)
	Anesthesia	1st	3 (2)	3 (4)	1 (0)	-	7 (6)
	Root canal treatment	1st	-	3 (0)	1 (0)	-	4 (0)
	Blood transfusion	1st of the 2nd cycle	1 (0)	4 (3)	-	-	5 (3)
Patient centeredness	Patient experience	2nd	-	-	-	6 (0)	6 (0)

* '(_)' is the number of pilot indicators

PART

II

Detailed description of the 2020 Quality Assessment Indicator

1.

Cancer

1) Colorectal cancer

☐ Common Criteria

※ Apply as inclusion criteria for the numerator or denominator of each indicator

○ Criteria for the subject of assessment

- **(Target patient)** Patients 18 years of age or older who underwent surgery for primary colorectal cancer (National Health Insurance and Medical Aid)
  - Patients first diagnosed with primary colorectal cancer (colon cancer, rectal cancer)
  - Patients with double primary cancer for colon and rectal cancer
  - Patients who received prior chemotherapy or radiotherapy at another hospital
- **(Target diagnosis and code)** Including principal/secondary diagnosis
  - Malignant neoplasm of colon (C18)
  - Malignant neoplasm of rectosigmoid junction (C19)
  - Malignant neoplasm of rectum (C20)
- **(Target surgeries)**
  - Colectomy
  - Rectal and sigmoid resection
  - Total coloproctectomy
- **(Cancer stage)** AJCC* I-IV

  * American Joint Committee on Cancer
- **(Pathology)** Adenocarcinoma

○ Exclusion criteria for the subject of assessment

- Patients diagnosed with recurrent or secondary cancer
- Patients who underwent surgery at a different institution and then were transferred
- Stage 0 colorectal cancer patients

Indicator numbers		01LIC0004
Indicator Name		Rate of preoperative workups
Indicator Definition		Proportion of patients undergoing preoperative workups among patients undergoing colorectal cancer resection
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Number of patients undergoing preoperative workups among denominators
	Inclusion Criteria	■ Recognition criteria of the preoperative workups ○ If all preoperative examinations of the morbidity were performed 90 days before surgery, it is recognized. - Colorectal cancer (5 items): pathologic examination, colonoscopy, CEA (Carcinoembryonic Antigen, tumor marker test for prognosis of digestive system cancer), abdominal and pelvic CT - Rectal cancer (6 items): pathologic examination, colonoscopy, CEA, chest CT, abdominal and pelvic CT ※ However, pathologic examination and fiberscope are acknowledged if performed before surgery (except for the 90-day period) ○ If prior therapy was performed before surgery, it is also acknowledged if it was administered 90 days before the start of prior therapy. ○ CT (Computed Tomography) - If the pelvis was taken when abdominal CT was taken, it is recognized that abdominal and pelvic CT were taken respectively. - If PET CT (Positron Emission Tomograpty CT) was performed before surgery in place of chest CT, it is recognized. ○ Tests performed at other hospitals are acknowledged if the following conditions are met. - Colonoscopy: If there is a record to confirm the location of the tumor - Pathologic examination: If there is a pathological report - If there is a CEA test result - CT: If there is the CT film from another institution or if there is a CT scan result sheet
	Exclusion Criteria	■ If a rectum CT was performed for rectal cancer, it is not recognized as an abdominal CT scan. ■ If only PET or MRI without CT scan is taken, it will not be recognized as a pre-operative examination.
	Denominator	Number of patients undergoing colorectal cancer resection
	Inclusion Criteria	■ Apply common criteria for assessment on colorectal cancer

	Exclusion Criteria	■ If a patient who has never received colorectal cancer-related treatment has undergone emergency surgery ■ Patients who did not undergo endoscopy due to perforation or obstruction ■ Patients receiving prior therapy at another institution ■ Patients with other primary cancer morbidity within 5 years ■ Apply common exclusion criteria for colorectal cancer assessment
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Neoplasms
Background and reason for selection		■ To assess whether colorectal cancer is accurately diagnosed by performing a high-sensitivity test before surgery ■ Before surgery, chest/abdominal CT should be taken to check liver and lung metastases ■ Elevated CEA before surgery is an independent predictor of poor outcome
Evidence and References		■ Natioanl Institute for Clinical Excellence: Improving Outcomes in Colorectal Cancers ■ NCCN: National Comprehensive Cancer Network Korean Guideline

Indicator numbers		01LIC0005
Indicator Name		Rate of documenting assessments of resection completeness
Indicator Definition		Among patients undergoing colorectal cancer resection, the proportion patients with a record of a surgeon assessing the completeness of a resection
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients the surgeon assessed and recorded in the medical record for completeness of the resection.
	Inclusion Criteria	
	Exclusion Criteria	■ Cases recorded by describing the resection margin
	Denominator	Number of patients undergoing colorectal cancer resection
	Inclusion Criteria	■ Apply common criteria for assessment on colorectal cancer
	Exclusion Criteria	■ Patients with other primary cancer morbidity within 5 years ■ Apply common exclusion criteria for colorectal cancer assessment
Things to be considered for calculation		■ It is desirable to assess the completeness of the surgical operation with the following scores - R0: complete tumor resection in which all resection margins are negative - R1: Incomplete tumor resection with microscopic infiltration in the resection margin - R2: Incomplete tumor resection with large unresectioned tumor sites remaining - C0: absolute curative resection - C1: relatively curative resection - C2: relatively palliative resection - C3: palliative resection
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.

Population subject to assessment	Adult, Elderly
Clinical subject	Neoplasms
Background and reason for selection	
Evidence and References	■ NCCN: National Comprehensive Cancer Network Korean Guideline

Indicator numbers		01LIC0006
Indicator Name		Rate of CEA test performance within 3 months after surgery
Indicator Definition		Among patients who had colorectal cancer resection surgery, the proportion of patients who were tested for the carcinoembryonic antigen (CEA) 3 months (90 days) after surgery
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients whose CEA was measured.
	Inclusion Criteria	■ If the CEA test was performed within 90 days of surgery, it is recognized.
	Exclusion Criteria	
	Denominator	Number of patients 3 months (90 days) after colorectal cancer resection
	Inclusion Criteria	■ Apply common criteria for assessment on colorectal cancer
	Exclusion Criteria	■ Patients who did not visit the hospital on the day of the examination ■ In-hospital deaths ■ Patients with other primary cancer morbidity within 5 years ■ Apply common exclusion criteria for colorectal cancer assessment
Things to be considered for calculation		■ CEA - Glycoprotein, the most commonly used tumor marker in gastrointestinal cancer
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Neoplasms

Background and reason for selection	■ Since it takes 3 months for CEA to recover to a normal level, it is recommended that tests be performed every 3 months. ■ CEA is a test to check whether the tumor remains after surgery and to check for recurrence. A return to normal postoperative CEA levels, which was elevated before surgery, is associated with complete tumor resection. On the other hand, a persistent elevation of CEA means that the tumor remains. ■ Even if the CEA before surgery was normal, it may rise when cancer recurs, so post-operative examination is essential
Evidence and References	■ NICCQ: National Initiative for Cancer Care Quality

Indicator numbers		01LIC0007
Indicator Name		Rate of pathology report completeness
Indicator Definition		The proportion patients whose pathology report is faithfully recorded among patients undergoing colorectal cancer resection
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients whose pathology report is faithfully recorded
	Inclusion Criteria	■ Pathology report records ○ If all of the following are listed in the pathology report, it is recognized. 1) Whether infiltration is expanded through infiltration depth and adjacent structures (Stage T) 2) Number of regional nodes examined 3) Number of benign regional nodes (stage N) 4) Presence or absence of tumors at the proximal and distal margins 5) Each distance of proximal, distal, and annular margins (in case of rectal cancer) 6) Tissue type and grade ■ For stage T and stage N, if TN is clearly specified (eg: T2N2), it is recognized.
	Exclusion Criteria	
	Denominator	Number of patients undergoing colorectal cancer resection
	Inclusion Criteria	■ Apply common criteria for assessment on colorectal cancer ■ In cases of requesting pathologic examination by an external institution
	Exclusion Criteria	■ In case of no residual tumor ■ Patients with other primary cancer morbidity within 5 years ■ Apply common exclusion criteria for colorectal cancer assessment
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly

Clinical subject	Neoplasms
Background and reason for selection	■ The most important factors in determining the prognosis of colorectal cancer are tumor depth, lymph node metastasis, and histological grade of cancer. Therefore, these should be recorded in the pathology report
Evidence and References	■ National Institute for Clinical Excellence: Improving Outcomes in Colorectal Cancer ■ NICCQ: National Initiative for Cancer Care Quality ■ NCCN: National Comprehensive Cancer Network Korean Guideline ■ NQF: National Quality Forum

Indicator numbers		01LIC0008
Indicator Name		Rate of regional lymph node resection and examination
Indicator Definition		Proportion patients undergoing regional lymph nodes resection and pathological biopsy of more than 12 regional lymph nodes among the patients receiving colon cancer resection
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients undergoing regional lymph nodes resection and pathological biopsy of more than 12 regional lymph nodes
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of patients undergoing colorectal cancer resection
	Inclusion Criteria	■ Apply common criteria for assessment on colorectal cancer
	Exclusion Criteria	■ Patients who have undergone prior radiotherapy or prior cancer chemotherapy ■ In case where colorectal cancer is not confirmed before surgery ■ Patients with other primary cancer morbidity within 5 years ■ Apply common exclusion criteria for colorectal cancer assessment
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Neoplasms

Background and reason for selection	■ It is recommended to assess at least 12 lymph nodes because more accurate lymph node staging is possible by not missing micrometastases in the sentinel node. ■ This is necessary to demonstrate stage II colorectal cancer clearly. Patients with N0 lesions but with fewer than 12 lymph nodes examined are considered high-risk due to incomplete staging. Number of lymph nodes examined correlates with the patient's survival
Evidence and References	■ National Institute for Clinical Excellence: Improving Outcomes in Colorectal Cancer ■ NCCN: National Comprehensive Cancer Network Korean Guideline

Indicator numbers		01LIC0014
Indicator Name		Rate of recommended adjuvant chemotherapy performed within 8 weeks after surgery
Indicator Definition		Proportion patients receiving the recommended first adjuvant chemotherapy performed within 8 weeks after surgery among patients receiving resection due to colorectal cancer (stages IIb to III) and rectal cancer (stages II to III)
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients receiving the recommended first adjuvant chemotherapy performed within 8 weeks after surgery
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of patients undergoing resection due to colorectal cancer (Stage II b~III), rectal cancer (Stage II~III)
	Inclusion Criteria	■ Apply common criteria for assessment on colorectal cancer ■ Regardless of the administration method (both oral and parenteral), all anticancer drugs administered are included in the assessment
	Exclusion Criteria	■ Patients transferred to another institution within 8 weeks after surgery ■ Patients who did not receive cancer chemotherapy due to patient factors within 8 weeks after surgery ■ Patients undergoing pre-operative therapy (combined treatment with radiotherapy, chemotherapy) ■ Patients receiving only palliative therapy after surgery or receiving combined treatment with radiotherapy after surgery ■ Patients with other primary cancer morbidity within 5 years ■ Apply common exclusion criteria for colorectal cancer assessment
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.

Population subject to assessment	Adult, Elderly
Clinical subject	Neoplasms
Background and reason for selection	■ In stage 2 or 3 colorectal cancer, which increases the risk of recurrence (occlusion, perforation, T4 lesion), adjuvant chemotherapy performed within 8 weeks can lower recurrence and prolong survival ■ Patients with stage 2 or 3 rectal cancer who underwent surgery should receive chemotherapy after surgery, and it is recommended to start chemotherapy within 8 weeks after surgery, considering the time it takes to recover from the initial treatment for surgery and surgical complications
Evidence and References	■ National Institute for Clinical Excellence: Improving Outcome in Colorectal Cancers ■ NQF: Natioanl Quality Forum

Indicator numbers		01LIC0021
Indicator Name		Availability of a specialist workforce (2)
Indicator Definition		Proportion of the average number of working days that one or more specialists actually worked full-time for each specialized subject (surgery, hemato-oncology, pathology) during the period subject to the colorectal cancer quality assessment
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Average number of work days of one or more specialists for each of the three specialized subjects (surgery, hemato-oncology, pathology)
	Inclusion Criteria	■ Specialist recognition criteria ○ Surgeon who treats and operates on colon cancer patients. ○ Hemato-oncologist ○ Pathologist ■ If two or more specialists work at the same time per day for each specialized subject, the number of working days is calculated as one day. ■ Example ○ The average number of actual full-time work days of the specialists for each specialized subject at A Institution - (Surgery) A doctor: Number of full-time work days (2018.3.10.-12.31.) = 297 days B doctor: Number of full-time work days (2018.12.1.-12.31.) = 31 days → Actual full-time work days of surgery = 297 days - (Hemato-oncology) Actual full-time work days = 60 days - (Pathology) No specialists = 0 days ∴ The numerator of A institution = (Total number work days for each specialized subject)/Number of specialized subjects = (297 + 60 + 0)/3 = 119 days
	Exclusion Criteria	
	Denominator	Number of days of operation during the assessment period
	Inclusion Criteria	■ Example ○ Number of days of operation of A Institution - When opened on March 10, 2018, the operating period is 297 days (2018.3.10.~12.31.) ∴ Denominator value of A Institution = 297 days
	Exclusion Criteria	

Things to be considered for calculation	
Institution subject to assessment	General Hospital, Hospital, Clinic
Assessment Period	1 year
Assessment Cycle	Biennial
Assessment data source	Medical records (Survey form), Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	
Clinical subject	Neoplasms
Background and reason for selection	■ To improve the quality of patient care and increase the opportunity to consider patients from different perspectives
Evidence and References	

Indicator numbers		01LIC0022
Indicator Name		Rate of recommended adjuvant chemotherapy
Indicator Definition		Proportion of patients receiving cancer chemotherapy consistent with recommended therapy among the colon cancer patients receiving adjuvant chemotherapy
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients whose adjuvant chemotherapy matched the recommended therapy.
	Inclusion Criteria	■ If there is a reason to change or stop adjuvant chemotherapy ○ When the patient refuses cancer chemotherapy ○ Patients transferred to other hospitals ○ In the case of patients with anticancer side effects ■ If the total number of sessions is not completed during the assessment period ■ If it is an adjuvant chemotherapy for which pre-approval has been applied, or if it is an IRB-approved clinical trial subject ■ The recommended adjuvant chemotherapy ○ It is the case that the cancer stage subject to chemotherapy, the first regimen (regimen, dosage, number of days of administration), and the total number of sessions are consistent with the recommended regimen. ① 5-FU/Leucovorin - Leucovorin 500mg/㎡, 1 time/week X 6, 5-FU 500mg/㎡, 1 time/week X 6, 8 weeks apart, 4 sessions - 5-FU 370-425mg/㎡ + Leucovorin 20-200mg/㎡ daily X 5 days, 28 days apart, 6 sessions ② Capecitabine - Capecitabine 1250mg/㎡, 2 times/day, 1~14 days, 3 weeks apart, 8 sessions ③ FLOX - 5-FU 500mg/㎡, IV bolus 1 time/week X 6 Leucovorin 500mg/㎡ IV week X 6, each 8 weeks Oxaliplatin 85mg/㎡ IV 1, 3, 5 week, 3 sessions among 8 weeks ④ FOLFOX 4 - Oxaliplatin 85mg/㎡ IV, day1 Leucovorin 200mg/㎡ IV, day1, 2 5-FU 400mg/㎡ IV bolus, 600mg/㎡ continuous infusion, day1&2, 2 weeks apart, 12 sessions

		⑤ mFOLFOX 6 - Oxaliplatin 85mg/㎡ IV, day1 Leucovorin 400mg/㎡ IV, day1 5-FU 400mg/㎡ IV bolus day1, 5-FU 1200mg/㎡/day X 2 day (total 2400mg/㎡ over 46~48hours) continuous infusion 2 weeks apart, 12 sessions ⑥ LV5FU2 - Leucovorin 200mg/㎡ IV day1&2 5-FU 400mg/㎡ IV bolus then 600mg/㎡ continuous infusion day1&2, 2 weeks apart, 12 sessions ⑦ sLV5FU2 - Leucovorin 400mg/㎡ IV over 2 hours, day 1 5FU 400mg/㎡ IV bolus day 1, 1200mg/㎡/day X 2 day (total 2400mg/㎡ over 46~48hours) continuous infusion 2 weeks apart, 12 sessions ⑧ CapeOx - Oxaliplatin 130mg/㎡ over 2 hours, day 1 Capecitabine 1000mg/㎡, 2 times/ day, 1~14 days, 3 weeks apart, 8 sessions
	Exclusion Criteria	
	Denominator	**Number of colorectal cancer patients receiving adjuvant chemotherapy alone after surgery**
	Inclusion Criteria	■ Apply common criteria for assessment of colorectal cancer ■ If the total number of sessions is not completed during the assessment period ■ In case of adjuvant chemotherapy applied alone after surgery
	Exclusion Criteria	■ Patients undergoing pre-operative therapy (combined treatment with radiotherapy, chemotherapy) ■ Patients receiving only palliative therapy after surgery or receiving combined treatment with radiotherapy after surgery ■ Patients with other primary cancer morbidity within 5 years ■ Apply common exclusion criteria for colorectal cancer assessment
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Neoplasms

Background and reason for selection	■ Anticancer agents should be administered according to the regimen
Evidence and References	

Indicator numbers		01LIC0023
Indicator Name		Rate of postoperative radiation therapy for rectal cancer (2)
Indicator Definition		Proportion of patients receiving radiation therapy after surgery among the patients receiving resection due to rectal cancer (Stage Ⅱ~Ⅲ)
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients receiving radiotherapy after surgery
	Inclusion Criteria	■ Patients who have been referred to another institution for radiotherapy (recognized if all records are available)
	Exclusion Criteria	
	Denominator	Number of patients requiring radiotherapy among patients undergoing resection for rectal cancer (Stage Ⅱ~Ⅲ)
	Inclusion Criteria	■ Apply common criteria for assessment of colorectal cancer ■ In cases where the radiotherapy is required after rectal cancer resection ① T4 or higher ② Node positive regardless of T stage ③ When the resection margin is positive ④ Incomplete resection ⑤ In cases where the location of the tumor is the lower side of the peritoneal reflection or spans the upper and lower side of the peritoneal reflection ⑥ If the tumor is located on the upper side and corresponds to ③ or ④ above
	Exclusion Criteria	■ Cases where the patient refused radiotherapy, etc. ■ Cases where the patient underwent radiation therapy before surgery ■ Cases where the location of the tumor is on the upper side ■ Patients with other primary cancer morbidity within 5 years ■ Apply common exclusion criteria for colorectal cancer assessment
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.

Population subject to assessment	Adult, Elderly
Clinical subject	Neoplasms
Background and reason for selection	■ To lower the risk of recurrence in the high-risk group of rectal cancer patients
Evidence and References	■ National Institute for Clinical Excellence: Improving Outcomes in Colorectal Cancers ■ NICCQ: Natioanl Initiative for Cancer Care Quality

Indicator numbers		01LIC0024
Indicator Name		Length of Stay Index (LI)
Indicator Definition		Considering the DRG (Diagnosis Related Group) of institutions, an indicator of how long the number of hospitalization days at the institution is compared to the expected appropriate number of hospitalization days.
Status of indicator use		Regular Indicator
Quality components		Efficiency
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	The average number of days of hospitalization for relevant institutions considering by type of institutions and DRG of colorectal cancer resection patients
	Inclusion Criteria	■ Calculation criteria ○ Multiplying the average number of hospitalization days by the number of cases by type and DRG of relevant institutions. And add by DRG
	Exclusion Criteria	
	Denominator	Average number of hospitalization days of all institutions considering the type of institutions and DRG of colorectal cancer resection patients
	Inclusion Criteria	■ Apply common criteria for assessment of colorectal cancer ■ Calculation criteria ○ Multiplying the average number of hospitalization days of all institutions by the number of cases by type and DRG of relevant institutions. And add by DRG ■ Type- tertiary general hospital, general hospital, hospital, clinic ■ DRG classification number ○ G131, G132, G141, G142, G121, G122, G021, G022, G031, G032
	Exclusion Criteria	■ The subject of the medical aid ■ Apply common exclusion criteria for colorectal cancer assessment ■ Excluding patients whose hospitalization days are extremely high or low, exceeding the upper value or falling below the lower value ○ Upper value = X 〉 {Q3+2.5 ⅠQ3-Q1 Ⅰ} Lower value = X 〈 {Q1-2.5 ⅠQ3-Q1 Ⅰ} - X : Number of hospitalization days per case, Q1 : 1st quartile, Q3 : 3rd quartile
Things to be considered for calculation		■ Definition of the DRG ○ The hospitalized patient classification system in which the main diagnosis name, surgery, death status, age, severity, etc. are corrected by patient based on resource consumption and clinical similarity
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year

Assessment Cycle	Biennial
Assessment data source	Medical records (Survey form), Administrative data
Risk Adjustment	Y
Risk Adjustment Variable	■ DRG
Interpretation of output	■ Result value (LI, length index) 〉1: Institutions higher than the average value for the same type ■ LI = 1: Institutions the same as the average value of the same type ■ LI 〈 1: Institutions lower than the average value of the same type (Example) The fact that LI is 1.2 means that the actual number of hospitalization days is 20% higher than the expected appropriate number of hospitalization days considering the patient composition of the institution
Population subject to assessment	Adult, Elderly
Clinical subject	Neoplasms
Background and reason for selection	■ To measure the cost-effectiveness of input for medical services
Evidence and References	■ COO: Cancer Care Ontario

Indicator numbers		01LIC0025
Indicator Name		Operative mortality rate (In-hospital mortality and 30-day postoperative mortality).
Indicator Definition		Among patients undergoing colorectal cancer resection, the proportion of patients who died during their hospital stay after surgery or within 30 days after surgery
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who died during their hospital stay after surgery or within 30 days after surgery
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of patients undergoing colorectal cancer resection
	Inclusion Criteria	■ Apply common criteria for assessment on colorectal cancer
	Exclusion Criteria	■ Apply common exclusion criteria for colorectal cancer assessment
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form), Administrative data
Risk Adjustment		Y
Risk Adjustment Variable		■ Claim data (common): gender, age, type of medical insurance, type of surgery, comorbidity ■ Survey data: Body mass index (BMI), combined operation, cancer stage, emergency surgery, past abdominal surgery, ASA score (patient status assessed by anesthesiologist)
Interpretation of output		■ Upper value and actual mortality value predicted mortality of 95% confidence interval ○ (Good) Actual morality ≤ Upper value of 95% confidence interval of the predicted mortality ○ (Insufficient) Actual morality 〉 Upper value of 95% confidence interval of the predicted mortality ○ (Excluded from assessment) In a case where the number of surgeries subject to assessment is fewer than 10

Population subject to assessment	Adult, Elderly
Clinical subject	Neoplasms
Background and reason for selection	■ Surgical morbidity of patients undergoing colorectal cancer resection is closely related to the quality of medical care, and the increase in morbidity can be understood as a signal that there is a problem with the quality of medical services provided by the institution
Evidence and References	■ Natioanl Institute for Clinical Excellence: Improving Outcomes in Colorectal Cancers ■ COO: Cancer Care Ontario

Indicator numbers		01LIC0026
Indicator Name		Costliness Index (CI)
Indicator Definition		Considering the DRG (Diagnosis Related Group) of institutions, the indicator to assess how expensive the hospitalization cost of the relevant institution compared to the expected reasonable hospitalization cost.
Status of indicator use		Pilot Indicator
Quality components		Efficiency
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	The average inpatient treatment cost of the relevant institutions considering by type of institutions and DRG of colorectal cancer resection patients
	Inclusion Criteria	■ Calculation criteria ○ Multiplying the average inpatient treatment cost by the number of cases by type and DRG of relevant institutions. And add by DRG
	Exclusion Criteria	
	Denominator	Average inpatient treatment cost of all institutions considering the type of institutions and DRG of colorectal cancer resection patients
	Inclusion Criteria	■ Apply common criteria for assessment on colorectal cancer ■ Calculation criteria ○ Multiplying the average inpatient treatment cost of all institutions by the number of cases by type and DRG of relevant institutions. And add by DRG ■ DRG classification number ○ G131, G132, G141, G142, G121, G122, G021, G022, G031, G032
	Exclusion Criteria	■ The subject of the medical aid ■ Apply common exclusion criteria for colorectal cancer assessment ■ Excluding patients whose cost of care is extremely high or low, exceeding the upper value or falling below the lower value ○ Upper value = X 〉 {Q3+2.5 ⅠQ3-Q1 Ⅰ} Lower value = X 〈 {Q1-2.5 ⅠQ3-Q1 Ⅰ} - X : Total cost per case, Q1 : 1st quartile, Q3 : 3rd quartile
Things to be considered for calculation		■ Definition of the DRG ○ The hospitalized patient classification system in which the main diagnosis name, surgery, death status, age, severity, etc. are corrected by patient based on resource consumption and clinical similarity
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form), Administrative data

Risk Adjustment	Y
Risk Adjustment Variable	■ DRG
Interpretation of output	■ Result value (CI, cost index) 〉1: Institutions higher than the average value of the same type ■ CI = 1: Institutions the same as the average value of the same type ■ CI 〈 1: Institutions lower than the average value of the same type (Example) The fact that CI is 1.2 means that the actual cost of hospitalization is 20% higher than the expected appropriate cost of hospitalization considering the patient composition of the institution.
Population subject to assessment	Adult, Elderly
Clinical subject	Neoplasms
Background and reason for selection	■ To measure the relative efficiency of resources input for medical services
Evidence and References	■ COO: Cancer Care Ontario

Indicator numbers		01LIC0027
Indicator Name		Rate of taking family history of cancer
Indicator Definition		Proportion of patients undergoing colorectal cancer resection with a documented family history of cancer
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients with confirmed family history of cancer
	Inclusion Criteria	■ Recognized if confirmed separately by family history of cancer ■ Recognized if medical staff (doctors, nurses) confirm family history
	Exclusion Criteria	
	Denominator	Number of patients undergoing colorectal cancer resection
	Inclusion Criteria	■ Apply common criteria for assessment on colorectal cancer
	Exclusion Criteria	■ Patients with other primary cancer morbidity within 5 years ■ Apply common exclusion criteria for colorectal cancer assessment
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Neoplasms
Background and reason for selection		■ About one-third of colorectal cancer patients in the United States have a family history, so it is necessary to confirm the family history
Evidence and References		

2) Breast cancer

☐ Common Criteria

※ Apply as inclusion criteria for the numerator or denominator of each indicator

○ Criteria for the subject of assessment

- **(Target patient)** Female patients 18 years of age or older who underwent surgery for primary breast cancer (National Health Insurance and Medical Aid)
- **(Target diagnosis and code)** Including principal/secondary diagnosis
  - Malignant neoplasm of breast (C50)
- **(Target surgeries and code)** Mastectomy
  - Partial resection (including operation for axillary lymph node) (N7136)
  - Partial resection (excluding operation for axillary lymph node) (N7137)
  - Total resection (including operation for axillary lymph node) (N7138)
  - Total resection (excluding operation for axillary lymph node) (N7139)
- **(Cancer stage)** AJCC* I-III

* American Joint Committee on Cancer

○ Exclusion criteria for the subject of assessment

- Stage 4 breast cancer patients
- Bilateral breast cancer (also exclude metachronous bilateral breast cancer)
- Patients who were diagnosed with a different type of primary cancer within five years
- Patients who underwent surgery or treatment at a different institution and then were transferred (radiation, chemotherapy, hormone, targeted therapy)
- Occult inflammatory breast cancer among the different forms of locally advanced breast cancer
- Other types of cancer such as sarcoma and lymphoma
- Pregnant patients
- Cases containing errors with resident registration numbers

Indicator numbers		01BSC0015
Indicator Name		Implementation rate of recommended adjuvant chemotherapy
Indicator Definition		Proportion of patients receiving recommended adjuvant chemotherapy among breast cancer surgery patients receiving adjuvant chemotherapy
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients receiving recommended adjuvant chemotherapy
	Inclusion Criteria	■ Cancer chemotherapy applied for prior approval ■ Recognized up to 70% of recommended dose ■ Recognition criteria for recommended adjuvant chemotherapy ○ Assess whether the recommended regimen of adjuvant chemotherapy and 1-session regimen (regimen, dose, number of days of administration) match ○ Recommended therapy: NCCN American Guideline, HIRA announcement (details on the application standards and methods of medical care benefit regarding drugs prescribed and administered to cancer patients)
	Exclusion Criteria	
	Denominator	Number of patients undergoing adjuvant chemotherapy among breast cancer surgery patients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on breast cancer ■ In case of cancer chemotherapy used alone after surgery
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on breast cancer ■ If cancer chemotherapy is performed at another institution after surgery ■ For clinical trial patients ■ If cancer chemotherapy could not be performed due to the patient's circumstances after surgery
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.

Population subject to assessment	Adult, Elderly
Clinical subject	Neoplasms
Background and reason for selection	■ Anticancer agents must be administered according to the regimen
Evidence and References	■ NCCN American Guideline. (Last version based on assessment year), HIRA's announcement. (Details on application standards and methods of medical care benefit for drugs prescribed and administered to cancer patients)

Indicator numbers		01BSC0018
Indicator Name		Rate of radiation therapy performed after total mastectomy
Indicator Definition		Proportion of patients receiving radiotherapy among patients requiring radiotherapy after total mastectomy
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients receiving radiotherapy
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of patients requiring radiotherapy among patients undergoing total mastectomy
	Inclusion Criteria	■ In the case of prior cancer chemotherapy, the indications and therapeutic range of radiotherapy are determined according to the clinical stage prior to cancer chemotherapy. ■ Apply common criteria to the subject of assessment on breast cancer ■ After total mastectomy, radiotherapy is required if any of the following conditions apply ○ If the boundary of the surgically resectioned specimen is positive ○ When the tumor directly invades the chest wall or skin regardless of the size of the tumor (T4) ○ In case of N2 or higher
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on breast cancer ■ When the boundary of the resectioned specimen is superficial and deep margin ■ In case of transfer to another institution after surgery or cancer chemotherapy ■ For patients who cannot receive radiotherapy because there is no radiation equipment, a referral letter or all records must be included in the medical record for recognition.
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)

Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Adult, Elderly
Clinical subject	Neoplasms
Background and reason for selection	■ After total mastectomy, if the resection margin is benign, it is necessary to perform radiation therapy
Evidence and References	

Indicator numbers		01BSC0022
Indicator Name		Length of Stay Index (LI)
Indicator Definition		Considering the DRG (Diagnosis Related Group) of institutions, an indicator of how long the number of hospitalization days at the institution is compared to the expected appropriate number of hospitalization days
Status of indicator use		Pilot Indicator
Quality components		Efficiency
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	The average number of days of hospitalization for relevant institutions considering by type of institutions and DRG of breast cancer surgery patients
	Inclusion Criteria	■ Calculation criteria ○ Multiplying the average number of hospitalization days by the number of cases by type and DRG of relevant institutions. And add by DRG
	Exclusion Criteria	
	Denominator	Average number of hospitalization days of all institutions considering the type of institutions and DRG of breast cancer surgery patients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on breast cancer ■ DRG classification number ○ J061 Radical mastectomy ○ J062 Mastectomy (in case of malignant tumor) ■ Calculation criteria ○ Multiplying the average number of hospitalization days of all institutions by the number of cases by type and DRG of relevant institutions. And add by DRG
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on breast cancer ■ Excluding patients whose hospitalization days are extremely high or low, exceeding the upper value or falling below the lower value ○ Upper value = X 〉 {Q3+2.5 ⅠQ3-Q1 Ⅰ} Lower value = X 〈 {Q1-2.5 ⅠQ3-Q1 Ⅰ} - X : Number of hospitalization days per case, Q1 : 1st quartile, Q3 : 3rd quartile ■ Patient who undergo both breast cancer operation and reconstruction operation ■ The subject of the medical aid
Things to be considered for calculation		■ Definition of the DRG ○ The hospitalized patient classification system in which the main diagnosis name, surgery, death status, age, severity, etc. are corrected by patient based on resource consumption and clinical similarity

Institution subject to assessment	General Hospital, Hospital, Clinic
Assessment Period	1 year
Assessment Cycle	Biennial
Assessment data source	Medical records (Survey form), Administrative data
Risk Adjustment	Y
Risk Adjustment Variable	■ DRG
Interpretation of output	■ Result value (LI, length index) 〉1: Institutions higher than the average value for the same type ■ LI = 1: Institutions the same as the average value of the same type ■ LI 〈 1: Institutions lower than the average value of the same type (Example) The fact that LI is 1.2 means that the actual number of hospitalization days is 20% higher than the expected appropriate number of hospitalization days considering the patient composition of the institution
Population subject to assessment	Adult, Elderly
Clinical subject	Neoplasms
Background and reason for selection	■ To measure the cost-effectiveness of input for medical services
Evidence and References	

Indicator numbers		01BSC0023
Indicator Name		Costliness Index (CI)
Indicator Definition		Considering the DRG (Diagnosis Related Group) of institutions, the indicator to assess how expensive the hospitalization cost of the relevant institution compared to the expected reasonable hospitalization cost
Status of indicator use		Pilot Indicator
Quality components		Efficiency
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	The average inpatient treatment cost of the relevant institutions considering by type of institutions and DRG of breast cancer sugery patients
	Inclusion Criteria	■ Calculation criteria ○ Multiplying the average inpatient treatment cost by the number of cases by type and DRG of relevant institutions. And add by DRG
	Exclusion Criteria	
	Denominator	Average inpatient treatment cost of all institutions considering the type of institutions and DRG of breast cancer surgery patients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on breast cancer ■ DRG classification number ○ J061 Radical mastectomy ○ J062 Mastectomy (in case of malignant tumor) ■ Calculation criteria ○ Multiplying the average inpatient treatment cost of all institutions by the number of cases by type and DRG of relevant institutions. And add by DRG
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on breast cancer ■ Excluding patients whose hospitalization cost is extremely high or low, exceeding the upper value or falling below the lower value ○ Upper value = X 〉 {Q3+2.5 ⅠQ3-Q1 Ⅰ} Lower value = X 〈 {Q1-2.5 ⅠQ3-Q1 Ⅰ} - X : Total cost per case, Q1 : 1st quartile, Q3 : 3rd quartile ■ Patient who undergo both breast cancer operatin and reconstruction operation. ■ The subject of the medical aid
Things to be considered for calculation		■ Definition of the DRG ○ The hospitalized patient classification system in which the main diagnosis name, surgery, death status, age, severity, etc. are corrected by patient based on resource consumption and clinical similarity

Institution subject to assessment	General Hospital, Hospital, Clinic
Assessment Period	1 year
Assessment Cycle	Biennial
Assessment data source	Medical records (Survey form), Administrative data
Risk Adjustment	Y
Risk Adjustment Variable	■ DRG
Interpretation of output	■ Result value (CI, cost index) 〉1: Institutions higher than the average value of the same type ■ CI = 1: Institutions the same as the average value of the same type ■ CI 〈 1: Institutions lower than the average value of the same type (Example) The fact that CI is 1.2 means that the actual cost of hospitalization is 20% higher than the expected appropriate cost of hospitalization considering the patient composition of the institution.
Population subject to assessment	Adult, Elderly
Clinical subject	Neoplasms
Background and reason for selection	■ To measure the cost effectiveness of input for medical services
Evidence and References	

Indicator numbers		01BSC0025
Indicator Name		Availability of a specialist workforce (2)
Indicator Definition		Proportion of the average number of work days that one or more specialists actually worked full time for each specialized subject (surgery, hemato-oncology, pathology, radiation oncology) during the period subject to breast cancer quality assessment
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Average work days of one or more specialists for each of the 4 specialized subjects (surgery, hemato-oncology, pathology, radiation oncology)
	Inclusion Criteria	■ Example ○ The average number of actual full-time work days of the specialists for each specialized subject at A Institution - (Surgery) a doctor: Number of full-time work days (2017.3.10.-12.31.) = 297 days b doctor: Number of full-time work days (2017.12.1.-12.31.) = 31 days ∴ Number of actual full-time work days of the surgery department = 297 days - (Hemato-oncology) Number of actual full-time work days = 103 days - (Pathology) No specialist = 0 days - (Radiation oncology) No specialist = 0 days ∴ The numerator of A Institution = (Total number of work days for each specialized subject)/Number of specialized subjects = (297 + 103 + 0 + 0)/4 = 100 days ■ If two or more specialists work at the same time per day for each specialized subject, the number of working days is calculated as one day
	Exclusion Criteria	
	Denominator	Number of days of operation during the assessment period
	Inclusion Criteria	■ Example ○ Number of days of operation of A institution - When opened on March 10, 2017, the operating period is 297 days (2017.3.10.~12.31.) ∴ Denominator value of A institution = 297 days
	Exclusion Criteria	
Things to be considered for calculation		

Institution subject to assessment	General Hospital, Hospital, Clinic
Assessment Period	1 year
Assessment Cycle	Biennial
Assessment data source	Medical records (Survey form), Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	
Clinical subject	Neoplasms
Background and reason for selection	■ To improve the quality of patient care and increase the opportunity to consider patients from different perspectives
Evidence and References	

Indicator numbers		01BSC0027
Indicator Name		Rate of obtaining consent forms for adjuvant therapy
Indicator Definition		Among breast cancer surgery patients receiving adjuvant therapy (cancer chemotherapy, radiation therapy, targeted therapy, endocrine therapy), the proportion of patients with a record of being provided (or their families being provided) an explanation of the purpose, toxicity, and process of adjuvant therapy and obtaining consent
Status of indicator use		Regular Indicator
Quality components		Patient-centeredness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients with a record of consent to adjuvant therapy
	Inclusion Criteria	■ Recognition criteria for records of consent for adjuvant therapy ○ Recognized only if it contains the following: - Cancer chemotherapy: drug type, duration, major side effects, etc. - Targeted therapy: duration, major side effects, etc. - Hormone therapy: drug type, duration, major side effects, etc. - Radiotherapy: treatment site, duration, major side effects, etc. ○ Recognized if all consent forms for adjuvant therapy exist ○ If all adjuvant therapies performed are recorded in one consent form, it is recognized that each consent form exists. ○ When a doctor or nurse specializing in tumors can fully explain adjuvant therapy has received the form ○ The content on the form written from the moment the patient visits the hospital for cancer treatment until the treatment begins is recognized. In the case of cancer chemotherapy, it is recognized only if a new content form is received from the patient whenever the regimen is changed in the middle.
	Exclusion Criteria	
	Denominator	Among the patients undergoing breast cancer surgery, the number of patients receiving adjuvant therapy (cancer chemotherapy, radiation therapy, targeted therapy, endocrine therapy)
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on breast cancer
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on breast cancer
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic

Assessment Period	1 year
Assessment Cycle	Biennial
Assessment data source	Medical records (Survey form)
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Adult, Elderly
Clinical subject	Neoplasms
Background and reason for selection	■ Physicians should discuss with the patient the possible effects and risks of treatment. At this time, the assumptions about the advantages of treatment based on the evidence supporting the treatment and the indirect evidence, the complications related to the treatment, and the characteristics of the high-risk prognosis should be explained to the patient, and the patient's choice should be included in whether to perform adjuvant treatment
Evidence and References	

Indicator numbers		01BSC0028
Indicator Name		Rate of pathology report completeness
Indicator Definition		Proportion of patients whose pathology report is faithfully recorded among the patients undergoing breast cancer surgery
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients whose pathology report is faithfully recorded
	Inclusion Criteria	■ Recognition criteria for the pathology report records ○ If all of the records below are recorded in the pathological record, it is recognized. - The size of the tumor - Histological type and grade - State of the resection margin - Invasion of surrounding blood vessels/lymphatic vessels by tumor - Lymph node status (number of positive lymph nodes/number of resected lymph node): Includes both sentinel lymph nodes and nodi lymphatici axillaris dissection - Hormone receptor, HER2 ○ If it is not a residual tumor, it is recognized if the contents are included in the final calculated pathology result sheet by confirmation of the past biopsy slide. If all the pathological records related to the indicator cannot be included, the indicator is recognized if the reason for not being included is described.
	Exclusion Criteria	
	Denominator	Number of patients undergoing breast cancer surgery
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on breast cancer
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on breast cancer
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		

Interpretation of output	The higher, the better.
Population subject to assessment	Adult, Elderly
Clinical subject	Neoplasms
Background and reason for selection	■ All pathological records necessary to determine the prognosis of breast cancer should be faithfully recorded
Evidence and References	

Indicator numbers		01BSC0031
Indicator Name		Rate of targeted therapy
Indicator Definition		If the HER2 (Human Epidermal growth factor Receptor type 2) immunologic test result is 3+, or the HER2 immunologic test result is 2+, the proportion of patients undergoing targeted therapy among breast cancer surgery patients whose HER2 gene amplification was confirmed in the FISH (Fluorescence In Situ Hybridization) or SISH (Silver In Situ Hybridization) test
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients receiving targeted therapy
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Among patients undergoing breast cancer surgery, if the HER2 (Human Epidermal growth factor Receptor type 2) immunologic test result is 3+ or the HER2 immunologic test result is 2+, the number of patients with HER2 gene amplification confirmed by FISH (Fluorescence In Situ Hybridization) or SISH (Silver In Situ Hybridization) tests
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on breast cancer
	Exclusion Criteria	■ In case where the axillary lymph node is negative and the size of the tumor is less than 1 cm ■ Apply common exclusion criteria to the subject of assessment on breast cancer
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Neoplasms

Background and reason for selection	■ In HER2-overexpressing breast cancer, if the tumor is lymph node-positive or lymph node-negative and the tumor size exceeds 1 cm, administration of trastuzumab within 1 year along with cancer chemotherapy is recommended, which improves the survival rate of the patient
Evidence and References	

Indicator numbers		01BSC0032
Indicator Name		Rate that final resection margin is negative for invasive breast cancer
Indicator Definition		Proportion of patients who final resection margin is invasive breast cancer negative among breast cancer patients undergoing breast conservation surgery
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who final resection margin is invasive breast cancer negative
	Inclusion Criteria	■ Final resection margin refers to the resection margin at the last operation performed to remove the tumor.
	Exclusion Criteria	
	Denominator	Number of patients undergoing breast conservation surgery
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on breast cancer
	Exclusion Criteria	■ When the boundary of the resectioned specimen is superficial and deep margin ■ In case of lateral margin, when radiotherapy was performed on patients with focal carcinoma in situ or invasive cancer positive ■ Apply common exclusion criteria to the subject of assessment on breast cancer
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Neoplasms
Background and reason for selection		■ In case where the final resection margin of invasive breast cancer is positive, it should be resected again in principle
Evidence and References		

Indicator numbers		01BSC0033
Indicator Name		Rate of bone density test performed in patients before AI (Aromatase Inhibitor) administration
Indicator Definition		Proportion of patients undergoing bone density tests before and after surgery among patients with breast cancer surgery to whom the AI is administrated.
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients undergoing bone density tests before and after surgery.
	Inclusion Criteria	■ Bone density test: Only the central type (spine, hip) is recognized. ■ Recognition period of the bone density test : Within 1 year before surgery or within 1 year after surgery
	Exclusion Criteria	
	Denominator	Number of patients receiving an AI among breast cancer surgery patients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on breast cancer
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on breast cancer
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Neoplasms
Background and reason for selection		■ In the case of AI administration, there is a risk of osteoporosis due to bone density loss
Evidence and References		

3) Lung cancer

☐ Common Criteria

※ Apply as inclusion criteria for the numerator or denominator of each indicator

○ Criteria for the subject of assessment

- **(Target patient)** Patients 18 years of age or older who received surgery, chemotherapy, and radiation therapy for primary lung cancer

  ※ Including patients who have been transferred from other institutions after surgery, chemotherapy, and radiation therapy

- **(Target diagnosis and code)** Including principal/secondary diagnosis

  • Malignant neoplasm of bronchus and lung (C34)

  ※ Including both small-cell lung cancer and non-small-cell lung cancer

- **(Target treatment)** Surgery*, Chemotherapy, Radiation therapy

  * Wedge resection of lung, Segmentectomy of Lung, Lobectomy of Lung, Pneumonectomy

- **(Cancer stage)** AJCC* I-IV

  * American Joint Committee on Cancer

○ Exclusion criteria for the subject of assessment

- Patients who have not undergone surgery, chemotherapy, or radiation therapy
- Patients who underwent surgery, chemotherapy, radiation therapy at a different institution and then were transferred
- Malignant neoplasm of trachea (C33), Carcinoma in situ of bronchus and lung (D02.2)
- Patients who were diagnosed with a different type of primary cancer within five years
- Double primary cancer patients who are diagnosed with synchronous primary cancer along with lung cancer or metachronous primary cancer after the diagnosis of lung cancer (including a second primary cancer in the lung)
- Patients with recurrent lung cancer
- Cases containing errors with resident registration numbers
- Sarcoma, carcinoid, lymphoma, salivary gland among tumors

Indicator numbers		01LCA0006
Indicator Name		Rate of cancer stage documentation by specialist in cancer-related fields
Indicator Definition		Proportion of patients whose cancer stage (AJCC Stage or TNM) was recorded by a cancer specialist in the medical record among patients receiving cancer chemotherapy and radiotherapy after lung cancer surgery
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients whose stage of cancer was recorded in the medical record by a cancer-related specialist.
	Inclusion Criteria	■ Cancer stage record by a cancer-related specialist following surgery and prior therapy 1) Patients who have not undergone surgery ○ If one or more of the specialists in internal medicine, thoracic surgery, radiation oncology recorded the cancer stage ① it is recognized. 2) Patients undergoing prior therapy and surgery ○ In the case of prior therapy and surgery, if both of the following cancer stages are recorded, it is recognized. - (Before surgery) If one or more of the specialists in internal medicine, thoracic surgery, radiation oncology recorded the cancer stage ① it is recognized. - (After surgery) If thoracic surgeon records cancer stage ② within 28 days after surgery, it is recognized. 3) In the case of surgery performed after not performing prior therapy ○ If thoracic surgeon records cancer stage ② within 28 days after surgery, it is recognized. ※ Cancer stage record ① SCLC limited-stage (LD)/extensive stage (ED) or TNM, NSCLC TNM or stage ② SCLC limited-stage (LD)/extensive stage (ED) or TNM, NSCLC TNM ■ When using the common menu for treating cancer patients, if the cancer stage is signed by the specialist, it is recognized as having a record. ■ In the case of a specialist training hospital, even if it is written by a trainee, if the specialist signs it after review, it is recognized as recorded.
	Exclusion Criteria	

	Denominator	Number of patients hospitalized for lung cancer
	Inclusion Criteria	■ Apply common criteria to the subject of assessment of lung cancer
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment of lung cancer
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Neoplasms
Background and reason for selection		■ Because the prognosis and treatment differ depending on the stage of TNM, the size of the tumor, the status of lymph node metastasis, and metastasis to other organs should be assessed. Records of staging by cancer specialists (internal medicine, thoracic surgery, radiation oncology specialist) other than pathology reports should be considered in future treatment.
Evidence and References		

Indicator numbers		01LCA0008
Indicator Name		Rate of pathology report completeness
Indicator Definition		Proportion of patients whose pathology report is recorded faithfully among patients undergoing lung cancer surgery.
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients whose pathology report is recorded faithfully
	Inclusion Criteria	■ Recognition criteria for pathology report records ○ Recognized if all of the following records are listed in the pathology report and signed by the pathologist ① TN stage, tumor size, tumor location, and pleural infiltration ② Status of lymph nodes (number of positive lymph nodes/number of resectioned lymph nodes) ③ The presence of tumors in the resection margin ④ Tumor invaded surrounding blood vessels/nerves/lymphatic vessels ⑤ Histological type ⑥ Other lung abnormalities such as interstitial fibrosis and pulmonary tuberculosis ⑦ In case of no residual tumor, ② and ⑥ above should be recorded. ○ However, it is recognized if the reasons for not including all the pathological records are described ○ In the case of T and N stage, it is recognized if the TN is clearly specified ■ In case of requesting a pathological examination to an external institution
	Exclusion Criteria	
	Denominator	Number of hospitalized patients undergoing lung cancer resection
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on lung cancer
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on lung cancer
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)

Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Adult, Elderly
Clinical subject	Neoplasms
Background and reason for selection	■ The pathologic findings important in determining the prognosis of lung cancer should be documented in the pathology report
Evidence and References	

Indicator numbers		01LCA0011
Indicator Name		Rate of documenting radiation therapy
Indicator Definition		Proportion of patients with documented radiotherapy among lung cancer patients receiving radiotherapy
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients whose radiotherapy content is recorded.
	Inclusion Criteria	■ Recognition criteria for the radiotherapy records ○ If the radiation oncology specialist has written all the contents of radiotherapy (total radiation dosage, radiation dosage per fraction or number of fractions, treatment area) in the medical record, it is recognized - In the case of brain stereotaxic radiosurgery, the case described by a neurosurgery specialist is also recognized ○ In the case of a specialist training hospital, even if it is written by a trainee, if the specialist signs it after review, it is recognized as recorded.
	Exclusion Criteria	
	Denominator	Number of lung cancer hospitalized patients receiving radiotherapy
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on lung cancer
	Exclusion Criteria	■ Patients undergoing radiotherapy by referral to another institution ■ Apply common exclusion criteria to the subject of assessment on lung cancer
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Neoplasms

Background and reason for selection	■ In order to know how the treatment proceeded, if radiotherapy was performed, the results of the status should be recorded at the time of hospital or department transfer
Evidence and References	

Indicator numbers		01LCA0017
Indicator Name		Rate of adjuvant chemotherapy performed within 8 weeks after surgery
Indicator Definition		Proportion of patients receiving adjuvant chemotherapy performed within 8 weeks after the last therapeutic surgery among patients undergoing surgery for NSCLC (Stage: ⅡⅠb~ⅢⅠN2, ECOG PS (Performance Status): 0-1)
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients receiving adjuvant chemotherapy performed within 8 weeks after therapeutic surgery.
	Inclusion Criteria	■ Regardless of the administration method (oral, parenteral), all anticancer agents administered are included in the assessment
	Exclusion Criteria	
	Denominator	Number of hospitalized patients undergoing lung cancer surgery for NSCLC (stage ⅡB to Ⅲ N2)
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on lung cancer ■ Cancer stage is based on the following criteria ① In the case of patients undergoing prior therapy before surgery, the clinical cancer stage recorded by the specialist in charge of the patient before the start of prior therapy ② For patients who did not receive prior therapy, the cancer stage recorded by the thoracic surgeon after surgery ■ PS is based on the records assessed before the start of adjuvant chemotherapy after surgery.
	Exclusion Criteria	■ Patients who were transferred to another institution or died within 8 weeks after surgery ■ Patients undergoing pre-operative therapy ■ When Concomitant ChemoRadio Therapy (CCRT) is performed after surgery or only palliative care is performed ■ If the post-operative adjuvant therapy is scheduled after radiotherapy ■ IRB-approved clinical trial patients ■ When Performance Status (ECOG or PS) is 2 or higher ■ Patients over 70 years of age ■ Apply common exclusion criteria to the subject of assessment on lung cancer
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic

Assessment Period	1 year
Assessment Cycle	Biennial
Assessment data source	Medical records (Survey form)
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Adult, Elderly
Clinical subject	Neoplasms
Background and reason for selection	■ For stage IIb-IIIN2 NSCLC patients, postoperative adjuvant chemotherapy is required ■ Adjuvant chemotherapy should be performed within 8 weeks after surgery considering the time it takes to recover from surgery and the initial treatment of surgical complications
Evidence and References	

Indicator numbers		01LCA0020
Indicator Name		Rate of Concomitant ChemoRadio Therapy (CCRT) in limited stage small cell lung cancer (SCLC) patients
Indicator Definition		Proportion of patients receiving CCRT among the limited stage SCLC patients at ECOG Performance Status (PS) 0-2.
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients undergoing CCRT
	Inclusion Criteria	■ Patients receiving radiotherapy by referral to another institution (accepted if there is a medical request form or hospital transfer record) ■ Radiotherapy should be administered at the beginning of 1 to 3 cycles of cancer chemotherapy. In this case, the combination of cancer chemotherapy and radiotherapy is recognized if 1 to 3 cycles of cancer chemotherapy and 1 session of radiotherapy are performed within 1 day.
	Exclusion Criteria	
	Denominator	Number of limited stage SCLC hospitalized patients with good performance status (PS 0-2)
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on lung cancer ■ Patients who have been referred to another institution for radiotherapy (recognized if there is a referral letter or hospital transfer record) ■ Cancer stage is based on the clinical cancer stage recorded by the attending specialist before the start of CCRT. ■ PS is based on the record assesssed before the start of CCRT
	Exclusion Criteria	■ Patients with limited stage SCLC who underwent surgery ■ Patient rejection ■ If the reasons for not performing CCRT, such as patient state ■ When Performance Status (ECOG or PS) is 3 or higher ■ Patients over 70 years of age ■ Apply common exclusion criteria to the subject of assessment on lung cancer
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)

Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Adult, Elderly
Clinical subject	Neoplasms
Background and reason for selection	■ Cancer chemotherapy alone (±radiotherapy) is recommended if PS is not good, but Concurrent radiochemotherapy is recommended for limited stage SCLC with good PS (PS 0-2)
Evidence and References	

Indicator numbers		01LCA0027
Indicator Name		Rate of Concomitant ChemoRadio Therapy (CCRT) in patients with inoperable stage Ⅲ non-small cell lung cancer (NSCLC)
Indicator Definition		Proportion of patients undergoing CCRT among patients with stage III NSCLC who are inoperable and in good Performance Status (PS) (PS 0-1)
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients undergoing CCRT
	Inclusion Criteria	■ In the case of CCRT, platinum-based cancer chemotherapy and chest radiotherapy must be combined to be recognized. ■ Radiotherapy should be administered at the beginning of cycle 1 of cancer chemotherapy. At this time, if 1 cycle cancer chemotherapy and 1 sessions radiotherapy are performed within 1 day, it is recognized. ■ Patients receiving radiotherapy by referral to another institution (Accepted if there is a medical request form or hospital transfer record)
	Exclusion Criteria	
	Denominator	Number of stage Ⅲ NSCLC hospitalized patients with good PS who were inoperable
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on lung cancer ■ Cancer stage is based on the clinical cancer stage recorded by the attending specialist before the start of CCRT. ■ PS is based on the record assesssed before the start of CCRT ■ Patients who refused surgery
	Exclusion Criteria	■ If the reasons for not performing CCRT, such as patient state and patient rejection, are stated. ■ When Performance Status (ECOG or PS) is 2 or higher ■ Patients over 70 years of age ■ Apply common exclusion criteria to the subject of assessment on lung cancer
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		

Interpretation of output	The higher, the better.
Population subject to assessment	Adult, Elderly
Clinical subject	Neoplasms
Background and reason for selection	■ CCRT is recommended if the PS is good with PS 0-1 and under 70 years of age among patients with stage III non-small-cell lung cancer that is inoperable (including patient refusal)
Evidence and References	■ Use of anticancer drugs that meet the guideline of the NCCN (National Cooperative cancer Network) and the HIRA's assessment criteria

Indicator numbers		01LCA0030
Indicator Name		Length of Stay Index (LI)
Indicator Definition		Considering the DRG (Diagnosis Related Group) of institutions, an indicator of how long the number of hospitalization days at the institution is compared to the expected appropriate number of hospitalization days.
Status of indicator use		Regular Indicator
Quality components		Efficiency
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	The average number of days of hospitalization for relevant institutions considering by type of institutions and DRG of lung cancer patients
	Inclusion Criteria	■ Calculation criteria ○ Multiplying the average number of hospitalization days by the number of cases by type and DRG of relevant institutions. And add by DRG
	Exclusion Criteria	
	Denominator	Average number of hospitalization days of all institutions considering the type of institutions and DRG of lung cancer patients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on lung cancer ■ Calculation criteria ○ Multiplying the average number of hospitalization days of all institutions by the number of cases by type and DRG of relevant institutions. And add by DRG ■ DRG classification number - E012 Major lung surgery (for malignancy) - E014 Other lung surgery - E015 Mediastinal surgery - E016 Major thoracic surgery - E017 Other thoracic surgery - E018 Major surgery using thoracoscope - E019 Other surgery using thoracoscope - E02 Bronchoscope and radiosurgery - E031 Diagnostic procedure for respiratory diseases
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on lung cancer ■ Excluding patients whose hospitalization days are extremely high or low, exceeding the upper value or falling below the lower value ○ Upper value = X 〉 {Q3+2.5 ⅠQ3-Q1 Ⅰ} Lower value = X 〈 {Q1-2.5 ⅠQ3-Q1 Ⅰ} - X : Number of hospitalization days per case, Q1 : 1st quartile, Q3 : 3rd quartile

Things to be considered for calculation	■ Definition of the DRG ○ The hospitalized patient classification system in which the main diagnosis name, surgery, death status, age, severity, etc. are corrected by patient based on resource consumption and clinical similarity
Institution subject to assessment	General Hospital, Hospital, Clinic
Assessment Period	1 year
Assessment Cycle	Biennial
Assessment data source	Medical records (Survey form), Administrative data
Risk Adjustment	Y
Risk Adjustment Variable	■ DRG
Interpretation of output	■ Result value (LI, length index) 〉1: Institutions higher than the average value for the same type ■ LI = 1: Institutions the same as the average value of the same type ■ LI 〈 1: Institutions lower than the average value of the same type (Example) The fact that LI is 1.2 means that the actual number of hospitalization days is 20% higher than the expected appropriate number of hospitalization days considering the patient composition of the institution
Population subject to assessment	Adult, Elderly
Clinical subject	Neoplasms
Background and reason for selection	■ To measure the cost-effectiveness of input for medical services
Evidence and References	

Indicator numbers		01LCA0031
Indicator Name		Costliness Index (CI)
Indicator Definition		Considering the DRG (Diagnosis Related Group) of institutions, an indicator of how long the number of hospitalization days at the institution is compared to the expected appropriate number of hospitalization days.
Status of indicator use		Pilot Indicator
Quality components		Efficiency
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	The average inpatient treatment cost of the relevant institutions considering by type of institutions and DRG of lung cancer patients
	Inclusion Criteria	■ Calculation criteria ○ Multiplying the average inpatient treatment cost by the number of cases by type and DRG of relevant institutions. And add by DRG
	Exclusion Criteria	
	Denominator	Average inpatient treatment cost of all institutions considering the type of institutions and DRG of lung cancer patients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on lung cancer ■ Calculation criteria ○ Multiplying the average inpatient treatment cost of all institutions by the number of cases by type and DRG of relevant institutions. And add by DRG ■ DRG classification number - E012 Major lung surgery (for malignancy) - E014 Other lung surgery - E015 Mediastinal surgery - E016 Major thoracic surgery - E017 Other thoracic surgery - E018 Major surgery using thoracoscope - E019 Other surgery using thoracoscope - E02 Bronchoscope and radiosurgery - E031 Diagnostic procedure for respiratory diseases
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on lung cancer ■ Excluding patients whose cost of care is extremely high or low, exceeding the upper value or falling below the lower value ○ Upper value = X 〉 {Q3+2.5 ⅰ Q3-Q1 ⅰ} Lower value = X 〈 {Q1-2.5 ⅰ Q3-Q1 ⅰ} - X : Total cost per case, Q1 : 1st quartile, Q3 : 3rd quartile

Things to be considered for calculation	■ Definition of the DRG ○ The hospitalized patient classification system in which the main diagnosis name, surgery, death status, age, severity, etc. are corrected by patient based on resource consumption and clinical similarity
Institution subject to assessment	General Hospital, Hospital, Clinic
Assessment Period	1 year
Assessment Cycle	Biennial
Assessment data source	Administrative data
Risk Adjustment	Y
Risk Adjustment Variable	■ DRG
Interpretation of output	■ Result value (CI, cost index) 〉1: Institutions higher than the average value of the same type ■ CI = 1: Institutions the same as the average value of the same type ■ CI 〈 1: Institutions lower than the average value of the same type (Example) The fact that CI is 1.2 means that the actual cost of hospitalization is 20% higher than the expected appropriate cost of hospitalization considering the patient composition of the institution.
Population subject to assessment	Adult, Elderly
Clinical subject	Neoplasms
Background and reason for selection	■ To measure the cost-effectiveness of resources invested in medical services
Evidence and References	

Indicator numbers		01LCA0032
Indicator Name		Availability of a specialist workforce (2)
Indicator Definition		Proportion of the average number of working days that one or more specialists actually worked full-time for each treatment subject (Respiratory Internal Medicine, Hematology Oncology, Thoracic Surgery, Pathology, Nuclear Medicine, Radiation Oncology, Radiology) during the period subject to lung cancer quality assessment.
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Number of working days that one or more specialists actually worked full-time for each treatment subject (Respiratory Internal Medicine, Hematology Oncology, Thoracic Surgery, Pathology, Nuclear Medicine, Radiation Oncology, Radiology) during the period subject to lung cancer quality assessment. (* Calculated as one day even when two or more specialists work full-time at the same time for each specialty)
	Inclusion Criteria	■ Example ○ The average number of actual full-time working days of the specialists for each specialized subject at A Institution - (Division of pulmonology) a doctor: Number of full-time working days (2018.3.10.~12.31.) = 297 days b doctor: Number of full-time working days (2018.3.10.~12.31.) = 297 days ∴ Number of actual full-time working days of the division of pulmonology = 297 days - (Hemato-oncology) Number of actual full-time working days = 60 day - (Thoracic surgery) No specialist = 0 day (Addition) - (Pathology) No specialist = 0 day - (Nuclear medicine) No specialist = 0 day - (Radiation oncology) No specialist = 0 day - (Radiology) No specialist = 0 day ∴ The numerator of A institution = (Total number of working days for each specialized subject)/Number of specialized subjects = (297+60+0+0+0+0+0)/7 = 51 day
	Exclusion Criteria	
	Denominator	Number of days of operation during the assessment period
	Inclusion Criteria	■ Example ○ Number of days of operation of A Institution - When opened on March 10, 2018, the operating period is 297 days (2018.3.10.~12.31.) ∴ Denominator value of A Institution = 297 days

Exclusion Criteria	
Things to be considered for calculation	
Institution subject to assessment	General Hospital, Hospital, Clinic
Assessment Period	1 year
Assessment Cycle	Biennial
Assessment data source	Administrative data, Medical records (Survey form)
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	
Clinical subject	Neoplasms
Background and reason for selection	■ To improve the quality of patient care and increase the opportunity to consider patients from different perspectives
Evidence and References	

Indicator numbers		01LCA0034
Indicator Name		Rate of confirmed pathological diagnosis before treatment
Indicator Definition		Proportion of patients with a histologically or cytologically confirmed diagnosis prior to initiation of treatment among lung cancer hospitalized patients receiving treatment other than lung cancer radical operation
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients with a histologically or cytologically confirmed diagnosis prior to initiation of treatment
	Inclusion Criteria	■ In the case of tests conducted by other institutions, if there is a result sheet (read sheet), it is recognized
	Exclusion Criteria	■ Cases receiving emergency palliative radiotherapy at stage IV ■ Cases stating the reasons for failure to perform histological tests.
	Denominator	Number of hospitalized patients receiving treatment other than radical operation for lung cancer
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on lung cancer
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Neoplasms
Background and reason for selection		■ A definitive pathological diagnosis must be made before starting treatment so that treatment directions can be set and communication between medical staff is helpful
Evidence and References		

Indicator numbers		01LCA0035
Indicator Name		Rate of lymph node dissection or sampling performance
Indicator Definition		Proportion of patients undergoing lymph node dissection or sampling among patients undergoing surgery for lung cancer.
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients undergoing lymph node dissection or sampling
	Inclusion Criteria	■ In stage N2 patients, dissection of at least three ipsilateral mediastinal lymph node groups (3 N2 stations) during surgery is recognized. ■ For stage N2, it is based on the clinical cancer stage (before and during surgery) recorded by the thoracic surgeon.
	Exclusion Criteria	
	Denominator	Number of hospitalized patients undergoing lung cancer resection
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on lung cancer
	Exclusion Criteria	■ Post-surgery stage III N3, IV patients ■ When cardiopulmonary function deteriorates due to COPD, etc. ■ In case mediastinal lymph node dissection of more than 3 stations cannot be satisfied due to previous surgery ■ In case where the reason for not performing lymph node dissection or lymph node sampling is stated ■ Patients with pure AIS (Adenocarcinoma In Situ) or MIA (Minimally Invasive Adenocarcinoma) ■ Patients with GGO (Ground Glass Opacity) according to the chest CT ■ Apply common exclusion criteria to the subject of assessment on lung cancer
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly

Clinical subject	Neoplasms
Background and reason for selection	■ Systematic lymph node dissection or sampling is necessary for complete resection. - A systematic biopsy of each lymph node demonstrates N2 lesions in 24% of clinical stage N0-1 patients, so complete lymph node resection is necessary for therapeutic purposes and induction of remission in N2 patients ■ Even in sublobar resection (segmentectomy and wedge resection), appropriate N1 and N2 lymph nodes should be sampled if not technically impossible ■ For N2 patients, at least three ipsilateral mediastinal lymph nodes (3 N2 stations) must be dissected during surgery (pathological record findings)
Evidence and References	

4) Stomach cancer

☐ Common Criteria

※ Apply as inclusion criteria for the numerator or denominator of each indicator

○ Criteria for the subject of assessment

- **(Target patient)** Patients 18 years of age or older who underwent surgery for primary stomach cancer (National Health Insurance and Medical Aid)
- **(Target diagnosis and code)** Including principal/secondary diagnosis
  - Malignant neoplasm of stomach (C16)
- **(Target surgeries)**

1) Endoscopic surgery

- Endoscopic treatment of upper gastrointestinal tumor-Mucosal resection and Submucosal resection
- Endoscopic treatment of upper gastrointestinal tumor-Submucosal dissection

2) Gastrectomy

- Total gastrectomy
- Subtotal gastrectomy

- **(Cancer stage)** AJCC* I-IV (Prossess indicator: AJCC I-III)

* American Joint Committee on Cancer

- **(Pathology)** Malignant Epithelial Tumor/Common Type

○ Exclusion criteria for the subject of assessment

- Patients who underwent surgery (gastrectomy) or neoadjuvant therapy (chemotherapy or radiation therapy) at a different institution and then were transferred
- Patients diagnosed with recurrent or secondary cancer

Indicator numbers		01AGC0012
Indicator Name		Rate of endoscopic resection record completeness
Indicator Definition		Proportion of patients whose treatment content is faithfully recorded among patients with stomach cancer who underwent endoscopic resection
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients whose treatment contents are faithfully recorded
	Inclusion Criteria	■ Recognition criteria for endoscopic resection treatment records ○ Method of resection (collective resection or partial resection) ○ Number of resection (only divisional resection) ○ Size ○ Whether there are complications
	Exclusion Criteria	
	Denominator	Number of patients undergoing endoscopic resection for stomach cancer
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on stomach cancer ■ Applied surgery ○ Endoscopic treatment of upper gastrointestinal tumor-Mucosal resection and Submucosal resection ○ Endoscopic treatment of upper gastrointestinal tumor-Submucosal dissection
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on stomach cancer ■ Patients with stomach cancer whose procedure was interrupted during endoscopic resection
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Neoplasms

Background and reason for selection	■ After endoscopic resection, It is recommended to faithfully record endoscopic resection to comfirm complete resection which is radical treatment
Evidence and References	

Indicator numbers		01AGC0014
Indicator Name		Rate of additional gastrectomy after incomplete endoscopic resection
Indicator Definition		Proportion of patients receiving gastrectomy among patients with stomach cancer who need additional gastrectomy after endoscopic resection
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who have undergone additional gastrectomy
	Inclusion Criteria	■ If the reason for not performing additional gastrectomy depending on patient factors or the judgment of the physician who performed endoscopic resection is recorded in the medical record, it is recognized.
	Exclusion Criteria	
	Denominator	Number of patients requiring additional gastrectomy among patients undergoing endoscopic resection for stomach cancer
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on stomach cancer ■ Applied surgery ○ Endoscopic treatment of upper gastrointestinal tumor-Mucosal resection and Submucosal resection ○ Endoscopic treatment of upper gastrointestinal tumor-Submucosal dissection ■ (Details required) Cancer cells in the resection margin (vertical plane) ■ In case where the additional gastrectomy is required ○ If one or more of the following items are listed in the endoscopic resection pathology report - Presence of cancer cells in the section margin - Invasion of lymphatic and blood vessels
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on stomach cancer ■ Patients undergoing gastrectomy due to complications from endoscopic resection
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		

Interpretation of output	The higher, the better.
Population subject to assessment	Adult, Elderly
Clinical subject	Neoplasms
Background and reason for selection	■ After endoscopic resection, gastrectomy should be performed if the possibilities of incomplete resection or metastasis is high
Evidence and References	

Indicator numbers		01AGC0018
Indicator Name		Rate of gastrectomy record completeness
Indicator Definition		Proportion of patients whose operational charts are faithfully recorded among stomach cancer patients undergoing gastrectomy
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients whose operational charts are faithfully recorded
	Inclusion Criteria	■ Recognition criteria of operational chart 1) Resection scope 2) Reconstruction 3) Location of the lesion 4) Lymph node dissection 5) Distant metastases 6) Whether there is a record of residual cancer
	Exclusion Criteria	
	Denominator	Number of patients undergoing gastrectomy for stomach cancer
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on stomach cancer ■ Applied surgery ○ Total gastrectomy ○ Subtotal gastrectomy
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on stomach cancer
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Neoplasms
Background and reason for selection		■ It is recommended to faithfully record the surgical record related to radical treatment that determines the prognosis of stomach cancer
Evidence and References		

Indicator numbers		01AGC0019
Indicator Name		Rate of regional lymph node resection and examination
Indicator Definition		Proportion of patients undergoing pathological examination after resecting 15 or more regional nodes among stomach cancer patients undergoing gastrectomy
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients undergoing pathological examination after resecting 15 or more regional nodes.
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of patients undergoing gastrectomy for stomach cancer
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on stomach cancer ■ Applied surgery ○ Total gastrectomy ○ Subtotal gastrectomy
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on stomach cancer ■ If cancer chemotherapy or radiotherapy was performed before gastrectomy ■ If gastrectomy or paragastric lymph node resection was performed in the past ■ Sentinel lymph node* resection was performed as a clinical trial subject * Sentinel lymph node: lymph node where cancer cells first spread from the primary tumor through lymphatic vessels
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Neoplasms

Background and reason for selection	■ Since lymph node metastasis is an important criterion for treatment and prognosis, a minimum of 15 regional lymph node dissections is recommended
Evidence and References	

Indicator numbers		01AGC0024
Indicator Name		Rate of recommended adjuvant chemotherapy within 8 weeks after surgery (stage Ⅱ-Ⅲ)
Indicator Definition		Proportion of patients receiving the recommended first adjuvant chemotherapy performed within 8 weeks of surgery among patients with stomach cancer who underwent gastrectomy (stage II-III),
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who received the recommended first adjuvant chemotherapy performed within 8 weeks after surgery
	Inclusion Criteria	■ Includes recommended adjuvant chemotherapy started within 8 weeks regardless of administration method (oral or parenteral) ○ Depending on the patient's condition, the first session of the first cycle is recognized up to 70% of the reference dose. ■ Criteria for the recommended adjuvant chemotherapy 1) S-1 - BSA (Body Surface Area) under 1.25m2: 40mg/serve - BSA 1.25m2 above ~ BSA under 1.5m2: 50mg/serve - BSA 1.5m2 above: 60mg/serve for evey 6 weeks, 12 months or 8 sessions 2) XELOX - Capecitabine 1000㎎/㎡ po bid, 1~14 days - Oxaliplatin 130㎎/㎡ IV, day 1, every 21 day interval, 8 sessions
	Exclusion Criteria	
	Denominator	Number of patients undergoing radical gastrectomy for stomach cancer stage II-III
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on stomach cancer ■ Applied surgery ○ Total gastrectomy ○ Subtotal gastrectomy ■ Based on the cancer stage recorded by the specialist in charge considering the results of the pathologic examination and various diagnostic tests after surgery

	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on stomach cancer ■ Patients transferred to another institution within 8 weeks after surgery ■ In case where chemotherapy was performed before surgery ■ In case wher radiation or chemo-radiotherapy was performed after surgery ■ If adjuvant therapy was not performed due to patient factors within 8 weeks after surgery ■ In case of the subject of the clinical trial
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Neoplasms
Background and reason for selection		■ In stage II or III stomach cancer, adjuvant chemotherapy lowers recurrence and prolongs survival. ■ It is recommended to start chemotherapy within 8 weeks after surgery, considering the time it takes to recover from the initial treatment of surgery and surgical complications.
Evidence and References		

Indicator numbers		01AGC0025
Indicator Name		Rate of recommended adjuvant chemotherapy performance
Indicator Definition		Proportion of patients receiving recommended adjuvant chemotherapy among patients with stomach cancer surgery receiving adjuvant chemotherapy
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients receiving recommended adjuvant chemotherapy
	Inclusion Criteria	■ Recognition criteria of the recommended adjuvant chemotherapy ○ 1 sessions regimen (regimen, dose, number of administration days), when total sessions are consistent with the recommended regimen ○ Depending on the patient's condition, the first session of the first cycle is recognized up to 70% of the reference dose. 1) S-1 - BSA (Body Surface Area) 1.25m2 under: 40mg/serve - BSA 1.25m2 above ~ BSA under 1.5m2: 50mg/serve - BSA 1.5m2 above: 60mg/serve for evey 6 weeks, 12 months or 8 sessions 2) XELOX - Capecitabine 1000㎎/㎡ po bid, 1~14 days - Oxaliplatin 130㎎/㎡ IV, day 1, every 21 day interval, 8 sessions ■ If there is a reason to change or stop adjuvant chemotherapy ○ Patients with recurrence or metastasis during the adjuvant chemotherapy ○ When the patient refuses the adjuvant chemotherapy ○ Patients transferred to other hospitals ○ Patients with anticancer side effects ■ If the total number of sessions is not completed during the assessment period
	Exclusion Criteria	■ Cases where there is no reason to change or stop adjuvant chemotherapy
	Denominator	Number of patients receiving adjuvant chemotherapy after stomach cancer surgery
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on stomach cancer ■ Applied surgery ○ Total gastrectomy ○ Subtotal gastrectomy

	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on stomach cancer ■ Patients diagnosed with another primary cancerous disease within 5 years ■ Patients undergoing cancer chemotherapy before surgery ■ Patients undergoing chemo-radiotherapy after surgery ■ In case of the subject of the clinical trial
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Neoplasms
Background and reason for selection		■ As adjuvant chemotherapy, the recommended cancer chemotherapy should be administered according to the regimen
Evidence and References		

Indicator numbers		01AGC0028
Indicator Name		Costliness Index (CI)
Indicator Definition		Considering the DRG (Diagnosis Related Group) of institutions, the indicator to assess how expensive the hospitalization cost of the relevant institution compared to the expected reasonable hospitalization cost.
Status of indicator use		Pilot Indicator
Quality components		Efficiency
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	The average inpatient treatment cost of the relevant institutions considering by type of institutions and DRG of stomach cancer surgery patients
	Inclusion Criteria	■ Calculation criteria ○ Multiplying the average inpatient treatment cost by the number of cases by type and DRG of relevant institutions. And add by DRG
	Exclusion Criteria	
	Denominator	Average inpatient treatment cost of all institutions considering the type of institutions and DRG of stomach cancer surgery patients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on stomach cancer ■ Calculation criteria ○ Multiplying the average inpatient treatment cost of all institutions by the number of cases by type and DRG of relevant institutions. And add by DRG ■ Major DRG classification numbers for each operation ○ Endoscopic resection: G501, G502, G511, G512 ○ Gastrectomy: G071, G072, G081, G082, G091, G092, G093, G094
	Exclusion Criteria	■ The subject of the medical aid ■ It refers to cases where the treatment cost is extremely high or low, and excludes cases that exceed the upper value or are less than the lower value. ○ Upper value = X 〉 {Q3+2.5 ⅠQ3-Q1 Ⅰ} Lower value = X 〈 {Q1-2.5 ⅠQ3-Q1 Ⅰ} - X : Total cost per case, Q1 : 1st quartile, Q3 : 3rd quartile ■ Apply common exclusion criteria to the subject of assessment on stomach cancer
Things to be considered for calculation		■ Definition of the DRG ○ The hospitalized patient classification system in which the main diagnosis name, surgery, death status, age, severity, etc. are corrected by patient based on resource consumption and clinical similarity
Institution subject to assessment		General Hospital, Hospital, Clinic

Assessment Period	1 year
Assessment Cycle	Biennial
Assessment data source	Administrative data
Risk Adjustment	Y
Risk Adjustment Variable	■ DRG
Interpretation of output	■ Result value (CI, cost index) 〉1: Institutions higher than the average value of the same type ■ CI = 1: Institutions the same as the average value of the same type ■ CI 〈 1: Institutions lower than the average value of the same type (Example) The fact that CI is 1.2 means that the actual cost of hospitalization is 20% higher than the expected appropriate cost of hospitalization considering the patient composition of the institution
Population subject to assessment	Adult, Elderly
Clinical subject	Neoplasms
Background and reason for selection	■ To measure the relative efficiency of resources invested in medical services
Evidence and References	

Indicator numbers		01AGC0029
Indicator Name		Length of Stay Index (LI)
Indicator Definition		Considering the DRG (Diagnosis Related Group) of institutions, an indicator of how long the number of hospitalization days at the institution is compared to the expected appropriate number of hospitalization days
Status of indicator use		Regular Indicator
Quality components		Efficiency
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	The average number of days of hospitalization for relevant institutions considering by type of institutions and DRG of stomach cancer surgery patients
	Inclusion Criteria	■ Calculation criteria ○ Multiplying the average number of hospitalization days by the number of cases by type and DRG of relevant institutions. And add by DRG
	Exclusion Criteria	
	Denominator	Average number of hospitalization days of all institutions considering the type of institutions and DRG of stomach cancer surgery patients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on stomach cancer ■ Calculation criteria ○ Multiplying the average number of hospitalization days of all institutions by the number of cases by type and DRG of relevant institutions. And add by DRG ■ Major DRG classification numbers for each operation ○ Endoscopic resection: G501, G502, G511, G512 ○ Gastrectomy: G071, G072, G081, G082, G091, G092, G093, G094
	Exclusion Criteria	■ The subject of the medical aid ■ It refers to cases with extremely high or low hospitalization days, excluding cases exceeding the upper value or lower than the lower value. ○ Upper value = X 〉 {Q3+2.5 ⅠQ3-Q1 Ⅰ} Lower value = X 〈 {Q1-2.5 ⅠQ3-Q1 Ⅰ} - X : Total cost per case, Q1 : 1st quartile, Q3 : 3rd quartile ■ Patients who transferred after receiving gastrectomy or prior therapy (cancer chemotherapy or radiation therapy) at another institution ■ Patients diagnosed with recurrent cancer or secondary cancer
Things to be considered for calculation		■ Definition of the DRG ○ The hospitalized patient classification system in which the main diagnosis name, surgery, death status, age, severity, etc. are corrected by patient based on resource consumption and clinical similarity

Institution subject to assessment	General Hospital, Hospital, Clinic
Assessment Period	1 year
Assessment Cycle	Biennial
Assessment data source	Medical records (Survey form), Administrative data
Risk Adjustment	Y
Risk Adjustment Variable	■ DRG
Interpretation of output	■ Result value (LI, length index) 〉1: Institutions higher than the average value for the same type ■ LI = 1: Institutions the same as the average value of the same type ■ LI 〈 1: Institutions lower than the average value of the same type (Example) The fact that LI is 1.2 means that the actual number of hospitalization days is 20% higher than the expected appropriate number of hospitalization days considering the patient composition of the institution
Population subject to assessment	Adult, Elderly
Clinical subject	Neoplasms
Background and reason for selection	■ To measure the cost-effectiveness of resources invested in medical services
Evidence and References	

Indicator numbers		01AGC0030
Indicator Name		Operative mortality rate (In-hospital mortality or 30-day postoperative mortality)
Indicator Definition		Proportion of patients who died within the hospitalization period or within 30 days after surgery among stomach cancer patients undergoing gastrectomy.
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who died within the hospitalization period or within 30 days after surgery. among stomach cancer patients undergoing gastrectomy.
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of stomach cancer patients undergoing gastrectomy
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on stomach cancer ■ Applied surgery ○ Total gastrectomy ○ Subtotal gastrectomy
	Exclusion Criteria	■ Patients who transferred after receiving gastrectomy or prior therapy (cancer chemotherapy or radiation therapy) at another institution ■ Patients diagnosed with recurrent cancer or secondary cancer
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form), Administrative data
Risk Adjustment		Y
Risk Adjustment Variable		■ Age, type of medical insurance, BMI, ASA score, cancer stage, emergency surgery, comorbidity index (Charlson Comorbidity Index, CCI), combined operation, gender
Interpretation of output		■ Upper value and actual mortality value predicted mortality of 95% confidence interval ○ (Good) Actual morality≤ Upper value of 95% confidence interval of the predicted mortality ○ (Insufficient) Actual morality〉Upper value of 95% confidence interval of the predicted mortality

Population subject to assessment	Adult, Elderly
Clinical subject	Neoplasms
Background and reason for selection	■ Operative mortality in patients undergoing gastrectomy is closely related to quality of care, and an increase in mortality can be understood as a signal that there is a problem with the quality of health care provided by institutions
Evidence and References	

Indicator numbers		01AGC0031
Indicator Name		Availability of a specialist workforce (2)
Indicator Definition		Proportion of the average number of working days that one or more specialists actually worked full-time for each treatment subject (surgery, division of gastroenterology, hemato-oncology, pathology, radiology) during the period subject to stomach cancer quality assessment.
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Number of working days that one or more specialists actually worked full-time for each treatment subject (surgery, division of gastroenterology, hemato-oncology, pathology, radiology) during the period subject to stomach cancer quality assessment.
	Inclusion Criteria	■ If two or more specialists work at the same time per day for each specialized subject, the number of working days is calculated as one day. ■ Example ○ The average number of actual full-time working days of the specialists for each specialized subject at A Institution - (Surgery) a doctor: Number of full-time working days (2017.3.10.~12.31.) = 297 days b doctor: Number of full-time working days (2017.12.1.~12.31.) = 31 day ∴ Number of actual full-time working days of the surgery department = 297 days - (Hemato-oncology) Number of actual full-time working days = 103 days - (Pathology) No specialist = 0 day - (division of gastroenterology) No specialist = 0 day - (radiology) No specialist = 0 day ∴ The numerator of A institution = (Total number of working days for each specialized subject)/Number of specialized subjects = (297+103+0+0+0)/5 = 100 day
	Exclusion Criteria	
	Denominator	Number of days of operation during the assessment period
	Inclusion Criteria	■ Example ○ Number of days of operation of A Institution - When opened on March 10, 2017, the operating period is 297 days (2017.3.10.~12.31.) ∴ Denominator value of A Institution = 297 days

Exclusion Criteria	
Things to be considered for calculation	
Institution subject to assessment	General Hospital, Hospital, Clinic
Assessment Period	1 year
Assessment Cycle	Biennial
Assessment data source	Medical records (Survey form), Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	
Clinical subject	Neoplasms
Background and reason for selection	■ To improve the quality of patient care and increase the opportunity to consider patients from different perspectives
Evidence and References	

Indicator numbers		01AGC0032
Indicator Name		Documentation rate of diagnostic endoscopies performed before gastrectomy
Indicator Definition		Proportion of patients with documented diagnostic endoscopy results prior to resection among stomach cancer patients undergoing gastrectomy or endoscopic resection.
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients with documented endoscopic results prior to endoscopic resection or gastrectomy
	Inclusion Criteria	■ Recognition criteria for the records of endoscopy results ○ Test results sheet or records written by the attending physician - Endoscopic resection · The lesion part of stomach cancer (drawings are also recognized) · Gross type (drawings or records of EGC(Early Gatric Cancer) type or Borrmann type are also recognized) · Size · Whether there is an ulcer (EGC type records are recognized) - Gastrectomy · The lesion part of stomach cancer (drawings are also recognized) · Gross type (drawings or records of EGC type or Borrmann type are also acceptable) · Size ○ It is also acceptable if there is a test result sheet brought from another institution or the test result recorded by the attending physician is recorded in the medical record. ○ If a patient who has undergone endoscopic resection at another institution undergoes additional endoscopic resection after being transferred, diagnostic endoscopic resection must be performed again before additional endoscopic resection to be recognized. ○ If EUS (Endoscopic Ultrasonography) is performed after diagnostic endoscopy, it is recognized as endoscopy for the EUS.
	Exclusion Criteria	
	Denominator	Number of patients undergoing endoscopic resection or gastrectomy for stomach cancer
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on stomach cancer

	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on stomach cancer ■ Patients diagnosed with another primary cancerous disease within 5 years ■ If you have had gastrectomy in the past ■ When a patient who has not received treatment related to stomach cancer undergoes emergency surgery ■ If endoscopy is not performed due to perforation ■ If the diagnosis before resection is not stomach cancer
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Neoplasms
Background and reason for selection		■ An endoscopy should be performed to identify indications for endoscopic resection, to determine gross findings and the exact location of stomach cancer before gastrectomy, and to perform biopsy
Evidence and References		

Indicator numbers		01AGC0034
Indicator Name		Rate of pathological diagnosis report completeness
Indicator Definition		Proportion of patients whose pathology report is faithfully recorded among patients undergoing ESD (endoscopic submucosal dissection)
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients whose pathology report is faithfully recorded.
	Inclusion Criteria	■ Items should be recorded in the pathology diagnosis report ○ ESD 1) The form of tissues 2) Differentiation (Tubular or Papillary Adenocarcinoma only) 3) Depth of infiltratioin 4) Invasion of blood vessels (lymphatic and blood vessels) 5) Presence of cancer cells in the resection margin (horizontal and vertical) 6) Size of the resectioned lesion ○ Gastrectomy 1) The form of tissues 2) Differentiation (Tubular or Papillary Adenocarcinoma only) 3) Presence of cancer cells in the proximal and distal resection margins 4) Depth of infiltration or T stage 5) Number of resectioned lymph nodes and number of benign regional nodes or stage N 6) Invasion of the vessels around the tumor
	Exclusion Criteria	
	Denominator	Number of patients undergoing endoscopic ESD for stomach cancer or who underwent gastrectomy
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on stomach cancer ■ Applicable only to patients with adenocarcinoma among the tissue types of stomach cancer
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on stomach cancer ■ Patients diagnosed with another primary cancerous disease within 5 years ■ If the tumor does not remain due to a previous examination or treatment
Things to be considered for calculation		

Institution subject to assessment	General Hospital, Hospital, Clinic
Assessment Period	1 year
Assessment Cycle	Biennial
Assessment data source	Medical records (Survey form)
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Adult, Elderly
Clinical subject	Neoplasms
Background and reason for selection	■ Pathologic findings that are critical in determining the prognosis and further treatment of stomach cancer should be recorded in the pathology report
Evidence and References	

Indicator numbers		01AGC0035
Indicator Name		Rate of radical surgery for stomach cancer
Indicator Definition		Proportion of patients undergoing radical surgery as a first gastrectomy among patients with stomach cancer whose preoperative cancer stage is cT2 or higher (when the tumor has invaded the muscle layer)
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the proportion of patients undergoing radical surgery as a first gastrectomy
	Inclusion Criteria	■ Recognition criteria for patients undergoing radical surgery ○ Among patients undergoing total gastrectomy or subtotal gastrectomy, both D2 lymph node dissection and residual cancer (R0) are listed on the operational chart
	Exclusion Criteria	
	Denominator	Number of patients with preoperative cancer stage above cT2 among patients with stomach cancer surgery
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on stomach cancer ■ Applied surgery ○ Total gastrectomy ○ Subtotal gastrectomy
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on stomach cancer ■ Patients diagnosed with another primary cancerous disease within 5 years ■ If there is a reason that radical surveillance is not possible
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic
Assessment Period		1 year
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Neoplasms

Background and reason for selection	■ In advanced stomach cancer, it is recommended to increase the radical treatment rate of the first surgery by performing radical surgery
Evidence and References	

5) Liver cancer treatment outcome

☐ Common Criteria

※ Apply as inclusion criteria for the numerator or denominator of each indicator

○ Criteria for the subject of assessment

- **(Target patient)** Patients 18 years of age or older who underwent liver surgery for liver cancer
- **(Target diagnosis and code)** Including principal/secondary diagnosis
  - Malignant neoplasm of liver cell carcinoma (C220)
  - Malignant neoplasm of intrahepatic bile duct carcinoma (C221)
  - Secondary malignant neoplasm of liver and intrahepatic bile duct (C787)
- **(Target surgeries and code)** Hepatectomy
  - Hepatectomy-Wedge Resection (Q7221)
  - Hepatectomy-Segmentectomy (Q7222)
  - Hepatectomy-Bisegmentectomy (Q7223)
  - Hepatectomy-Lobectomy (Q7224)
  - Hepatectomy-Trisegmentectomy (Q7225)

○ Exclusion criteria for the subject of assessment

- Cases in which the disease to be assessed is not in the principal/secondary diagnosis but only in the R/O (rule out)
- Statement of claim for medical care benefits when medical institutions that have closed during the assessment target period

Indicator numbers		01HCC0021
Indicator Name		Operative mortality rate (In-hospital mortality or 30-day postoperative mortality)
Indicator Definition		Proportion of patients who died within the hospitalization period or within 30 days after surgery among patients undergoing hepatic resection.
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who died within the hospitalization period or within 30 days after surgery
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of patients undergoing hepatic resection for liver cancer
	Inclusion Criteria	■ Apply common criteria for assessment on liver cancer treatment outcome
	Exclusion Criteria	
Things to be considered for calculation		■ As a result of the preliminary assessment, the treatment outcome (surgical mortality) were assessed until a standardized treatment for liver cancer was established. ■ Statistical discrimination is insufficient to calculate an assessment grade for surgical mortality. Therefore, instead of calculating results for each institution, only national liver cancer surgery mortality and assessment reports are provided
Institution subject to assessment		General Hospital, Hospital
Assessment Period		2 year
Assessment Cycle		Biennial
Assessment data source		Administrative data
Risk Adjustment		Y
Risk Adjustment Variable		■ Patient's clinical condition, etc.
Interpretation of output		■ To figure out the death status of liver cancer resection patients
Population subject to assessment		Adult, Elderly
Clinical subject		Neoplasms
Background and reason for selection		■ Operative mortality in patients undergoing hepatic resection is closely related to the quality of medical care, and an increase in mortality can be understood as a signal that there is a problem with the quality of medical services provided by medical institutions
Evidence and References		

2.

Acute disease

1) CABG (coronary artery bypass graft)

☐ Common Criteria

※ Apply as inclusion criteria for the numerator or denominator of each indicator

○ Criteria for the subject of assessment

- **(Target patient)** Patients who were hospitalized for ischemic heart disease and underwent coronary artery bypass surgery (National Health Insurance and Medical Aid)
- **(Target diagnosis and code)** Including principal/secondary diagnosis
  - Ischemic heart disease (I20-I25)
- **(Target surgeries and code)**
  - Aorta-Coronary bypass surgery (O1640, O1641, O1647, O1648, O1649)
  - Off-pump Coronary artery bypass graft surgery (OA641, OA647, OA648, OA649)

○ Exclusion criteria for the subject of assessment

- Patients under the age of 18
- Patients with inaccurate resident registration numbers
- Pregnancy, childbirth, and puerperium
- AIDS (Specified code: V103)
- Metastatic cancer (KCD code: C77, C78, C79)
- Heart or lung transplant (Specified code: Q8080 (Heart transplantation) among V087, V088, V015, V277, V192)
- Other major cardiovascular surgery during the same hospitalization period (Exclusion criteria for isolated CABG)

Indicator numbers		01CAB0001, 0010 ※ Assigning indicator numbers for each surgical method
Indicator Name		The number of Coronary Artery Bypass Graft (CABG) surgeries (Total number of CABG surgeries/Total number of isolated CABG surgeries)
Indicator Definition		Number of CABG cases (Total number of CABG surgeries/Total number of isolated CABG surgeries) performed on patients hospitalized with ischemic heart disease.
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Number of surgery cases (Total number of CABG surgeries/Total number of isolated CABG surgeries) in patients hospitalized for ischemic heart disease.
	Inclusion Criteria	■ Apply common criteria to the subject of the CABG assessment
	Exclusion Criteria	■ (When calculating the number of isolated CABG surgeries) Patients with other major cardiovascular surgery during the same hospitalization period
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		■ (When calculating the number of individual cases) It is not included in the calculation of the overall score used in the calculation of grades in Health insurance review & assessment (HIRA)'s national portal
Institution subject to assessment		General Hospital
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Medical records (Survey form), Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System

Background and reason for selection	■ CABG is an operation that requires proficiency because it uses complex medical technology. Technical errors can clinically be accompanied by serious sequelae ranging from myocardial infarction, cerebral infarction, and death. Therefore, it can be said that the amount of treatment has a great effect on the treatment results.
Evidence and References	

Indicator numbers		01CAB0005
Indicator Name		Length of Stay Index (LI)
Indicator Definition		Considering patient composition, how long the average number of hospitalization days for patients who underwent CABG (Coronary Artery Bypass Graft) per institutions compared to the total average number of hospitalization days.
Status of indicator use		Pilot Indicator
Quality components		Efficiency
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	The average number of hospitalization days for the relevant institutions considering DRG (Diagnosis Related Group) in patients undergoing CABG surgery.
	Inclusion Criteria	■ Calculation criteria ○ The sum of each DRG by multiplying the average number of hospitalization days per DRG of the subject institutions by the number of cases per DRG of the subject institutions
	Exclusion Criteria	
	Denominator	Average number of hospitalization days of all institutions taking into account the DRG of patients undergoing CABG surgery
	Inclusion Criteria	■ Apply common criteria to the subject of the CABG assessment ■ Calculation criteria ○ The sum of each DRG by multiplying the average number of hospitalization days per entire DRG by the number of cases per DRG of the subject institutions
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on CABG ■ Patients who died during hospitalization ■ Excluding patients with extremely high or low hospitalization days exceeding the upper value or falling below the lower value ○ Upper value = X 〉 {Q3+2.5 ⅠQ3-Q1 Ⅰ} Lower value = X 〈 {Q1-2.5 ⅠQ3-Q1 Ⅰ} - X : Number of hospitalization days per episode, Q1 : 1st quartile, Q3 : 3rd quartile
Things to be considered for calculation		■ Definition of DRG. ○ A system that classifies hospitalized patients based on resource consumption and clinical similarity as a patient classification system.
Institution subject to assessment		General Hospital
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Medical records (Survey form), Administrative data

Risk Adjustment	Y
Risk Adjustment Variable	■ Apply the Refined Diagnosis Related Group (RDRG), which is classified by age and severity
Interpretation of output	■ If it exceeds 1.0, it means that the number of hospitalization days is higher than the average, and if it is less than 1.0, it means that the number of hospitalization days is low.
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Circulatory System
Background and reason for selection	■ To measure the relative efficiency of resources invested in medical services
Evidence and References	

Indicator numbers		01CAB0006
Indicator Name		Costliness Index (CI)
Indicator Definition		Considering the composition of patients, how expensive is the average hospitalization cost of patients receiving CABG (Coronary Artery Bypass Graft) per institution compared to the total average hospitalization cost
Status of indicator use		Pilot Indicator
Quality components		Efficiency
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	The average hospitalization costs for the relevant institutions considering DRG (Diagnosis Related Group) in patients with CABG surgery
	Inclusion Criteria	■ Calculation criteria ○ The sum of each DRG by multiplying the average hospitalization cost per DRG of the subject institutions by the number of cases per DRG of the subject institutions
	Exclusion Criteria	
	Denominator	Average inpatient treatment cost of all institutions taking into account the DRG of CABG surgery patients
	Inclusion Criteria	■ Apply common criteria to the subject of the CABG assessment ■ Calculation criteria ○ The sum of each DRG by multiplying the average inpatient treatment cost per DRG by the number of cases per DRG of the subject institutions
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on CABG ■ Patients who died during hospitalization ■ Excluding patients whose hospitalization cost is extremely high or low, exceeding the upper value or falling below the lower value ○ Upper value = X 〉 {Q3+2.5 ⅠQ3-Q1 Ⅰ} Lower value = X 〈 {Q1-2.5 ⅠQ3-Q1 Ⅰ} - X : Total medical fee per episode, Q1 : 1st quartile, Q3 : 3rd quartile
Things to be considered for calculation		■ Definition of DRG. ○ A system that classifies hospitalized patients based on resource consumption and clinical similarity as a patient classification system.
Institution subject to assessment		General Hospital
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		Y
Risk Adjustment Variable		■ Apply the Refined Diagnosis Related Group (RDRG), which is classified by age and severity

Interpretation of output	■ If it exceeds 1.0, it means that the inpatient treatment cost is higher than the average, and if it is less than 1.0, it means that it is low.
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Circulatory System
Background and reason for selection	■ To measure the relative efficiency of resources invested in medical services
Evidence and References	

Indicator numbers		01CAB0009
Indicator Name		Postoperative readmission rate (within 30 days from discharge)
Indicator Definition		Proportion of the patients who rehospitalized within 30 days after discharge among hospitalized patients undergoing isolated CABG (Coronary Artery Bypass Graft) for ischemic heart disease.
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients re-hospitalized with CABG-related morbidity within 30 days of discharge.
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of patients undergoing CABG alone among patients hospitalized for ischemic heart disease
	Inclusion Criteria	■ Apply common criteria to the subject of the CABG assessment ■ Definition of independent CABG ○ CABG performed alone without concurrent major cardiovascular surgery during the same hospitalization period
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on CABG ■ Patients who died during hospitalization
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		Y
Risk Adjustment Variable		■ Gender, age, BMI, past diabetes, past peripheral and carotid artery disease, initial pulse rate, serum creatinine, LM disease, emergency surgery
Interpretation of output		■ (E-assessment) Severity Adjustment readmission rate ○ Lower is better ■ (National Portal) Readmission indicator ○ (Calculation method) Using the severity adjustment result, the higher the score of 100.0, the better the score ○ (Calculation formula) 1-Actual readmissions rate / 1-Predicted readmission rate*100

	○ (Interpretation method) If it exceeds 100.0, it means that the readmission rate is higher than the average, and when it is less than 100.0, it means that the readmission rate is low
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Circulatory System
Background and reason for selection	■ Readmission is closely related to the number of days in hospital after surgery. In the US, the hospital stay is short (5.9 days after surgery), and the readmission rate within 7 days of discharge is 5.3% ('03). However, in Korea, the Number of postoperative hospitalization days is relatively long (15.7 days), so the readmission rate within 7 days of discharge is 1.1%.
Evidence and References	

Indicator numbers		01CAB0011
Indicator Name		Rate of CABG using internal thoracic artery
Indicator Definition		Proportion of patients who underwent surgery using the internal thoracic artery among hospitalized patients who underwent isolated CABG (Coronary Artery Bypass Graft) for ischemic heart disease.
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who underwent CABG surgery using internal thoracic artery.
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of patients undergoing isolated CABG among patients hospitalized for ischemic heart disease
	Inclusion Criteria	■ Apply common criteria to the subject of the CABG assessment ■ Definition of isolated CABG ○ CABG performed alone without concurrent major cardiovascular surgery during the same hospitalization period
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on CABG ■ Patients with repeated CABG surgery ■ In the case where the reason for not being able to use the internal thoracic artery is recorded
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System

Background and reason for selection	■ CABG using internal thoracic artery improves long-term vascular maintenance and long-term survival rate
Evidence and References	■ American College of Cardiology (ACC)/American Heart Association (AHA), American Heart Association/American Heart Association Guidelines

Indicator numbers		01CAB0012
Indicator Name		Rate of aspirin prescription at discharge
Indicator Definition		Proportion of patients prescribed aspirin at discharge among hospitalized patients receiving isolated CABG (Coronary Artery Bypass Graft) for ischemic heart disease.
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients prescribed aspirin at discharge
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of patients undergoing isolated CABG among patients hospitalized for ischemic heart disease
	Inclusion Criteria	■ Apply common criteria to the subject of the CABG assessment ■ Definition of isolated CABG ○ CABG performed alone without concurrent major cardiovascular surgery during the same hospitalization period
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on CABG ■ Patients who died during hospitalization ■ Patients who refused treatment and were discharged ■ Patients discharged to hospice ■ In case where a valid reason for not prescribing aspirin is recorded
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System

Background and reason for selection	■ According to the ACC/AHA guideline, postoperative aspirin administration is the primary treatment plan to reduce long-term complications and mortality immediately after surgery.
Evidence and References	■ American College of Cardiology (ACC)/American Heart Association (AHA), American Heart Association/American Heart Association Guidelines

Indicator numbers		01CAB0013
Indicator Name		Rate of reoperation due to postoperative hemorrhage or hematoma
Indicator Definition		Proportion of patients undergoing re-operation due to postoperative hemorrhage or hematoma among hospitalized patients receiving isolated CABG (Coronary Artery Bypass Graft) for ischemic heart disease.
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients undergoing thoracotomy due to hemorrhage or hematoma after surgery
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of patients undergoing isolated CABG alone among patients hospitalized for ischemic heart disease
	Inclusion Criteria	■ Apply common criteria to the subject of the CABG assessment ■ Definition of isolated CABG ○ CABG performed alone without concurrent major cardiovascular surgery during the same hospitalization period
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on CABG
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System
Background and reason for selection		■ This is one of the Ppatient Safety Indicators (PSI) of the Agency for Healthcare Research and Quality (AHRQ). There is global consensus that accidents can be reduced by improving the environment that raises provider awareness of patient safety.
Evidence and References		

Indicator numbers		01CAB0014
Indicator Name		Mortality rate (within 30 days of operation)
Indicator Definition		Proportion of patients who died within 30 days after surgery among hospitalized patients receiving isolated CABG (Coronary Artery Bypass Graft) for ischemic heart disease.
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who died within 30 days after surgery
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of patients undergoing isolated CABG among patients hospitalized for ischemic heart disease
	Inclusion Criteria	■ Apply common criteria to the subject of the CABG assessment ■ Definition of isolated CABG ○ CABG performed alone without concurrent major cardiovascular surgery during the same hospitalization period
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on CABG
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Medical records (Survey form), Administrative data
Risk Adjustment		Y
Risk Adjustment Variable		■ Gender, age, ejection fraction, emergency surgery, endotracheal intubation, cardiogenic shock, serum creatinine, BMI, AMI within 3 weeks, electrocardiogram abnormalities before surgery, dialysis, LM Disease
Interpretation of output		■ (E-assessment) Severity Adjustment readmission rate ○ Lower is better ■ (National Portal) Survival Indicator ○ (Calculation method) Using the severity adjustment result, the higher the score of 100.0, the better the score ○ (Calculation formula) 1-Actual morality/1-predicted mortality*100

	○ (Interpretation method) If the survival indicator exceeds 100, set the upper limit to 100.0 (100.0 is considered to have reached the minimum mean value)
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Circulatory System
Background and reason for selection	■ Mortality rate is closely related to quality of care.
Evidence and References	■ According to a report on cardiac surgery by the Pennsylvania Health Care Cost Containment Council (PHC4), in-hospitalmortality decreased by 53.1% from 3.2% in 1994 to 1.5% in 2015.

Indicator numbers		01CAB0015
Indicator Name		Postoperative length of stay
Indicator Definition		Average number of days hospitalized after surgery per hospitalized patient receiving isolated CABG (Coronary Artery Bypass Graft) for ischemic heart disease
Status of indicator use		Regular Indicator
Quality components		Efficiency
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	The total number of postoperative hospitalization days of the persons subject to the denominator.
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of patients undergoing isolated CABG among patients hospitalized for ischemic heart disease
	Inclusion Criteria	■ Apply common criteria to the subject of the CABG assessment ■ Definition of isolated CABG ○ CABG performed alone without concurrent major cardiovascular surgery during the same hospitalization period
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on CABG ■ Patients who died during hospitalization
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Medical records (Survey form), Administrative data
Risk Adjustment		Y
Risk Adjustment Variable		■ Gender, age, ejection fraction, emergency surgery, endotracheal intubation, cardiogenic shock, dyslipidemia, PTCA (Percutaneous Transluminal Coronary Angioplasty) failure, past chronic obstructive pulmonary disease, body mass index, unstable angina pectoris, past peripheral and carotid artery disease, past heart failure, past diabetes, serum creatinine
Interpretation of output		■ To understand the status of hospitalization days
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System

Background and reason for selection	■ As a result of the pre-assessment in 2005, there is a large variance in the number of hospitalization days between institutions, so it is necessary to conduct an assessment.
Evidence and References	

Indicator numbers		01CAB0016
Indicator Name		Rate of PCI (Percutaneous Coronary Intervention) before CABG (Coronary Artery Bypass Graft)
Indicator Definition		Proportion of patients undergoing pre-operative PCI among hospitalized patients receiving CABG for ischemic heart disease.
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients undergoing PCI before CABG
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of patients undergoing CABG among patients hospitalized for ischemic heart disease
	Inclusion Criteria	■ Apply common criteria to the subject of the CABG assessment
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on CABG ※ Exclusion criteria related to isolated CABG are not included
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		■ To understand the status of the operation
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System
Background and reason for selection		■ It is an indicator that reflects the condition of the patient before surgery
Evidence and References		

Indicator numbers		CAB0017~0021 ※ Assigning indicator numbers to each type of combined surgery
Indicator Name		Rate of combined surgery (aorta/valve/left ventricular aneurysm/carotid artery/VSD)
Indicator Definition		Proportion of patients undergoing a combined operation (aorta/valve/left ventricular aneurysm/carotid artery/VSD) among hospitalized patients receiving CABG (Coronary Artery Bypass Graft) for ischemic heart disease
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients undergoing a combined operation (aorta/valve/left ventricular aneurysm/carotid artery/VSD)
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of patients undergoing CABG among patients hospitalized for ischemic heart disease
	Inclusion Criteria	■ Apply common criteria to the subject of the CABG assessment
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on CABG ※ Exclusion criteria related to isolated CABG are not included
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		■ To understand the current status of combined operation
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System
Background and reason for selection		
Evidence and References		

Indicator numbers		01CAB0022
Indicator Name		Rate of off pump CABG (Coronary Artery Bypass Graft)
Indicator Definition		Proportion of patients not using artificial heart-lung machines among hospitalized patients receiving isolated CABG for ischemic heart disease.
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients receiving CABG without artificial heart lung machine taking over function of heart and lungs
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of patients undergoing isolated CABG among patients hospitalized for ischemic heart disease
	Inclusion Criteria	■ Apply common criteria to the subject of the CABG assessment ■ Definition of isolated CABG ○ CABG performed alone without concurrent major cardiovascular surgery during the same hospitalization period
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on CABG ※ Exclusion criteria related to isolated CABG are not included
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		■ To figure out the status of off pump implementation
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System
Background and reason for selection		■ To check the status of off pump operation, one of the isolated CABG surgical methods
Evidence and References		

Indicator numbers		01CAB0023
Indicator Name		Rate of extubation within 24 hours after CABG (Coronary Artery Bypass Graft)
Indicator Definition		Proportion of patients with endotracheal tube extubation within 24 hours after surgery among hospitalized patients receiving isolated CABG for ischemic heart disease.
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients with endotracheal tube extubation within 24 hours after surgery
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of patients undergoing isolated CABG among patients hospitalized for ischemic heart disease
	Inclusion Criteria	■ Apply common criteria to the subject of the CABG assessment ■ Definition of isolated CABG ○ CABG performed alone without concurrent major cardiovascular surgery during the same hospitalization period
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on CABG
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System
Background and reason for selection		■ Early extubation after major surgery is meaningful in terms of cost-effectiveness as it helps patients recover faster, reduces postoperative complications, and reduces ICU and hospital stay.
Evidence and References		

Indicator numbers		01CAB0024
Indicator Name		Rate of reoperation due to postoperative infection
Indicator Definition		Proportion of patients undergoing reoperation due to postoperative infection among hospitalized patients receiving isolated CABG (Coronary Artery Bypass Graft) for ischemic heart disease.
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients underging reoperation due to infection, including postoperative mediastinitis
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of patients hospitalized for ischemic heart disease and received isolated CABG
	Inclusion Criteria	■ Apply common criteria to the subject of the CABG assessment ■ Definition of isolated CABG ○ CABG performed alone without concurrent major cardiovascular surgery during the same hospitalization period
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on CABG
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System
Background and reason for selection		■ This is one of the Patient Safety Indicator (PSI) indicators, and the Rate of reoperation due to postoperative infection is closely related to the quality of medical care.
Evidence and References		

2) Ischemic heart disease (AMI (acute myocardial infarction), PCI (percutaneous coronary intervention))

☐ Common Criteria

※ Apply as inclusion criteria for the numerator or denominator of each indicator

○ Criteria for the subject of assessment

- **(Target patient)** Patients hospitalized for ischemic heart disease (National Health Insurance and Medical Aid)

1) AMI(Acute Myocardial Infarction)

- A patient with confirmed AMI who was hospitalized via the emergency room due to ischemic heart disease
- Including patients who visited the emergency room through an outpatient clinic on the same day

2) PCI(Percutaneous Coronary Intervention)

- A patient who was hospitalized for ischemic heart disease and underwent PCI

- **(Target diagnosis and code)** Including principal/secondary diagnosis
  - Ischemic heart disease (I20-I25)
- **(Target surgeries and code)** Cases of PCI
  - Percutaneous Transluminal Coronary Angioplasty (M6551, M6552)
  - Percutaneous Transcatheter Placement of Intracoronary Stent (M6561-M6564)
  - Percutaneous Transluminal Coronary Atherectomy (M6571, M6572)
  - Percutaneous Intravascular Atherectomy (M6620)
  - Percutaneous Transluminal Coronary Thrombolysis (M6634)
  - Percutaneous Mechanical Thrombolysis (M6633)

○ Exclusion criteria for the subject of assessment

- Patients under the age of 18
- Metastatic cancer (KCD code: C77, C78, C79)

- Pregnancy, childbirth, and puerperium
- Patients with inaccurate resident registration numbers
- AIDS (Specified code: V103)
- Heart or lung transplant (Specified code: Q8080 (Heart transplantation) among V087, V088, V015, V277, V192)

Indicator numbers		01IHD0007
Indicator Name		Numbers of PCI (Percutaneous Coronary Intervention) cases
Indicator Definition		Number of PCI cases performed in hospitalized patients with ischemic heart disease
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Total number of PCI cases conducted on patients hospitalized with ischemic heart disease
	Inclusion Criteria	■ Patients and surgery subject to the PCI assessment among the common criteria for ischemic heart disease assessment
	Exclusion Criteria	
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System
Background and reason for selection		■ In the case of surgery or procedures that require a high level of skill, there is a study that showed that the treatment results of providers (hospitals or doctors) with a lot of experience in surgery (procedures) may have higher-quality treatment results compared with institutions that do not.
Evidence and References		

Indicator numbers		01IHD0008
Indicator Name		Length of Stay Index (LI) for PCI (Percutaneous Coronary Intervention)
Indicator Definition		How long the average number of hospitalization days for PCI patients per institutions taking into account patient composition is compared to the total average number of hospitalization days.
Status of indicator use		Pilot Indicator
Quality components		Efficiency
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Average number of days of hospitalization in the relevant institutions considering DRG (Diagnosis Related Group) in PCI patients with ischemic heart disease.
	Inclusion Criteria	■ Calculation criteria ○ The sum of each DRG by multiplying the average number of hospitalization days per DRG of the subject institutions by the number of cases per DRG of the subject institutions
	Exclusion Criteria	
	Denominator	Average number of hospitalization days for all institutions considering the group of patients receiving PCI for ischemic heart disease
	Inclusion Criteria	■ Calculation criteria ○ The sum of each DRG by multiplying the average number of hospitalization days per entire DRG by the number of cases per DRG of the subject institutions ■ Patients and surgery subject to the PCI assessment among the common criteria for ischemic heart disease assessment
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on ischemic heart disease ■ Patients who died during hospitalization ■ Excluding patients whose hospitalization days are extremely high or low, exceeding the upper value or falling below the lower value ○ Upper value = X 〉 {Q3+2.5 ⅰ Q3-Q1 ⅰ} Lower value = X 〈 {Q1-2.5 ⅰ Q3-Q1 ⅰ} - X : medical fee per episode, Q1 : 1st quartile, Q3 : 3rd quartile
Things to be considered for calculation		■ Definition of DRG. ○ A system that classifies hospitalized patients based on resource consumption and clinical similarity as a patient classification system. ○ Disease related group number: F071, F072, F073
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Undecided

Assessment data source	Medical records (Survey form), Administrative data
Risk Adjustment	Y
Risk Adjustment Variable	■ RDRG (Refined Diagnosis Related Group), which subdivided DRG classified by diagnosis, surgery, death, etc. by age and severity, is applied
Interpretation of output	■ If it exceeds 1.0, it means that the number of hospitalization days is higher than the average, and if it is less than 1.0, it means that the number of hospitalization days is low.
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Circulatory System
Background and reason for selection	■ To measure the relative efficiency of resources invested in medical services
Evidence and References	

Indicator numbers		01IHD0009
Indicator Name		Costliness Index (CI) for PCI (Percutaneous Coronary Intervention)
Indicator Definition		How expensive is the average hospitalization fee for PCI patients per institutions taking into account patient composition compared to the overall average hospitalization fee
Status of indicator use		Pilot Indicator
Quality components		Efficiency
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	The average cost of the relevant institution considering DRG (Diagnosis Related Group) of patient who underwent PCI for ischemic heart disease.
	Inclusion Criteria	■ Calculation criteria ○ The sum of each DRG by multiplying the average treatment cost per DRG of the subject institutions by the number of cases per DRG of the subject institutions
	Exclusion Criteria	
	Denominator	Average treatment expenses of all institutions considering the DRG of patients receiving PCI for ischemic heart disease
	Inclusion Criteria	■ Calculation criteria ○ The sum of each DRG by multiplying the average treatment cost per DRG by the number of cases per DRG of the subject institutions ■ Patients and surgery subject to the PCI assessment among the common criteria for ischemic heart disease assessment
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on ischemic heart disease ■ Patients who died during hospitalization ■ Excluding patients whose cost of care is extremely high or low, exceeding the upper value or falling below the lower value ○ Upper value = X 〉 {Q3+2.5 ⅰ Q3-Q1 ⅰ} Lower value = X 〈 {Q1-2.5 ⅰ Q3-Q1 ⅰ} - X : Length of hospital stay per episode, Q1 : 1st quartile, Q3 : 3rd quartile
Things to be considered for calculation		■ Definition of DRG. ○ A system that classifies hospitalized patients based on resource consumption and clinical similarity as a patient classification system. ○ Disease related group number: F071, F072, F073
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form), Administrative data

Risk Adjustment	Y
Risk Adjustment Variable	■ RDRG (Refined Diagnosis Related Group), which subdivided DRG classified by diagnosis, surgery, death, etc. by age and severity, is applied
Interpretation of output	■ If it exceeds 1.0, it means that the treatment cost is higher than the average, and if it is less than 1.0, it means that the treatment cost is low.
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Circulatory System
Background and reason for selection	■ To measure the relative efficiency of resources invested in medical services
Evidence and References	

Indicator numbers		01IHD0010, 0018 ※ Assigning indicator numbers depending on the time of death
Indicator Name		Mortality rate of PCI (Percutaneous Coronary Intervention) (in-hospital / within 1 year of discharge)
Indicator Definition		Proportion of patients who died (in-hospital / within 1 year of discharge) among PCI patients for ischemic heart disease
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who died (in-hospital / within 1 year of discharge)
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of PCI patients for ischemic heart disease
	Inclusion Criteria	■ Patients and surgery subject to the PCI assessment among the common criteria for ischemic heart disease assessment
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on ischemic heart disease
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form), Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System
Background and reason for selection		■ Mortality is closely related to quality of care.
Evidence and References		

Indicator numbers		01IHD0011
Indicator Name		Rate of aspirin prescription at discharge for PCI (Percutaneous Coronary Intervention) patients
Indicator Definition		Proportion of patients prescribed aspirin at discharge among PCI patients for ischemic heart disease
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients prescribed aspirin at discharge
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of PCI patients for ischemic heart disease
	Inclusion Criteria	■ Patients and surgery subject to the PCI assessment among the common criteria for ischemic heart disease assessment
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on ischemic heart disease ■ Patients who died during hospitalization ■ Patients who have been transferred to other hospitals ■ Patients who refused treatment and were discharged without hope
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System
Background and reason for selection		■ Prescribing aspirin is recommended to prevent myocardial infarction or death.
Evidence and References		■ Boden et al., 2006

Indicator numbers		01IHD0012
Indicator Name		Rate of antiplatelet agent prescription at discharge for PCI (Percutaneous Coronary Intervention) patients
Indicator Definition		Proportion of patients prescribed antiplatelet agents at discharge among PCI patients for ischemic heart disease
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients prescribed antiplatelet agents at discharge
	Inclusion Criteria	
	Exclusion Criteria	■ Aspirin among antiplatelet agents
	Denominator	Number of PCI patients for ischemic heart disease
	Inclusion Criteria	■ Patients and surgery subject to the PCI assessment among the common criteria for ischemic heart disease assessment
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on ischemic heart disease ■ Patients who died during hospitalization ■ Patients who have been transferred to other hospitals ■ Patients who refused treatment and were discharged without hope
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System
Background and reason for selection		■ Clopidogrel is a powerful antiplatelet agent. Among the methods for preventing acute or subacute thrombus in the stent, the combination of Clopidogrel and aspirin is the best. On electrocardiogram, ST-segment elevation showed that Prasugrel or Ticagrelor reduced complications compared to Clopidogrel in ACS (Acute Coronary Syndrome)
Evidence and References		■ Standard treatment recommendations for coronary angiography of the Korean Society of Cardiology (2013.3)

Indicator numbers		01IHD0013
Indicator Name		Mortality rate within 30 days after PCI (Percutaneous Coronary Intervention)
Indicator Definition		Proportion of patients who died within 30 days of the procedure among PCI patients for ischemic heart disease
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who died within 30 days of the procedure
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of PCI patients for ischemic heart disease
	Inclusion Criteria	■ Patients and surgery subject to the PCI assessment among the common criteria for ischemic heart disease assessment
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on ischemic heart disease
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form), Administrative data
Risk Adjustment		Y
Risk Adjustment Variable		■ Age, gender, coronary artery disease, Family history, body surface area, ejection fraction, whether medication is administered to maintain blood pressure and cardiac output, number of invading vascula, heart attack, current congestive heart failure diagnosis, cholesterol elevation, chronic obstructive pulmonary disease, arrhythmia, peripheral vascular disease, heart failure, renal failure, etc.
Interpretation of output		Lower is better
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System
Background and reason for selection		■ Mortality is closely related to quality of care.
Evidence and References		

Indicator numbers		01IHD0014
Indicator Name		Rate of PCI (Percutaneous Coronary Intervention) in patients with ischemic heart disease (by institution/region)
Indicator Definition		Proportion of patients receiving PCI by institution/region among patients hospitalized for ischemic heart disease.
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients receiving PCI by institution/region
	Inclusion Criteria	■ Application to the operation that is subject to the PCI assessment
	Exclusion Criteria	
	Denominator	Number of hospitalized patients with ischemic heart disease per each relevant institution/region
	Inclusion Criteria	■ KCD code of the ischemic heart disease ○ I20~I25
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		■ To understand the status
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System
Background and reason for selection		■ PCI is a procedure that shows regional variation, which may be due to patient or physician preference.
Evidence and References		

Indicator numbers		01IHD0015
Indicator Name		Rate of PCI (Percutaneous Coronary Intervention) of stable Coronary artery disease (CAD) patient (by institution/region)
Indicator Definition		Proportion of patients receiving PCI by institution/region among patients hospitalized with stable CAD.
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients receiving PCI by institution/region
	Inclusion Criteria	■ Application to the operation that is subject to the PCI assessment
	Exclusion Criteria	
	Denominator	Number of patients hospitalized with stable CAD per each relevant institution/region
	Inclusion Criteria	■ Scope of stable CAD and KCD code ○ Angina pectoris: I20 ○ Angina pectoris with documented spasm: I201 ○ Other forms of Angina pectoris: I208 ○ Unspecified angina pectoris: I209 ○ Ischemic heart disease: I25 ○ Described as atherosclerotic cardiovascular disease: I250 ○ Atherosclerotic heart disease: I251 ○ Old myocardial infarction: I252 ○ Ischemic cardiomyopathy: I255 ○ Silent myocardial ischaemia: I256 ○ Other forms of chronicischemic heart disease: I258 ○ Unspecified chronic ischemic heart disease: I259
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		■ To understand the status of PCI implementation

Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Circulatory System
Background and reason for selection	■ For stable coronal artery disease, optimal medical therapy has better results than PCI. ■ There are three types of coronary artery disease included in the PCI guidelines: silent ischemic heart disease, unstable angina/non-ST assessment MI, and ST-assessment MI.
Evidence and References	■ Boden WE, et al. Optimal medical therapy with or without PCI for stable coronary disease. NEJM 2007;356:15003-1516 ■ 2011 ACCF/AHA/SCAI guideline for PCI. A report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines and the Society for Cardiovascular Angiography and Inteventions

Indicator numbers		01IHD0016
Indicator Name		Rate of ACS (Acute Coronary Syndrome) in patients with ischemic heart disease (by institution/region)
Indicator Definition		Proportion of patients with ACS by institution/region among patients hospitalized for ischemic heart disease.
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients with ACS
	Inclusion Criteria	■ Scope of ACS and KCD code ○ Unstable angina pectoris: I200 ○ AMI: I21 ○ Subsequent myocardial infarction: I22 ○ Specific current complications due to AMI: I23 ○ Other acute ischemic heart disease: I24 ○ Cardiovascular thrombosis without myocardial infarction: I240 ○ Other forms of acute ischemic heart disease: I248 ○ Unspecified acute ischemic heart disease: I249
	Exclusion Criteria	
	Denominator	Number of hospitalized patients with ischemic heart disease per each relevant institution/region
	Inclusion Criteria	■ KCD code of the ischemic heart disease ○ I20~I25
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		■ To understand the status
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System

Background and reason for selection	■ There are three types of coronary artery disease included in the PCI guidelines: silent ischemic heart disease, unstable angina/non-ST assessment MI, and ST-assessment MI.
Evidence and References	■ 2011 ACCF/AHA/SCAI guideline for PCI. A report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines and the Society for Cardiovascular Angiography and Inteventions

Indicator numbers		01IHD0017
Indicator Name		Prescription rate of statin for PCI (Percutaneous Coronary Intervention) patients discharged from hospital with LDL-C (Low Density Lipoprotein-Cholesterol) 100 or higher
Indicator Definition		Proportion of patients prescribed statins at discharge among patients undergoing PCI with LDL-C 100 mg/dl or higher.
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients prescribed statins at discharge
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of patients with LDL-C levels above 100 among patients undergoing PCI
	Inclusion Criteria	■ Patients and surgery subject to the PCI assessment
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on ischemic heart disease ■ Patients who have been transferred to other hospitals ■ Patients who refused treatment and were discharged to hospice ■ Patients who died during hospitalization
Things to be considered for calculation		■ LDL-C normal category ○ Less than 200mg/dl.
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System
Background and reason for selection		■ Cholesterol control in heart disease can reduce complications such as heart attack and stroke and reduce mortality by 40%
Evidence and References		■ NQMC (National Quality Measures Clearinghouse) 7084

Indicator numbers		01IHD0019
Indicator Name		Readmission rate within 30 days of discharge for PCI (Percutaneous Coronary Intervention) patients
Indicator Definition		Proportion of patients rehospitalized within 30 days after discharge among PCI patients with ischemic heart disease
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients rehospitalized within 30 days after discharge
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of PCI patients for ischemic heart disease
	Inclusion Criteria	■ Patients and surgery subject to the PCI assessment among the common criteria for ischemic heart disease assessment
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on ischemic heart disease ■ Patients who died during hospitalization
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System
Background and reason for selection		■ Readmission rates associated with complications after PCI are closely related to quality of care
Evidence and References		

Indicator numbers		01IHD0020
Indicator Name		Number of hospitalization for AMI (Acute Myocardial Infarction)
Indicator Definition		Number of AMI patients admitted via emergency room
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Number of hospitalizations of AMI patients hospitalized via the emergency room.
	Inclusion Criteria	■ Patients subject to AMI assessment among common criteria for ischemic heart disease assessment
	Exclusion Criteria	
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		■ The second pilot project for additional/subtractive payment under the same type (Jan.~Dec., 2008) and an assessment targeting general hospitals only (Jul.~Dec., 2008) to expand by type were individually conducted after the first pilot project for additional or subtractive payment for general hospitals
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form), Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System
Background and reason for selection		■ In the domestic assessment in 2005, the number of AMI hospitalizations showed a very large variance between institutions
Evidence and References		

Indicator numbers		01IHD0021
Indicator Name		Length of Stay Index (LI) for AMI (Acute Myocardial Infarction)
Indicator Definition		How long the average number of hospitalization days for AMI patients per institutions taking into account patient composition is compared to the total average number of hospitalization days.
Status of indicator use		Regular Indicator
Quality components		Efficiency
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Average hospitalization date of the relevant institutions considering the DRG (Diagnosis Related Group) of AMI patients.
	Inclusion Criteria	■ Calculation criteria ○ The sum of each DRG by multiplying the average number of hospitalization days per DRG of the subject institutions by the number of cases per DRG of the subject institutions
	Exclusion Criteria	
	Denominator	Average number of hospitalization days of all institutions considering the DRG of AMI patients
	Inclusion Criteria	■ Calculation criteria ○ The sum of each DRG by multiplying the average number of hospitalization days per entire DRG by the number of cases per DRG of the subject institutions ■ Patients subject to AMI assessment among common criteria for ischemic heart disease assessment
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on ischemic heart disease ■ Patients who died during hospitalization ■ Patients who were transferred from other institutions ■ Patients transferred to another institution ■ Excluding patients whose hospitalization days are extremely high or low, exceeding the upper value or falling below the lower value ○ Upper value = X 〉 {Q3+2.5 ⅠQ3-Q1 Ⅰ} Lower value = X 〈 {Q1-2.5 ⅠQ3-Q1 Ⅰ} - X : Length of hospital stay per episode, Q1 : 1st quartile, Q3 : 3rd quartile

Things to be considered for calculation	■ Definition of DRG. ○ A system that classifies hospitalized patients based on resource consumption and clinical similarity as a patient classification system. ■ The second pilot project for additional/subtractive payment under the same type (Jan.~Dec., 2008) and an assessment targeting general hospitals only (Jul.~Dec., 2008) to expand by type were individually conducted after the first pilot project for additional or subtractive payment for general hospitals
Institution subject to assessment	General Hospital
Assessment Period	6 months
Assessment Cycle	Undecided
Assessment data source	Medical records (Survey form), Administrative data
Risk Adjustment	Y
Risk Adjustment Variable	■ RDRG (Refined Diagnosis Related Group), which subdivided DRG classified by diagnosis, surgery, death, etc. by age and severity, is applied
Interpretation of output	■ If it exceeds 1.0, it means that the number of hospitalization days is higher than the average, and if it is less than 1.0, it means that the number of hospitalization days is low.
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Circulatory System
Background and reason for selection	■ To measure the relative efficiency of resources invested in medical services
Evidence and References	

Indicator numbers		01IHD0022
Indicator Name		Costliness Index (CI) for AMI (Acute Myocardial Infarction)
Indicator Definition		How expensive the average hospitalization fee of AMI patients per institutions taking into account patient composition is compared to the overall average hospitalization fee
Status of indicator use		Regular Indicator
Quality components		Efficiency
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	The average fee of the relevant institution considering the DRG (Diagnosis Related Group) of AMI patients
	Inclusion Criteria	■ Calculation criteria ○ The sum of each DRG by multiplying the average treatment cost per DRG of the subject institutions by the number of cases per DRG of the subject institutions
	Exclusion Criteria	
	Denominator	Average treatment expenses of all institutions considering the DRG of AMI patients
	Inclusion Criteria	■ Calculation criteria ○ The sum of each DRG by multiplying the average treatment cost per DRG by the number of cases per DRG of the subject institutions ■ Patients subject to AMI assessment among common criteria for ischemic heart disease assessment
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on ischemic heart disease ■ Patients who died during hospitalization ■ Patients who were transferred from other institutions ■ Patients transferred to another institution ■ Excluding patients whose cost of care are extremely high or low, exceeding the upper value or falling below the lower value ○ Upper value = X 〉 {Q3+2.5 ⅰ Q3-Q1 ⅰ} Lower value = X 〈 {Q1-2.5 ⅰ Q3-Q1 ⅰ} - X : Total medical fee per case, Q1 : 1st quartile, Q3 : 3rd quartile
Things to be considered for calculation		■ Definition of DRG. ○ A system that classifies hospitalized patients based on resource consumption and clinical similarity as a patient classification system. ■ The second pilot project for additional/subtractive payment under the same type (Jan.~Dec., 2008) and an assessment targeting general hospitals only (Jul.~Dec., 2008) to expand by type were individually conducted after the first pilot project for additional or subtractive payment for general hospitals

Institution subject to assessment	General Hospital
Assessment Period	6 months
Assessment Cycle	Undecided
Assessment data source	Administrative data
Risk Adjustment	Y
Risk Adjustment Variable	■ RDRG (Refined Diagnosis Related Group), which subdivided DRG classified by diagnosis, surgery, death, etc. by age and severity, is applied
Interpretation of output	■ If it exceeds 1.0, it means that the number of hospitalization days is higher than the average. If it is less than 1.0, it means that the number of hospitalization days is low.
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Circulatory System
Background and reason for selection	■ To measure the relative efficiency of resources invested in medical services
Evidence and References	

Indicator numbers		01IHD0023
Indicator Name		Rate of t-PA (Tissue Plasmigen Activator) received for AMI (Acute Myocardial Infarction) patients within 30 minutes of arrival at the hospital
Indicator Definition		Proportion of patients administered t-PA within 30 minutes among AMI inpatients receiving t-PA within 6 hours of arrival at the hospital
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients administered t-PA within 30 minutes
	Inclusion Criteria	■ Within 30 minutes from arrival at the emergency room to administration of t-PA
	Exclusion Criteria	
	Denominator	Number of t-PA-administered patients within 6 hours after arriving at the hospital among AMI patients admitted via the emergency room
	Inclusion Criteria	■ The subject of refusion* among patients subject to AMI assessment * The subject of refusion - Patients with ST-segment elevation according to ECG test or new onset LBBB (sudden left bundle branch block)
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on ischemic heart disease ■ Patients who were transferred from other institutions ■ Patients with t-PA contraindications ■ Patients whose valid reasons for not administering t-PA within 30 minutes is recorded
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System

Background and reason for selection	■ t-PA administration time is one of the important indicators to predict the outcome of AMI patients. ■ The American College of Cardiology (ACC) and American Heart Association (AHA) guidelines recommend that thrombus lysis treatment be performed within 30 minutes after arriving at the hospital in ST-Elevation Myocardial Infarction (STEMI) AMI.
Evidence and References	

Indicator numbers		01IHD0024
Indicator Name		Rate of aspirin prescription at discharge for AMI (Acute Myocardial Infarction) patients
Indicator Definition		Proportion of patients prescribed aspirin at discharge among patients hospitalized due to AMI
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients prescribed aspirin at discharge
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of AMI patients admitted via emergency room
	Inclusion Criteria	■ Patients subject to AMI assessment
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on ischemic heart disease ■ Patients transferred to another institution ■ Patients who refused treatment and were discharged to hospice ■ Patients who died during hospitalization ■ Patients taking aspirin alternatives
Things to be considered for calculation		■ The second pilot project for additional/subtractive payment under the same type (Jan.~Dec., 2008) and an assessment targeting general hospitals only (Jul.~Dec., 2008) to expand by type were individually conducted after the first pilot project for additional or subtractive payment for general hospitals
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System

Background and reason for selection	■ Studies have shown that aspirin reduces the risk and death of side effects by about 20% in patients with myocardial infection. National guidelines also strongly recommend long-term use of aspirin to prevent secondary cardiovascular disease.
Evidence and References	■ Antiplatelet Trialist's Collaboration, 1994 ■ Braunwand, 2000 & Ryan, 1999

Indicator numbers		01IHD0025
Indicator Name		Rate of beta blockers prescription at discharge for AMI (Acute Myocardial Infarction) patients
Indicator Definition		Proportion of patients prescribed beta blockers at discharge among patients hospitalized due to AMI
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients prescribed beta blockers at discharge
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of AMI patients admitted via emergency room
	Inclusion Criteria	■ Patients subject to AMI assessment
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on ischemic heart disease ■ Patients transferred to another institution ■ Patients who refused treatment and were discharged to hospice ■ Patients who died during hospitalization
Things to be considered for calculation		■ The second pilot project for additional/subtractive payment under the same type (Jan.~Dec., 2008) and an assessment targeting general hospitals only (Jul.~Dec., 2008) to expand by type were individually conducted after the first pilot project for additional or subtractive payment for general hospitals
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System

Background and reason for selection	■ Early administration of beta blockers in AMI patients reduced the morbidity and size of mortality and myocardial infarction, and associated complications when t-PA was not administered. Also, when t-PA was administered, the recurrence rate was reduced
Evidence and References	

Indicator numbers		01IHD0026, 0034 ※ Assigning indicator numbers depending on the time of death
Indicator Name		Mortality rate of AMI (Acute Myocardial Infarction) (in-hospital / within 1 year of discharge)
Indicator Definition		Proportion of patients who died (in-hospital / within 1 year of discharge) among patients hospitalized due to AMI
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who died (in-hospital / within 1 year of discharge)
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of AMI patients admitted via emergency room
	Inclusion Criteria	■ Patients subject to AMI assessment
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on ischemic heart disease
Things to be considered for calculation		■ The second pilot project for additional/subtractive payment under the same type (Jan.~Dec., 2008) and an assessment targeting general hospitals only (Jul.~Dec., 2008) to expand by type were individually conducted after the first pilot project for additional or subtractive payment for general hospitals
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form), Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System
Background and reason for selection		■ Mortality in AMI patients is closely related to quality of care
Evidence and References		

Indicator numbers		01IHD0027
Indicator Name		Mortality rate of AMI (Acute Myocardial Infarction) within 30 days of admission
Indicator Definition		Proportion of patients who died within 30 days after hospitalization among patients hospitalized due to AMI
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who died within 30 days of hospitalization
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of AMI patients admitted via emergency room
	Inclusion Criteria	■ Definition of predicted survival rate ○ (Calculation formula) 1-predicted mortality* * Predicted mortality: Since mortality may vary according to the clinical characteristics (severity) of patients admitted to each institution, the predicted mortality is calculated based on this severity ■ Patients subject to AMI assessment
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on ischemic heart disease ■ Patients who were transferred from other institutions ■ Patients transferred to another institution
Things to be considered for calculation		■ The second pilot project for additional/subtractive payment under the same type (Jan.~Dec., 2008) and an assessment targeting general hospitals only (Jul.~Dec., 2008) to expand by type were individually conducted after the first pilot project for additional or subtractive payment for general hospitals
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form), Administrative data
Risk Adjustment		Y

Risk Adjustment Variable	■ Basic ○ Age, gender, Killip class (myocardial infarction risk indicators) ■ Addition ○ Time required from symptom onset to arrival at emergency room, use of ambulance, body mass indicator, serum creatinine, initial blood pressure, pulse, ejection fraction, left main coronary artery disease, number of invading vascular, patient status upon hospital arrival (whether CPR was performed), symptoms and signs of heart disease (cardiac arrest, ventricular fibrillation), electrocardiogram findings within 48 hours of admission, history of stroke
Interpretation of output	■ (E-assessment) Risk-adjusted mortality ○ Lower is better ■ (National Portal) Readmission indicator ○ (Calculation method) Using the result of risk adjustment, a higher score of 100.0 is converted into a better score ○ (Calculation formula) 1-actual morality/1-predicted mortality ○ (Interpretation method) If it exceeds 100.0, it means that the survival rate is higher than the average, and if it is less than 100.0, it means that the survival rate is low
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Circulatory System
Background and reason for selection	■ To measure the relative efficiency of resources invested in medical services
Evidence and References	

Indicator numbers		01IHD0028
Indicator Name		Rate of ambulance use of AMI (Acute Myocardial Infarction) patients
Indicator Definition		Proportion of patients who visited the hospital in an ambulance among patients hospitalized due to AMI
Status of indicator use		Pilot Indicator
Quality components		Coordination
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who visited the hospital in an ambulance
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of AMI patients admitted via emergency room
	Inclusion Criteria	■ Patients subject to AMI assessment
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on ischemic heart disease ■ Patients who were transferred from other institutions
Things to be considered for calculation		■ The second pilot project for additional/subtractive payment under the same type (Jan.~Dec., 2008) and an assessment targeting general hospitals only (Jul.~Dec., 2008) to expand by type were individually conducted after the first pilot project for additional or subtractive payment for general hospitals
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System
Background and reason for selection		■ To examine the role and function of the emergency medical system in the initial response to acute disease
Evidence and References		

Indicator numbers		01IHD0029
Indicator Name		Media of the time required from the onset of chest pain to hospital arrival in AMI (Acute Myocardial Infarction) patients
Indicator Definition		Median time (min.) required from chest pain to hospital arrival in patients hospitalized with AMI
Status of indicator use		Pilot Indicator
Quality components		Coordination
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Median time (min.) required from the start of chest pain to the arrival of a patient with acute myocardial infarction hospitalized via the emergency room
	Inclusion Criteria	■ The definition of median ○ The value in the center - (Odd number) the values located at (n*+1)/2th * n = total number of values - (Even number) the arithmetic mean of the values located at n/2 and (n+2)/2th ■ Patients subject to AMI assessment among common criteria for ischemic heart disease assessment
	Exclusion Criteria	■ Common exclusion criteria to the subject of assessment. ■ Patients who were transferred from other institutions ■ Patients whose time of onset of symptoms and time of arrival at the emergency room are unknown
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		■ The second pilot project for additional/subtractive payment under the same type (Jan.~Dec., 2008) and an assessment targeting general hospitals only (Jul.~Dec., 2008) to expand by type were individually conducted after the first pilot project for additional or subtractive payment for general hospitals
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better

Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Circulatory System
Background and reason for selection	■ To analyze and consider factors outside the medical institution among the effects on the prognosis of acute stroke mortality
Evidence and References	

Indicator numbers		01IHD0030
Indicator Name		Rate of t-PA (Tissue Plasmigen Activator) received to AMI (Acute Myocardial Infarction) patients
Indicator Definition		Proportion of patients receiving t-PA administration among patients hospitalized due to AMI
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients receiving t-PA administration
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of AMI patients admitted via emergency room
	Inclusion Criteria	■ Patients subject to AMI assessment ○ AMI patients who were hospitalized via the emergency room and subject to refusion* with ischemic heart disease (KCD code: I20~I25) as main/sub-diagnosis * The subject to refusion - Patients with ST-segment elevation according to ECG test or new onset LBBB (sudden left bundle branch block) ○ Including patients who visited the emergency room on the day of the outpatient transfer
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on ischemic heart disease ■ Patients who were transferred from other institutions
Things to be considered for calculation		■ The second pilot project for additional/subtractive payment under the same type (Jan.~Dec., 2008) and an assessment targeting general hospitals only (Jul.~Dec., 2008) to expand by type were individually conducted after the first pilot project for additional or subtractive payment for general hospitals
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.

Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Circulatory System
Background and reason for selection	■ In AMI patients with ST segment elevation or LBBB on electrocardiogram, t-PA administration has the advantage of easier refusion in situations where PCI cannot be performed. However, contraindications to administration should be considered
Evidence and References	

Indicator numbers		01IHD0031
Indicator Name		Rate of performing P.PCI (Primary Percutaneous Coronary Intervention) in patients with AMI (Acute Myocardial Infarction)
Indicator Definition		Proportion of patients receiving P.PCI among patients hospitalized due to AMI
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients receiving P.PCI
	Inclusion Criteria	■ P.PCI ○ PCI with angioplasty or stent insertion without prior thrombolytic therapy within the first few hours after myocardial infarction symptoms
	Exclusion Criteria	
	Denominator	Number of AMI patients admitted via emergency room
	Inclusion Criteria	■ Patients subject to AMI assessment ○ AMI patients who were hospitalized via the emergency room and subject to refusion* with ischemic heart disease (KCD code I20~I25) as main/sub-diagnosis * The subject to refusion - Patients with ST-segment elevation according to ECG test or new onset LBBB (sudden left bundle branch block) ○ Including patients who visited the emergency room on the day of the outpatient transfer
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on ischemic heart disease ■ Patients who were transferred from other institutions
Things to be considered for calculation		■ The second pilot project for additional/subtractive payment under the same type (Jan.~Dec., 2008) and an assessment targeting general hospitals only (Jul.~Dec., 2008) to expand by type were individually conducted after the first pilot project for additional or subtractive payment for general hospitals
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.

Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Circulatory System
Background and reason for selection	■ Immediate PCI in AMI patients with ST segment elevation or LBBB can significantly lower mortality
Evidence and References	

Indicator numbers		01IHD0032
Indicator Name		Median of the time (min.) required from arrival at the hospital to administration of t-PA (Tissue Plasmigen Activator) in AMI (Acute Myocardial Infarction) patients
Indicator Definition		Median time (min.) required from hospital arrival to t-PA administration of patients hospitalized with AMI
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Median time (min.) required from the time of arrival of AMI patients hospitalized via the emergency room to t-PA administration
	Inclusion Criteria	■ Patients subject to AMI assessment ○ AMI patients who were hospitalized via the emergency room and subject to refusion* with ischemic heart disease (KCD code I20~I25) as main/sub diagnosis * The subject to refusion - Patients with ST-segment elevation according to ECG test or new onset LBBB (sudden left bundle branch block) ○ Including patients who visited the emergency room on the day of the outpatient transfer
	Exclusion Criteria	
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on ischemic heart disease ■ Patients who were transferred from other institutions ■ Patients whose hospital arrival time and t-PA administration time are unknown
Things to be considered for calculation		■ The second pilot project for additional/subtractive payment under the same type (Jan.~Dec., 2008) and an assessment targeting general hospitals only (Jul.~Dec., 2008) to expand by type were individually conducted after the first pilot project for additional or subtractive payment for general hospitals
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form)
Risk Adjustment		

Risk Adjustment Variable	
Interpretation of output	Lower is better
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Circulatory System
Background and reason for selection	■ To analyze and consider factors in the emergency medical delivery system in medical institutions among the effects on the prognosis of Mortality rate of AMI
Evidence and References	

Indicator numbers		01IHD0033
Indicator Name		Median of time (min.) required from hospital arrival to ballooning in P.PCI (Primary Percutaneous Coronary Intervention) for AMI (Acute Myocardial Infarction) patients
Indicator Definition		Median time (min.) required from hospital arrival to PCI ballooning of patients hospitalized with AMI.
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Median time (min.) required from the time of arrival of AMI patients hospitalized via the emergency room to balloon infusion of P.PCI
	Inclusion Criteria	■ Patients subject to AMI assessment ○ AMI patients who were hospitalized via the emergency room and subject to refusion* with ischemic heart disease (KCD code: I20~I25) as main/sub diagnosis * The subject to refusion - Patients with ST-segment elevation according to ECG test or new onset LBBB (sudden left bundle branch block) ○ Including patients who visited the emergency room on the day of the outpatient transfer ■ P.PCI ○ PCI with angioplasty or stent insertion without prior thrombolytic therapy within the first few hours after myocardial infarction symptoms
	Exclusion Criteria	
	Denominator	
	Inclusion Criteria	■ Including emergency room visits on the day of outpatient transit ■ Patients subject to refusion: Patients with ST-segment elevation according to ECG test or new onset LBBB
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on ischemic heart disease ■ Patients who were transferred from other institutions ■ Patients whose time of arrival at the hospital and the time of PCI are unknown
Things to be considered for calculation		■ The second pilot project for additional/subtractive payment under the same type (Jan.~Dec., 2008) and an assessment targeting general hospitals only (Jul.~Dec., 2008) to expand by type were individually conducted after the first pilot project for additional or subtractive payment for general hospitals
Institution subject to assessment		General Hospital

Assessment Period	6 months
Assessment Cycle	Undecided
Assessment data source	Medical records (Survey form)
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	Lower is better
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Circulatory System
Background and reason for selection	■ To analyze and consider factors in the emergency medical delivery system in medical institutions among the effects on the prognosis of mortality rate of AMI
Evidence and References	

Indicator numbers		01IHD0035
Indicator Name		Rate of performing P.PCI (Primary Percutaneous Coronary Intervention) within 90 minutes of hospital arrival for AMI (Acute Myocardial Infarction) patients
Indicator Definition		Proportion of patients who experienced ballooning within 90 minutes after arrival at the hospital among AMI-hospitalized patients receiving P.PCI within 12 hours after arrival at the hospital
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who experienced ballooning within 90 minutes
	Inclusion Criteria	■ Within 90 minutes from arrival at the emergency room to PCI ballooning ■ Number of patients within 90 minutes until stent insertion when a stent is inserted directly without ballooning when a catheter is inserted
	Exclusion Criteria	
	Denominator	Number of patients with P.PCI within 12 hours of arriving at the hospital among AMI patients admitted via the emergency room
	Inclusion Criteria	■ The subject of refusion* among patients subject to AMI assessment * The subject of refusion - Patients with ST-segment elevation according to ECG test or new onset LBBB (sudden left bundle branch block) ■ P.PCI ○ PCI with angioplasty or stent insertion without prior thrombolytic therapy within the first few hours after myocardial infarction symptoms
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on ischemic heart disease ■ Patients who were transferred from other hospitals ■ Patients whose justifiable reasons for failing to perform PCI within 90 minutes is recorded
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.

Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Circulatory System
Background and reason for selection	■ Immediate PCI in AMI patients with ST segment elevation or LBBB can significantly lower mortality ■ According to the guidelines of the American College of Cardiology (ACC) and the American Heart Association (AHA), primary PCI is recommended within 90 minutes of arrival at the hospital.
Evidence and References	

Indicator numbers		01IHD0036
Indicator Name		Prescription rate of statin for AMI (Acute Myocardial Infarction) patients discharged from hospital with LDL-C (Low Density Lipoprotein-cholesterol) 100 or higher
Indicator Definition		Proportion of patients prescribed statins at discharge among AMI hospitalized patients with LDL-C 100 mg/dl or higher.
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who were prescribed statins at discharge
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of AMI patients admitted via the emergency room with LDL-C of 100 mg/dl or higher
	Inclusion Criteria	■ Patients subject to AMI assessment
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on ischemic heart disease ■ Patients who were transferred from other institutions ■ Patients who refused treatment and were discharged to hospice ■ Patients who died during hospitalization
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System

Background and reason for selection	■ Cholesterol-lowering management reduces mortality and complications such as heart attack and stroke by 40%. According to the NCEP ATPIII (National Cholesterol Education Program-Adult Treatment panel Ⅲ) guidelines, it is recommended that patients with coronary artery disease or those at high risk for coronary artery disease have an LDL-C target of 100 mg/dl or less.
Evidence and References	■ NQMC (National Quality Measures Clearinghouse) 7084 ■ NCEP ATPIII (National Cholesterol Education Program-Adult Treatment panel Ⅲ) Guideline

3) Acute stroke

☐ Common Criteria

※ Apply as inclusion criteria for the numerator or denominator of each indicator

○ Criteria for the subject of assessment

- **(Target patient)** Patients with acute stroke whose main diagnosis was I60-I63 and were admitted through the emergency room within seven days of the onset of symptoms (National Health Insurance and Medical Aid)
- **(Target diagnosis and code)**

1) Hemorrhagic Stroke (I60-I62)

- Subarachnoid hemorrhage (I60)
- Intracerebral hemorrhage (I61)
- Other nontraumatic intracranial hemorrhage (I62)

2) Ischemic Stroke (I63)

- Cerebral infarction (I63)

Indicator numbers		01STR0010
Indicator Name		Availability of a specialist workforce
Indicator Definition		Status of specialists for the treatment of acute stroke patients (neuroscience, neurosurgery, rehabilitation medicine specialist)
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	A, B, C, and D grades are calculated by dividing them into 4 groups according to the number of subjects that neuroscience, neurosurgery, and rehabilitation medicine specialists work full-time.
	Inclusion Criteria	■ Grade calculation criteria ○ A: Institutions where specialists of neuroscience, neurosurgery, and rehabilitation medicine all work full time ○ B: Institutions where only two specialists in the departments work full-time among neuroscience, neurosurgery, and rehabilitation medicine ○ C: Institutions where only one specialist in the department works full-time among neuroscience, neurosurgery, and rehabilitation medicine ○ D: An institution where all three specialists do not work full-time
	Exclusion Criteria	
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Every year
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher the grade, the better.
Population subject to assessment		
Clinical subject		Diseases and Disorders of the Circulatory System

Background and reason for selection	■ Hospitalized patient with acute cerebral stroke should be treated at least in an organized cerebral stroke specialized ward that includes multidisciplinary team nursing, such as doctors and nurses with special expertise in cerebral stroke treatment or rehabilitation treatment. Clinical outcomes of patients admitted to these cerebral stroke specialized wards have been reported to be better than those of patients admitted to other wards.
Evidence and References	■ M. Patrice Lindsay, Moira K. Kapral, et al. The Canadian stroke quality of care study : establishing indicators for optimal acute stroke care, CMAJ, Feb, 2005;1723 ■ NHS Performance Rating System Indicator, 2003-2004.

Indicator numbers		01STR0020
Indicator Name		Rate of anticoagulant prescription at the time of discharge in patient with atrial fibrillation
Indicator Definition		Proportion of cases in which anticoagulants were prescribed at discharge among the hospitalization cases of the a patient with atrial fibillation and ischemic stroke.
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of oral anticoagulants prescribed at discharge
	Inclusion Criteria	■ Types of anticoagulants ○ warfarin, etc.
	Exclusion Criteria	
	Denominator	Number of hospitalizations in patients with acute ischemic stroke with atrial fibrillation before or during hospitalization
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on acute ischemic stroke (KCD code I63)
	Exclusion Criteria	■ Death during hospitalized ■ Refusal of treatment or discharge due to lack of hope ■ Transfer to another hospital ■ Anticoagulant contraindications or in cases where the reason for not being able to administer is recorded
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Every year
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System

Background and reason for selection	■ Patients with stroke with heart disease at high risk of embolism have a high possibility of stroke recurrence, so unless there are special contraindications, anticoagulant (warfarin, etc.) treatment with an INR 2.0-3.0 target is recommended.
Evidence and References	■ Cerebral Stroke Clinical Research Center, cerebral stroke treatment guidelines, anticoagulant domestic recommendations. 2013. 271-272.

Indicator numbers		01STR0021
Indicator Name		Rate of antithrombotic agents prescription at discharge
Indicator Definition		Proportion of cases in which oral antithrombotic agents were prescribed at discharge among the hospitalization cases of the patient with acute ischemic stroke
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of cases in which oral antithrombotic agents were prescribed at discharge
	Inclusion Criteria	■ Types of antithrombotic agents ○ anticoagulant drug: warfarin, etc. ○ antiplatelet drug: clopidogrel, ticlopidine, aspirin, etc.
	Exclusion Criteria	
	Denominator	Number of hospitalizations of patients with acute ischemic stroke
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on acute ischemic stroke (KCD code I63)
	Exclusion Criteria	■ Death while hospitalized ■ Refusal of treatment or discharge due to lack of hope ■ Transfer to another hospital ■ Anticoagulant contraindications or in case where the reason for not being able to administer is recorded
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Every year
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System

Background and reason for selection	■ According to the results of several clinical studies, antithrombotic therapy has been reported to be effective in reducing stroke mortality, stroke-related complications and stroke recurrence. Because arterial occlusion due to embolic thrombus is common, it is very important to administer antithrombotic to patients with ischemic stroke for secondary prevention.
Evidence and References	■ Disease-Specific Care Certification Program : Stroke Performance Measurement Implementation Guide, Joint commission, 2004:2-3

Indicator numbers		01STR0034
Indicator Name		Rate of ambulance use
Indicator Definition		Proportion of patients who arrived at the hospital in an ambulance among the hospitalization cases of acute stroke patients
Status of indicator use		Pilot Indicator
Quality components		Coordination
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of hospitalizations of acute stroke patients who arrived at the hospital by ambulance
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of hospitalizations for acute stroke patients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on acute stroke (KCD code I60~I63)
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Every year
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System
Background and reason for selection		■ To examine the role and function of the emergency medical system in the initial response to acute disease
Evidence and References		

Indicator numbers		01STR0035
Indicator Name		Median of arrival time after symptom occurrence
Indicator Definition		Median (min) time from symptom onset and detection to emergency room arrival in patients hospitalized for acute stroke
Status of indicator use		Pilot Indicator
Quality components		Coordination
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Median (min) time from symptom onset and detection to emergency room arrival among the hospitalization cases of acute stroke patients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment of acute stroke (KCD code I60-I63)
	Exclusion Criteria	■ Cases where the time of symptom occurrence and discovery time are unknown ■ Cases transferred from other hospitals
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Every year
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System
Background and reason for selection		■ To analyze and consider factors outside the medical institution among the effects on the prognosis of acute stroke mortality
Evidence and References		

Indicator numbers		01STR0038
Indicator Name		Rate of stroke scale performed within 2 days of inpatient
Indicator Definition		Proportion of cases in which a stroke scale assessment was conducted within 2 days from the start of hospitalization among the hospitalization cases of acute stroke patients
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of cases in which a stroke scale assessment was conducted within 2 days after hospitalization
	Inclusion Criteria	■ Types of cerebral stroke scales ○ NIHSS (National Institutes of Health Storke scale) ○ GCS (Glasgow Coma Scale) ○ mRS (modified Rankin Scale) ○ WFNS grade (Scale for subarachnoid hemorrhage devised by World Federation Neurosurgeon) ○ HHS (Hunt & Hess Scale)
	Exclusion Criteria	
	Denominator	Number of hospitalizations for acute stroke patients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on acute stroke (KCD code I60~I63)
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Every year
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System
Background and reason for selection		■ It is important to diagnose stroke accurately by checking whether there is a change in consciousness or dysfunction of the cranial nerve and to treat it properly at an early stage.
Evidence and References		

Indicator numbers		01STR0039
Indicator Name		Rate of functional outcome scale performed at discharge
Indicator Definition		Proportion of cases for which a functional outcome scale was performed at discharge among the hospitalization cases of acute stroke patients.
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of cases for which a functional outcome scale was performed at discharge
	Inclusion Criteria	■ Types of functional outcome scales ○ K-MBI (Korean version of Modified Barthel Indicator) ○ MBI (Modifid Barthel Indicator) ○ BI (Barthel Indicator) ○ FIM (Fuctional Independence Measure) ○ mRS (modified Rankin Scale) ○ GOS (Glasgow Outcome Scale) ○ Others: FAC (Functional Ambulatory Category), GCS (Glasgow Coma Scale), NIHSS (National Institutes of Health Storke scale)
	Exclusion Criteria	
	Denominator	Number of hospitalizations for acute stroke patients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on acute stroke (KCD code I60~I63)
	Exclusion Criteria	■ Death while hospitalized ■ Refusal of treatment or discharge due to lack of hope
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Every year
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System
Background and reason for selection		■ The effect of inpatient rehabilitation can be determined by the results of the functional outcome scale performed before discharge
Evidence and References		

Indicator numbers		01STR0043~0044 ※ Assigning indicator numbers for each disease to be assessed
Indicator Name		Mortality rate (Within 30 days of admission)
Indicator Definition		Proportion of deaths within 30 days of hospitalization among hospitalized patients with acute (hemorrhagic/ischemic) stroke
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of deaths within 30 days of hospitalization.
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of hospitalizations of patients with acute (hemorrhagic/ischemic) stroke
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on acute hemorrhagic stroke (KCD code I60~I62) ■ Apply common criteria to the subject of assessment on acute ischemic stroke (KCD code I63)
	Exclusion Criteria	■ Transferred from other hospitals
Things to be considered for calculation		■ In case where the risk is adjusted, the result is being disclosed as a survival indicator* * (Survival indicator) ratio of actual mortality to predicted – (Calculation formula) = (1-Actual morality)/(1-predicted mortality) · Actual morality = Deceased patient/Patients subject to assessment · predicted mortality = Mortality calculated by adjusting the risk
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Every year
Assessment data source		Medical records (Survey form), Administrative data
Risk Adjustment		Y
Risk Adjustment Variable		■ Hemorrhagic stroke ○ Gender, Age, Stroke scale (GCS), Morbidity (Divided into subarachnoid, intracerebral, and other hemorrhages) ■ Ischemic stroke ○ Gender, Age, Stroke scale (NIHSS)
Interpretation of output		Lower is better
Population subject to assessment		Adult, Elderly

Clinical subject	Diseases and Disorders of the Circulatory System
Background and reason for selection	■ Mortality in acute stroke patients is closely related to quality of care.
Evidence and References	

Indicator numbers		01STR0045
Indicator Name		Length of Stay Index (LI)
Indicator Definition		How long is the average length of hospitalization for acute stroke patients per institutions taking into account patient composition compared to the overall average length of hospital stay
Status of indicator use		Pilot Indicator
Quality components		Efficiency
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	The average number of days of hospital stay at the relevant institutions considering the DRG (Diagnosis Related Group) of patients with acute stroke
	Inclusion Criteria	■ Calculation criteria ○ The sum of each disease group by multiplying the average number of hospitalization days by type and DRG of relevant institutions by the number of cases by type and DRG
	Exclusion Criteria	
	Denominator	Average number of hospitalization days of all institutions taking into account the disease group of patients with acute stroke
	Inclusion Criteria	■ Calculation criteria ○ The sum of each disease group by multiplying the average number of hospitalization days per entire disease group by the number of cases per disease group of the subject long-term-care institutions ■ Apply common criteria to the subject of assessment on acute stroke (KCD code I60~I63)
	Exclusion Criteria	■ Death while hospitalized ■ Refusal of treatment or discharge due to lack of hope ■ Transferred from other hospitals ■ The case of transferring to another hospital for acute phase treatment ■ Excluding patients whose hospitalization days are extremely high or low, exceeding the upper value or falling below the lower value ○ Upper value = X 〉 {Q3+2.5 ⅰ Q3-Q1 ⅰ} Lower value = X 〈 {Q1-2.5 ⅰ Q3-Q1 ⅰ} - X : Number of hospitalization days per episode, Q1 : 1st quartile, Q3 : 3rd quartile
Things to be considered for calculation		■ It is not included in the calculation of the overall score used in the calculation of grades in HIRA's website. ■ Definition of disease group. ○ A system that classifies hospitalized patients based on resource consumption and clinical similarity as a patient classification system.

Institution subject to assessment	General Hospital
Assessment Period	6 months
Assessment Cycle	Every year
Assessment data source	Administrative data
Risk Adjustment	Y
Risk Adjustment Variable	■ RDRG (Refined Diagnosis Related Group), which subdivided DRG classified by diagnosis, surgery, death, etc. by age and severity, is applied
Interpretation of output	■ If it exceeds 1.0, it means that the number of hospitalization days is higher than the average, and if it is less than 1.0, it means that the number of hospitalization days is low.
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Circulatory System
Background and reason for selection	■ To measure the relative efficiency of resources invested in medical services
Evidence and References	

Indicator numbers		01STR0046
Indicator Name		Costliness Index (CI)
Indicator Definition		How expensive is the average hospitalization cost of acute stroke patients per institutions taking into account patient composition compared to the overall average hospitalization cost
Status of indicator use		Pilot Indicator
Quality components		Efficiency
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	The average cost of treatment of the relevant institutions considering the DRG (Diagnosis Related Group) of patients with acute stroke
	Inclusion Criteria	■ Calculation criteria ○ The sum of each disease group by multiplying the average treatment cost per disease group of the subject institutions by the number of cases per disease group of the subject institutions
	Exclusion Criteria	
	Denominator	Average treatment expenses of all institutions considering the disease group of patients with acute stroke
	Inclusion Criteria	■ Calculation criteria ○ The sum of each disease group by multiplying the average treatment cost per disease group by the number of cases per disease group of the subject institutions ■ Apply common criteria to the subject of assessment on acute stroke (KCD code I60~I63)
	Exclusion Criteria	■ Death while hospitalized ■ Refusal of treatment or discharge due to lack of hope ■ Transferred from other hospitals ■ The case of transferring to another hospital for acute phase treatment ■ Subjects of new comprehensive fee ■ Excluding patients whose cost of care is extremely high or low, exceeding the upper value or falling below the lower value ○ Upper value = X 〉 {Q3+2.5 ⅠQ3-Q1 Ⅰ} Lower value = X 〈 {Q1-2.5 ⅠQ3-Q1 Ⅰ} - X : Length of hospital stay per episode, Q1 : 1st quartile, Q3 : 3rd quartile
Things to be considered for calculation		■ Definition of disease group ○ A system that classifies hospitalized patients based on resource consumption and clinical similarity as a patient classification system.
Institution subject to assessment		General Hospital
Assessment Period		6 months

Assessment Cycle	Every year
Assessment data source	Administrative data
Risk Adjustment	Y
Risk Adjustment Variable	■ Apply RDRG (Refined Diagnosis Related Group), which is classified by age and severity.
Interpretation of output	■ If it exceeds 1.0, it means that the treatment cost is higher than the average, and if it is less than 1.0, it means that the treatment cost is low.
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Circulatory System
Background and reason for selection	■ To measure the relative efficiency of resources invested in medical services
Evidence and References	

Indicator numbers		01STR0047
Indicator Name		Rate of dysphagia screening test performance before the first meal
Indicator Definition		Proportion of cases where a dysphagia screening test was conducted among the hospitalization cases of acute stroke patients undergoing diet during the hospitalization period
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of cases where a dysphagia screening test was conducted
	Inclusion Criteria	■ Dysphagia screening test ○ Wet swallowing test: Swallow 1/3 or 1/2 teaspoon (or 3 cc syringe) of distilled water ■ Recognition criteria for cases of dysphagia screening test ○ The results of the neurological assessment, the results of the dysphagia screening test, and the series of procedures for determining the dietary method are recorded in the medical record.
	Exclusion Criteria	■ Records of dietary prescriptions separately recorded in the physician's orders
	Denominator	Number of cases in which acute stroke patients administered diet during hospitalization
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on acute stroke (KCD code I60~I63)
	Exclusion Criteria	■ Cases where PEG (Percutaneous Endoscopic Gastrostomt) and L-tube feeding were performed during hospitalization
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Every year
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System

Background and reason for selection	■ In acute stroke, aspiration pneumonia due to dysphagia is the most common complication of cerebral stroke, accounting for about 12%, and the resulting mortality is about 5%. ■ According to the National Stroke Foundation's cerebral stroke Clinical Guideline, dysphagia screening test should be performed within 24 hours of hospitalization, and if the dysphagia screening test fails, it is recommended to refer to a speech-language pathologist for a comprehensive assessment. ■ The importance of the patient's swallowing ability before taking fluids, food, or drugs is suggested in many practice guidelines. JCAHO and RCP recommended that dysphagia screening test be performed in all patients diagnosed with ischemic/hemorrhagic cerebral stroke. In the AHA/ASA clinical practice guidelines published by Ducan et al., a comprehensive clinical assessment is recommended for patients with cerebral stroke suspected of having dysphagia.
Evidence and References	■ Hong KS, et al. Impact of neurological and medical compliances on 3-month outcomes in acute ischemic stroke. European Journal of Neurology. 2008;15(12)1324-31. ■ Clinical Guidelines for Acute Stroke Management: Section 5 Assessment and Management of the consequences of stroke. The National Stroke Foundation 2007. ■ Disease-Specific Care Certification Program: Stroke Performance Measurement Implementation Guide, 2nd Edition. The Joint Commission. 2007. ■ National Setinel Stroke Audit Phase I (organisational audit)2006 Phase II (clinical audit)2006: Section 2 Results for the process of stroke care Audit. Royal college of physician. 2007. ■ Ducan P.W., Zorowitz R et al. AHA/ASA Endorsed Practice Guidelines, Management of Adult Stroke Rehabilitation Care: A Clinical Practice Guideline. Stroke. 2005; 36:100-143.

Indicator numbers		01STR0048
Indicator Name		Rate of brain imaging test performance within 1 hour (3)
Indicator Definition		Proportion of cases in which brain imaging test (CT or MRI) was performed within 1 hour after arrival at the hospital among the hospitalization cases of acute stroke patient who visited the hospital within 6 hours from the onset of symptoms or finally confirmed to be normal
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of brain imaging tests conducted within an hour after arrival at the hospital
	Inclusion Criteria	■ Types of Brain imaging test ○ CT (Computed Tomography) ○ MRI (Magnetic Resonance Imaging) ■ Brain imaging test is the first examination criterion
	Exclusion Criteria	
	Denominator	Number of hospitalizations of patients with acute stroke who visited the hospital within 6 hours from the onset of symptoms or the time when the final normal state was confirmed
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on acute stroke (KCD code I60~I63) ■ The definition of the time when the normal state is finally confirmed. ○ If the time at which the symptoms occurred is unclear, it refers to the most recent time at which the patient was in normal state before the symptoms occurred.
	Exclusion Criteria	■ Refusing treatment or being discharged from the hospital because there is no hope ■ Cases where Brain imaging test was performed at another hospital after the time of onset of symptoms (final confirmation of normal state) ■ Cases where Brain imaging test was not performed because CPR (Cardio Pulmonary Resuscitation) was performed within 1 hour of arrival at the hospital ■ Cases where Brain imaging test was not performed because there were no symptoms within 1 hour of arriving at the hospital ○ 0 score according to the NIHSS (Natioanl Institutes of Health Stroke Scale), etc.
Things to be considered for calculation		
Institution subject to assessment		General Hospital

Assessment Period	6 months
Assessment Cycle	Every year
Assessment data source	Medical records (Survey form)
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Circulatory System
Background and reason for selection	■ Brain imaging test plays an important role in the initial assessment of patients. Brain imaging findings such as the size and location of the lesion and the distribution of blood vessels related to cerebral infarction have a decisive influence on the treatment policy.
Evidence and References	■ Cerebral Stroke Clinical Research Center, Medical guidelines for cerebral stroke., 2013;133-137.

Indicator numbers		01STR0049
Indicator Name		Rate of early rehabilitation assessment within 5 days
Indicator Definition		Proportion of cases in which the need for rehabilitation was assessed within 5 days of the start of hospitalization among the hospitalization cases of acute stroke patients
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of cases in which the need for rehabilitation was assessed within 5 days after hospitalization
	Inclusion Criteria	■ Recognition criteria for cases where assessment of the need for rehabilitation treatment was performed ○ If there's a rehabilitation medicine, a case where there is a reply after requesting a combined treatment to the rehabilitation medicine within 5 days of hospitalization ○ If there's no rehabilitation medicine, a case where rehabilitation treatment is performed within 5 days of hospitalization. ○ The reason for not implementing rehabilitation treatment is recorded in the medical record within 5 days of hospitalization
	Exclusion Criteria	
	Denominator	Number of hospitalizations for acute stroke patients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on acute stroke (KCD code I60~I63)
	Exclusion Criteria	■ Discharged, transferred, or died within 5 days of hospitalization
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Every year
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System

Background and reason for selection	■ Patients receiving systematic rehabilitation treatment after cerebral stroke showed lower mortality (OR, 0.86; 95% CI, 0.71-0.94), and disability due to stroke was relatively low (OR, 0.78; 95% CI, 0.68-0.89), and a good prognosis can be expected through early rehabilitation. ■ The National Institute of Neurological Disorders and Stroke (NINDS) requires rehabilitation treatment immediately as soon as the patient with cerebral stroke stabilizes within 24 to 48 hours of occurrence of stroke. Another foreign clinical guideline recommends that patients be referred to a rehabilitation team as soon as possible after hospitalization and that rehabilitation assessments be performed within 72 hours of hospitalization. ■ According to the Korean standard guidelines for cerebral stroke rehabilitation, rehabilitation should be started when the patient is internally medically and neurologically stable after stroke, and it is desirable to start rehabilitation treatment within 72 hours for acute stroke patients.
Evidence and References	■ Stroke Unit Trialists' Collaboration; Organised inpatient (stroke unit) care for stroke (Cochrane Review). In: The Cochrane Library, Issue 3, 2007. Chichester, UK:John Wiley ■ National Institute of Neurological Disorders and Stroke. Post-Stroke Rehabilitation Fact Sheet. accessed 11. Aug.2009 World Wide Web: http://www.ninds.nih.gov/isorders/stroke/poststrokerehab.htm. ■ Olsen TS, Langhorne P, Diener HC, Hennerici M, Ferro J, Sivenius J, Wahlgren NG, Bath P. European stroke initiative recommendations for stroke management-update 2003. Cerebrovascular Diseases. 2003;16: 311-337. ■ National clinical guidelines for stroke: Second edition. Royal college of physicians of London. 2004. ■ Management of patients with stroke: Rehabilitation,prevention and management of complications, and discharge planning. A national clinical guideline. Scottish intercollegiate guideline network. 2002. ■ Kim Yeon-hee et al., Korean standard treatment guidelines for cerebral stroke rehabilitation. 2012.

Indicator numbers		01STR0050
Indicator Name		Rate of intravenous thrombolytic agent (t-PA) administration within 60 minutes (2)
Indicator Definition		Proportion of cases administered intravenous t-PA (Tissue Plasmigen Activator) within 60 minutes after arrival at hospital among cases of intravenous t-PA administered acute ischemic stroke hospitalization within 4.5 hours from the onset of symptoms or finally confirmed to be normal
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of cases administered intravenous t-PA within 60 minutes of hospital arrival
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of hospitalizations of patients with acute ischemic stroke receiving intravenous t-PA within 4.5 hours from the onset of symptoms or the time when the final normal state was confirmed
	Inclusion Criteria	■ Apply common criteria to the subject of assessment of acute phase ischemic stroke (KCD code I63) ■ The definition of the time when the normal state is finally confirmed. ○ If the time at which the symptoms occurred is unclear, it refers to the most recent time at which the patient was in normal state before the symptoms occurred.
	Exclusion Criteria	■ Cases where symptoms improve and then worsen again within 1 hour after arriving at the hospital ○ The National Institutes of Health Stroke Scale (NIHSS) score increased by 2 or more points compared to when the condition was most improved. ■ Cases where blood pressure is higher than the level recommended by the standard treatment guidelines, so blood pressure lowering treatment should be performed first within 1 hour of arriving at the hospital ■ Cases in which airway intubation was first performed within 1 hour after arriving at the hospital due to respiratory distress or unstable vital signs
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Every year

Assessment data source	Medical records (Survey form)
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Circulatory System
Background and reason for selection	■ The ECASS (european Cooperative Acute Stroke Study)-3 trial proved that intravenous t-PA effects are better with faster administration time, decrease with time, and are effective until administration within 4.5 hours. Rapid t-PA administration may reduce stroke symptoms and reduce permanent disability
Evidence and References	■ Hacke W, Kaste M, Bluhmki E, Brozman M, Davalos A, Guidetti D, et al. Thrombolysis with alteplase 3 to 4.5 hours after acute ischemic stroke. N Engl J Med 2008;359:1317-1329. ■ Wayne Rosamond, Katherine Flegal, et al. AHA Statistical Update: Heart Disease and Stroke Statistics-2007 Update:A Report From the American Heart Association Statistics Committee and Stroke Statistics Subcommittee, Circulation, 2007;115:e69-e171. ■ Institute for Clinical Systems Improvement (ICSI) Guideline 2012 for Diagnosis and initial treatment of ischemic stroke.

Indicator numbers		01STR0054
Indicator Name		Rate of intravenous thrombolytic agent (t-PA) administration (3)
Indicator Definition		Proportion of cases where intravenous t-PA (Tissue Plasminogen Activator) was administered within 4.5 hours from the onset of symptoms or finally confirmed to be normal among the hospitalizations of patients with acute ischemic stroke who visited the hospital within 4.5 hours from the onset of symptoms or finally confirmed to be normal
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of cases where intravenous t-PA was administered within 4.5 hours from the onset of symptoms or finally confirmed to be normal
	Inclusion Criteria	■ If the time of symptom onset is unclear, t-PA is administered within 4.5 hours from the most recent time when the patient's condition was normal before the onset of symptoms.
	Exclusion Criteria	
	Denominator	Number of hospitalizations of patients with acute phase ischemic stroke who visited the hospital within 4.5 hours from the onset of symptoms or the time when the final normal state was confirmed
	Inclusion Criteria	■ Apply common criteria to the subject of assessment of acute phase ischemic stroke (KCD code I63) ■ The definition of the time when the normal state is finally confirmed. ○ If the time at which the symptoms occurred is unclear, it refers to the most recent time at which the patient was in normal state before the symptoms occurred.
	Exclusion Criteria	■ Cases where the time when symptoms occurred and the time when the final normal state was confirmed are unknown ■ Cases in which reasonable reasons for not administering intravenous t-PA are recorded
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Every year
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.

Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Circulatory System
Background and reason for selection	■ If intravenous t-PA is administered intravenously within 4.5 hours after symptom onset, stroke symptoms can be significantly reduced and permanent disability can be reduced.
Evidence and References	

Indicator numbers		01STR0055
Indicator Name		Rate of early rehabilitation treatment performed
Indicator Definition		Proportion of cases where rehabilitation was performed during hospitalization among the cases of acute stroke requiring rehabilitation treatment
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of cases where rehabilitation was performed during hospitalization
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of cases requiring rehabilitation treatment among the cases returned after requesting rehabilitation medicine consultation in acute stroke hospitalization
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on acute stroke (KCD code I60~I63)
	Exclusion Criteria	■ Cases rejected by the patient or their family ■ Cases where a patient or their family requested rehabilitation treatment after transferring to another hospital ■ Rehabilitation needed at outpatient clinic after discharge according to the reply for the combined treatment of rehabilitation medicine
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Every year
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System
Background and reason for selection		■ Rehabilitation treatment performed on patients who are determined to need rehabilitation treatment after requesting consultation to rehabilitation medicine can improve functional recovery and minimalize disability
Evidence and References		

Indicator numbers		01STR0058
Indicator Name		Incidence rate of pneumonia among inpatients
Indicator Definition		Proportion of pneumonia occurred 48 hours after hospitalization among hospitalization cases of patients with acute hemorrhagic stroke
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of cases of pneumonia occurred 48 hours after hospitalization
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of hospitalizations of patients with acute hemorrhagic stroke
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on acute hemorrhagic stroke (KCD code I60~I62)
	Exclusion Criteria	■ Transferred from other hospitals ■ Cases of death within 3 days of hospitalization ■ Cases using ventilator within 2 days of hospitalization
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Every year
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System
Background and reason for selection		■ Aspiration pneumonia due to dysphagia is the most common complication of stroke, accounting for about 12%, and the mortality due to this is about 5%
Evidence and References		■ Hong KS, Kang DW, Koo JS, Yu KH, Han MK, Cho YJ, et al. Impact of neurological and medical complications on 3-month outcomes in acute ischaemic stroke. European Journal of Neurology.2008;15(12):1324-31. ■ Al-Khaled M, Matthis C, Binder A, Mudter J, Schttschneider J, Pulkowski U, et al. Dysphagia in Patients with Acute Ischemic Stroke: Early Dysphagia Screening May Reduce Stroke-Related Pneumonia and Improve Stroke Outcomes. Cerebrovas Dis 2016;42:81-89.

Indicator numbers		01STR0059
Indicator Name		Rate of performing training for stroke patient
Indicator Definition		Proportion of cases where physicians provided cerebral stroke training to patients during hospitalization among the acute stroke hospitalization cases
Status of indicator use		Pilot Indicator
Quality components		Patient-centeredness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of cases where physicians provided cerebral stroke training to patients
	Inclusion Criteria	■ Categories of Records of conducting the stroke training for patient ○ Pathogenesis and examination of stroke, risk factor management, symptoms of stroke and how to deal with it, and management of medication, diet, and lifestyle to prevent recurrence of stroke, etc
	Exclusion Criteria	
	Denominator	Number of hospitalizations for acute stroke patients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on acute stroke (KCD code I60~I63)
	Exclusion Criteria	■ Death during hospitalization ■ Refusal of treatment or discharge due to lack of hope ■ Cases where the reason for not conducting education on stroke is recorded.
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Every year
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System
Background and reason for selection		■ In order to effectively lower Incidence rate and mortality, it is essential for patient to understand the disease and receive continous treatment. ■ In particular, for cardiovascular disease, diet, exercise, managing risk factors, and maintaining drug intake are important for prognosis and prevention of future recurrence
Evidence and References		

Indicator numbers		01STR0060
Indicator Name		Whether the stroke intensive care unit is in operation
Indicator Definition		Whether the stroke intensive care unit is in operation for acute stroke treatment
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	A, B, and C grades are calculated by dividing into 3 groups according to whether the acute stroke intensive care unit is operated, whether it is certified by the Korean Stroke Society, or whether the 'stroke intensive care unit inpatient fee' can be calculated.
	Inclusion Criteria	■ Grade calculation criteria ○ A: An institution that operates a stroke intensive care unit and has been certified by the Korean Stroke Society or an institution that can calculate 'stroke intensive care unit inpatient fee' ○ B: An institution that operates a stroke intensive care unit but is not certified by the Korean Stroke Society or an institution that cannot calculate the 'stroke intensive care unit inpatient fee' ○ C: An institution that does not operate a stroke intensive care unit
	Exclusion Criteria	
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Every year
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher the grade, the better.
Population subject to assessment		
Clinical subject		Diseases and Disorders of the Circulatory System

Background and reason for selection	■ Stroke intensive care unit may improve survival and recovery of cerebral stroke patients
Evidence and References	

Indicator numbers		01STR0061
Indicator Name		Incidence rate of pneumonia among inpatients with ischemic stroke
Indicator Definition		Proportion of cases where pneumonia occurred within 48 hours after start of hospitalization among hospitalizations of patients with acute ischemic stroke
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of cases of pneumonia occurred 48 hours after hospitalization
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of hospitalizations in patients with acute ischemic stroke
	Inclusion Criteria	■ Apply common criteria to the subject of assessment of acute phase ischemic stroke (KCD code I63)
	Exclusion Criteria	■ Transferred from other hospitals ■ Cases of death within 3 days of hospitalization ■ Cases using ventilator within 2 days of hospitalization
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Every year
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System
Background and reason for selection		■ Aspiration pneumonia due to dysphagia is the most common complication of stroke, accounting for about 12%, and the mortality due to this is about 5%.

Evidence and References	■ Hong KS, Kang DW, Koo JS, Yu KH, Han MK, Cho YJ, et al. Impact of neurological and medical complications on 3-month outcomes in acute ischaemic stroke. European Journal of Neurology.2008;15(12):1324-31. ■ Al-Khaled M, Matthis C, Binder A, Mudter J, Schttschneider J, Pulkowski U, et al. Dysphagia in Patients with Acute Ischemic Stroke: Early Dysphagia Screening May Reduce Stroke-Related Pneumonia and Improve Stroke Outcomes. Cerebrovas Dis 2016;42:81-89.

4) Pneumonia

☐ Common Criteria

※ Apply as inclusion criteria for the numerator or denominator of each indicator

○ Criteria for the subject of assessment

- **(Target patient)** Adult patients age 18 years or older who were hospitalized for "community-acquired pneumonia*" and received intravenous antibiotics for three days or more

* community-acquired pneumonia (CAP)

· Pneumonia that develops during normal social life and is diagnosed within 48 hours of hospitalization after onset of during normal life

- **(Target diagnosis)** Pneumonia (Including principal diagnosis or primary sub-diagnosis)

○ Exclusion criteria for the subject of assessment

- Suspected or confirmed cases of COVID-19
- Cases that are not community-acquired pneumonia
  - Hospital-related pneumonia, medical-facility-related pneumonia, ventilator-related pneumonia, postoperative pneumonia
  - Cases where antibiotics (intravenous) were not administered within 72 hours of hospitalization
  - Patients from nursing homes
  - Patients who have recently had close contact with medical facilities (cases with hospitalization history of 2 days or more within 90 days)
  - Pneumonia in patients who transferred after using antibiotics (intravenous)
  - Cases where pneumonia treatment was delayed due to acute disease (emergency surgery, etc.)
  - Hospice and palliative care cases
- Cases in which comorbidities or conditions increase the risk of occurrence and severity of pneumonia

- Cases diagnosed with a malignant tumor within the last three months or received chemotherapy or radiation therapy
- Cases where patients are taking immunosuppressants or have accompanying immune diseases
- Cases treated with high-dose steroids (20 mg/day, more than two weeks)
- Cases that received dialysis treatment [cases that received blood and peritoneal dialysis more than twice a week within 30 days (more than eight times a month)]
- HIV or acquired immune deficiency syndrome

– Any of the following diseases

- Tuberculous pneumonia (A150-A1621)
- Interstitial plasma cell pneumonia (B59)
- Pneumonia in Aspergillosis (J172)
- Pneumonia in mycoses (J172)
- Pneumonia in candidiasis (J172)
- Pneumonia in coccidioidomycosis (J172)
- Pneumonia in histoplasmosis (J172)
- Aspiration pneumonia (J690)
- Loeffler's pneumonia (J82)
- Lymphoid interstitial pneumonia (J8410)
- Endogenous lipoid pneumonia (J8410)
- Usual interstitial pneumonia (J8418)
- Interstitial pneumonia (J849)
- Abscess of lung with pneumonia (J851)

Indicator numbers		01CAP0002
Indicator Name		Median of time of first antibiotic administration (min.)
Indicator Definition		Median of time taken from hospital arrival of CAP (Community Acquired Pneumonia) patients to administration of first anibiotics (min.)
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Median (min.) of the time required from the time of arrival of the patient hospitalized with CAP to the administration of the first anibiotics
	Inclusion Criteria	■ Common criteria is applied to the subject of the pneumonia assessment ■ Criteria for the time of first administration of antibiotics ○ Actual administration time recorded on the nursing record or medication record of the first antibiotics administered ※ CAP - The pneumonia developed during normal life in society and diagnosed within 48 hours of hospitalization
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on pneumonia
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		■ Median ○ The time value in the middle when the time spent on the patient being assessed is lined up
Institution subject to assessment		General Hospital, Hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Respiratory System

Background and reason for selection	■ Delay in initiation of appropriate treatment may worsen the patient's prognosis. In all hospitalized patients, antibiotics treatment should be started within 8 hours of arrival at the hospital. Mortality rate within 30 days of hospitalization is decreased if hospitalized patients are treated with antibiotics within 8 hours of hospital arrival.
Evidence and References	■ The recommendations for CAP treatment guidelines. CAP treatment guideline committee; 2009 ■ Guidelines for Adult Community Pneumonia. The pneumonia guidelines committee of the Korean Academy of Tuberculosis and Respiratory Diseases; 2005

Indicator numbers		01CAP0003
Indicator Name		Adequacy of initial antibiotic selection
Indicator Definition		Proportion of cases in which appropriate antibiotics were administered according to the guidelines for use of antibiotics among the cases of hospitalized due to CAP (Community Acquired Pneumonia)
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of cases in which appropriate antibiotics were administered according to the guidelines for use of antibiotics
	Inclusion Criteria	■ Criteria for guidelines for use of antibiotics ○ Administration of antibiotics according to the adult CAP antibiotics guidelines ○ Check the adequacy of the antibiotics selection through the claim specification (form)
	Exclusion Criteria	■ Recognition criteria for tests ○ Recognized if an outpatient examination was performed on the day of admission ○ Cases in which the doctor's sputum culture test prescription time is listed ○ Recognized if it was performed within 48 hours before hospitalization ■ Criteria for hospital arrival time ○ This is the hospitalization time, and if passing through the emergency room, record the arrival time of the emergency room
	Denominator	Number of hospitalizations due to Community Acquired Pneumonia
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on pneumonia ※ CAP - Pneumonia that develops during normal life in society and diagnosed within 48 hours of hospitalization
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on pneumonia
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		

Interpretation of output	The higher, the better.
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Respiratory System
Background and reason for selection	■ For adult hospitalized patients who may have contracted CAP, single administration of beta-lactam antibiotics or respiratory fluoroquinolone antibiotics is recommended during empirical treatment. The combined administration of beta-lactam antibiotic and marcolide antibiotics is limited to patients with suspected atypical bacterial infection or severe pneumonia
Evidence and References	■ Guidelines for Use of Antibiotics for Adult CAP. The Korean Academy of Tuberculosis and Respiratory Diseases, the Korean Society of Infectious Diseases, etc.:2017

Indicator numbers		01CAP0004
Indicator Name		Median of administration days of antibiotic injection
Indicator Definition		Median of intravenous antibiotics administration days during the hospitalization period of CAP (Community Acquired Pneumonia) patients
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Median (days) of intravenous anibiotics administration days administered during the hospitalization period of CAP patients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on pneumonia. ■ Recognition criteria for antibiotics administration time ○ Cases of recording the actual administration time of the first antibiotics administered on the nursing record or medication record, and cases with claim codes and names of first and last administered antibiotics
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on pneumonia
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		■ Median ○ The time value in the middle when the assessment target times are arranged in a line (if the number of data is even, add the position values before and after the middle and then divide by 2)
Institution subject to assessment		General Hospital, Hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Respiratory System
Background and reason for selection		■ In general, it is administered for more than 5 days, and all signs of clinical safety criteria such as no fever for 48 to 72 hours must be met to end treatment.

Evidence and References	■ Guidelines for Use of Antibiotics for Adult CAP. The Korean Academy of Tuberculosis and Respiratory Diseases, the Korean Society of Infectious Diseases, etc.:2017

Indicator numbers		01CAP0005
Indicator Name		Rate of blood culture testing before administering the first dose of antibiotics
Indicator Definition		Proportion of cases in which blood culture test was performed before the first antibiotic administration among inpatient cases of CAP (Community Acquired Pneumonia) patients for whom blood culture was performed
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the cases subject to the denominator, the number of cases in which blood culture test was performed before the first antibiotic administration
	Inclusion Criteria	■ Criteria for the time of first administration of antibiotics ○ Actual administration time recorded on the nursing record or medication record of the first antibiotics administered ■ Recognition criteria for tests ○ Recognized if an outpatient examination was performed on the day of admission ○ Recognized if it was performed within 48 hours before hospitalization
	Exclusion Criteria	
	Denominator	Number of blood culture tests performed in CAP hospitalized patients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on pneumonia ※ CAP - Pneumonia that develops during normal life in society and diagnosed within 48 hours of hospitalization ■ Implementation criteria for blood culture test ○ Includes cases recorded as laboratory reception time because the blood test collection time and blood collection date are not recorded
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on pneumonia ■ Exceptional recognition of blood culture test after initial use of antibiotics ○ Cases in which the spectrum of antibiotics is broadened or changed due to the following symptoms according to the results of re-assessment after 48 to 72 hours ① Symptoms: increased shortness of breath, increased sputum ② When the body temperature continues to be 38°C or higher, when respiration increases, when blood pressure decreases ③ In the case of chest photos, the initial symptoms deteriorated and symptoms that did not exist appeared ④ WBC increase, PLT decrease, CRP increase according to the blood test results

Things to be considered for calculation	
Institution subject to assessment	General Hospital, Hospital
Assessment Period	6 months
Assessment Cycle	Biennial
Assessment data source	Medical records (Survey form)
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Respiratory System
Background and reason for selection	■ All patients with moderate or severe CAP requiring hospitalization should undergo blood culture testing prior to administration of antibiotics. When bacteria grow in blood culture test, the diagnostic value is higher than other culture tests, and it provides important information related to antibiotics resistance.
Evidence and References	■ Guidelines for Use of Antibiotics for Adult CAP. The Korean Academy of Tuberculosis and Respiratory Diseases, the Korean Society of Infectious Diseases, etc.:2017 ■ Harrison's principles of internal mdeicine. 19th ed. McGraw-Hill professional. Dennis Kasper et al; 2015

Indicator numbers		01CAP0006
Indicator Name		Rate of sputum smear exam prescription
Indicator Definition		Proportion of cases where sputum smear exam was prescribed by a doctor within 24 hours of arrival at the hospital among the cases of hospitalized due to CAP (Community Acquired Pneumonia)
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of cases where sputum smear exam was prescribed by a doctor within 24 hours of arrival at the hospital
	Inclusion Criteria	■ Recognition criteria for tests ○ Recognized if an outpatient examination was performed on the day of admission ○ Cases in which the doctor's sputum smear exam prescription time is listed ○ Recognized if it was performed within 48 hours before hospitalization ■ Criteria for hospital arrival time ○ This is the hospitalization time, and if passing through the emergency room, record the arrival time of the emergency room
	Exclusion Criteria	
	Denominator	Number of hospitalizations due to CAP
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on pneumonia ※ CAP - Pneumonia that develops during normal life in society and diagnosed within 48 hours of hospitalization
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on pneumonia
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly

Clinical subject	Diseases and Disorders of the Respiratory System
Background and reason for selection	■ As an appropriate method for diagnosing the causative bacteria from hospitalized patients with CAP, it is recommended to perform sputum gram staining and culture test for all pneumonia patients who are clinically adapted before antibiotics administration
Evidence and References	■ The recommendations for CAP treatment guidelines. CAP treatment guideline committee; 2009 ■ Guidelines for Adult Community Pneumonia. The pneumonia guidelines committee of the Korean Academy of Tuberculosis and Respiratory Diseases; 2005

Indicator numbers		01CAP0008
Indicator Name		Rate of sputum culture prescription
Indicator Definition		Proportion of cases where sputum culture was prescribed by a doctor within 24 hours of arrival at the hospital among the cases of hospitalized due to CAP (Community Acquired Pneumonia)
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of cases where sputum culture was prescribed by a doctor within 24 hours of arrival at the hospital
	Inclusion Criteria	■ Recognition criteria for tests ○ Recognized if an outpatient examination was performed on the day of admission ○ Cases in which the doctor's sputum culture test prescription time is listed ○ Recognized if it was performed within 48 hours before hospitalization ■ Criteria for hospital arrival time ○ This is the hospitalization time, and if passing through the emergency room, record the arrival time of the emergency room
	Exclusion Criteria	
	Denominator	Number of hospitalizations due to CAP
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on pneumonia ※ CAP - Pneumonia that develops during normal life in society and diagnosed within 48 hours of hospitalization
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on pneumonia
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly

Clinical subject	Diseases and Disorders of the Respiratory System
Background and reason for selection	■ As an appropriate method for diagnosing the causative bacteria from hospitalized patients with CAP, it is recommended to perform sputum gram staining and culture test for all pneumonia patients who are clinically adapted before antibiotics administration
Evidence and References	■ The recommendations for CAP treatment guidelines. CAP treatment guideline committee; 2009 ■ Guidelines for Adult Community Pneumonia. The pneumonia guidelines committee of the Korean Academy of Tuberculosis and Respiratory Diseases; 2005

Indicator numbers		01CAP0010
Indicator Name		Rate of oxygen saturation test
Indicator Definition		Proportion of cases for which oxygen saturation test was performed by ABGA (Aterial Blood Gas Anlaysis) or pulse oximetry within 24 hours of arrival at the hospital among the cases of hospitalized due to CAP (Community Acquired Pneumonia)
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of cases for which oxygen saturation test was performed by ABGA or pulse oximetry within 24 hours of arrival at the hospital
	Inclusion Criteria	■ Recognition criteria for tests ○ Recognized if an outpatient examination was performed on the day of admission ○ Recognized if it was performed within 48 hours before hospitalization ■ Oxygen saturation test criteria ○ Whether the ABGA or pulse oximetry test is performed and recorded ○ Based on ABGA - Cases with the date and time of collection - In cases where there is no collection date and time, cases in which the test result report date and time are listed ○ Criteria for pulse oximetry test - Cases in which the test result record date and time are listed - Cases in which the date and time of measurement are listed in case there is no record date and time of test results ■ Criteria for hospital arrival time ○ This is the hospitalization time, and if passing through the emergency room, record the arrival time of the emergency room
	Exclusion Criteria	
	Denominator	Number of hospitalizations due to CAP
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on pneumonia ※ CAP - Pneumonia that develops during normal life in society and diagnosed within 48 hours of hospitalization
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on pneumonia
Things to be considered for calculation		

Institution subject to assessment	General Hospital, Hospital
Assessment Period	6 months
Assessment Cycle	Biennial
Assessment data source	Medical records (Survey form)
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Respiratory System
Background and reason for selection	■ To assess the severity of pneumonia based on the pneumonia treatment guidelines ■ If PaO2 〈 60 mmHg, oxygen administration and bronchial intubation are suggested, and it is associated with mortality rate within 30 days of hospitalization.
Evidence and References	■ Guidelines for Adult Community Pneumonia. The pneumonia guidelines committee of the Korean Academy of Tuberculosis and Respiratory Diseases; 2005

Indicator numbers		01CAP0013
Indicator Name		Utilization rate of severity assessment tool
Indicator Definition		Proportion of cases for which a severity assessment tool was used within 24 hours of admission among the cases of hospitalized due to CAP (Commnity Acquired Pneumonia)
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of cases for which a severity assessment tool was used within 24 hours of admission
	Inclusion Criteria	■ Recognition criteria for tests ○ Recognized if an outpatient examination was performed on the day of admission ○ Recognized if it was performed within 48 hours before hospitalization ■ Severity assessment tool and recognition criteria ○ Assessment tool: CURB-65 (Confusion, blood urea, respiratory rate, blood pressure, 65 years or older), PSI (Pneumonia Severity Indicator) ○ Recognition criteria - In the case of CURB-65, cases in which judgment records are recorded for each item - Others: Cases with the type of severity assessment tool and total score ■ Criteria for initial hospitalization ○ Within 24 hours after arrival at the hospital ■ Criteria for hospital arrival time ○ This is the hospitalization time, and if passing through the emergency room, record the arrival time of the emergency room
	Exclusion Criteria	
	Denominator	Number of hospitalizations due to CAP
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on pneumonia ※ CAP - Pneumonia that develops during normal life in society and diagnosed within 48 hours of hospitalization
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on pneumonia
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital

Assessment Period	6 months
Assessment Cycle	Biennial
Assessment data source	Medical records (Survey form)
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Respiratory System
Background and reason for selection	■ The decision whether to be hospitalized is one of the most important decisions after CAP diagnosis. Out-patient treatment or inpatient treatment should be appropriately determined according to the patient's severity or risk of death. The two severity assessment tools, PSI and CURB-65, are the most used.
Evidence and References	■ Guidelines for Adult Community Pneumonia. The pneumonia guidelines committee of the Korean Academy of Tuberculosis and Respiratory Diseases; 2005 ■ Guidelines for Use of Antibiotics for Adult CAP. The Korean Academy of Tuberculosis and Respiratory Diseases, the Korean Society of Infectious Diseases, etc.:2017

Indicator numbers		01CAP0018
Indicator Name		Readmission rate within 30 days of discharge
Indicator Definition		Proportion of readmissions due to pneumonia within 30 days after discharge among the cases of hospitalized due to CAP (Community Acquired Pneumonia)
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of readmissions due to pneumonia within 30 days after discharge
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of hospitalizations due to CAP
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on pneumonia ※ CAP - Pneumonia that develops during normal life in society and diagnosed within 48 hours of hospitalization
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on pneumonia ■ Death during hospitalization ■ Transferred from other hospitals ■ Transfer to another hospital ■ Discharge against medical advice
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Respiratory System

Background and reason for selection	■ While readmission assesses health care quality, it also has a significant impact on health care expenditure. The US Med PAC reported the seriousness of the size of medical expenditures due to readmission in its 2008 Congressional Report.
Evidence and References	■ Smith JR, Hider P, Graham P. The readmission rate as an indicator of the quality of elective surgical inpatient care for the elderly in New zealand. Journal of the New Zealand Medical Association 2009

Indicator numbers		01CAP0020
Indicator Name		Mortality rate within 30 days of admission
Indicator Definition		Proportion of deaths within 30 days of hospitalization among the cases of hospitalized due to CAP (Community Acquired Pneumonia)
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of deaths within 30 days of hospitalization
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of hospitalizations due to CAP
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on pneumonia ※ CAP - Pneumonia that develops during normal life in society and diagnosed within 48 hours of hospitalization
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on pneumonia ■ Transferred from other hospitals
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form), Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Respiratory System

Background and reason for selection	■ Risk factors for CAP include alcoholism, asthma, immunosuppression, nursing homes, and the elderly over 70 compared to 60 to 69 years old. Risk factors for S.pneumoniae pneumonia include dementia, convulsive disease, heart failure, cerebrovascular disease, and alcoholism, smoking, COPD, and HIV infection, etc.
Evidence and References	■ Dennis Kasper. Harrison's principles of internal medicine. 19th ed. McGraw-Hill Professional; 2015

Indicator numbers		01CAP0021
Indicator Name		Rate of antibiotic administration within 8 hours of arrival at hospital
Indicator Definition		Proportion of first antibiotics administered within 8 hours of hospital arrival among the cases of hospitalized due to CAP (Community Acquired Pneumonia)
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of first antibiotics administered within 8 hours of hospital arrival
	Inclusion Criteria	■ Criteria for the time of first administration of antibiotics ○ Actual administration time recorded on the nursing record or medication record of the first antibiotics administered ■ Criteria for hospital arrival time ○ This is the hospitalization time, and if passing through the emergency room, record the arrival time of the emergency room
	Exclusion Criteria	
	Denominator	Number of hospitalizations due to CAP
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on pneumonia ※ CAP - Pneumonia that develops during normal life in society and diagnosed within 48 hours of hospitalization
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on pneumonia
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Respiratory System

Background and reason for selection	■ Delay in initiation of appropriate treatment may worsen the patient's prognosis. In all hospitalized patients, antibiotics treatment should be started within 8 hours of arrival at the hospital. Mortality rate within 30 days of hospitalization is decreased if hospitalized patients are treated with antibiotics within 8 hours of hospital arrival.
Evidence and References	■ The recommendations for CAP treatment guidelines. CAP treatment guideline committee; 2009 ■ Guidelines for Adult Community Pneumonia. The pneumonia guidelines committee of the Korean Academy of Tuberculosis and Respiratory Diseases; 2005

Indicator numbers		01CAP0023
Indicator Name		Length of Stay Index (LI)
Indicator Definition		How long the average number of hospitalization days of patients per institutions taking into account patient composition. pneumonia is compared to the total average number of hospitalization days
Status of indicator use		Pilot Indicator
Quality components		Efficiency
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	The average number of days of hospitalization for the relevant institutions considering the types and DRG (Diagnosis Related Group) of pneumonia patients
	Inclusion Criteria	■ Calculation criteria ○ The sum of each DRG by multiplying the average number of hospitalization days by type and DRG of the relevant institutions by the number of cases by type and DRG of the relevant health care institutions
	Exclusion Criteria	
	Denominator	Average number of hospitalization days of all institutions considering the type and DRG of pneumonia patients
	Inclusion Criteria	■ Calculation criteria ○ The sum of each DRG by multiplying the average number of hospitalization days by type and DRG of all institutions by the number of cases by type and DRG of the relevant institutions ■ Apply common criteria to the subject of assessment on pneumonia ※ CAP - Pneumonia that develops during normal life in society and diagnosed within 48 hours of hospitalization
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on pneumonia ■ Death during hospitalization ■ Transferred from other hospitals ■ Transfer to another hospital ■ Excluding patients whose hospitalization days are extremely high or low, exceeding the upper value or falling below the lower value ○ Upper value = X 〉 {Q3+2.5 ⅰ Q3-Q1 ⅰ} Lower value = X 〈 {Q1-2.5 ⅰ Q3-Q1 ⅰ} - X : Number of hospitalization days per case, Q1 : 1st quartile, Q3 : 3rd quartile

Things to be considered for calculation	■ Definition of DRG ○ A system that classifies hospitalized patients based on resource consumption and clinical similarity as a patient classification system.
Institution subject to assessment	General Hospital, Hospital
Assessment Period	6 months
Assessment Cycle	Biennial
Assessment data source	Medical records (Survey form), Administrative data
Risk Adjustment	Y
Risk Adjustment Variable	■ Apply the RDRG (Refined Diagnosis Related Group) adjusted for each patient's main diagnosis, surgery, death status, age, and severity
Interpretation of output	■ If it exceeds 1.0, it means that the number of hospitalization days is higher than the average, and if it is less than 1.0, it means that the number of hospitalization days is low.
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Respiratory System
Background and reason for selection	■ To measure the relative efficiency of resources invested in medical services
Evidence and References	■ Relation between length of hospital stay and costs of care for patients with community-acquired pneumonia. Michael J Fine, et al; 2000

Indicator numbers		01CAP0024
Indicator Name		Costliness Index (CI)
Indicator Definition		How expensive the average hospitalization fee of the patient per health care institutions taking into account patient composition pneumonia is compared to the overall average hospitalization fee.
Status of indicator use		Pilot Indicator
Quality components		Efficiency
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	The average number of days of hospitalization for the relevant institutions considering the types and DRG (Diagnosis Related Group) of pneumonia patients.
	Inclusion Criteria	■ Calculation criteria ○ The sum of each DRG by multiplying the average number of hospitalization days by type and DRG of the relevant institutions by the number of cases by type and DRG of the relevant institutions
	Exclusion Criteria	
	Denominator	Average inpatient treatment cost of all institutions considering the type and DRG of pneumonia patients
	Inclusion Criteria	■ Calculation criteria ○ The sum of each DRG by multiplying the average inpatient treatment fees by type and DRG of all institutions by the number of cases by type and DRG of the relevant institutions ■ Apply common criteria to the subject of assessment on pneumonia ※ CAP - Pneumonia that develops during normal life in society and diagnosed within 48 hours of hospitalization
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on pneumonia ■ Death during hospitalization ■ Transferred from other hospitals ■ Transfer to another hospital ■ Excluding patients whose cost of care is extremely high or low, exceeding the upper value or falling below the lower value ○ Upper value = X 〉 {Q3+2.5 ⅠQ3-Q1 Ⅰ} Lower value = X 〈 {Q1-2.5 ⅠQ3-Q1 Ⅰ} - X : Number of hospital stay per episode, Q1 : 1st quartile, Q3 : 3rd quartile
Things to be considered for calculation		■ Definition of DRG ○ A system that classifies hospitalized patients based on resource consumption and clinical similarity as a patient classification system.

Institution subject to assessment	General Hospital, Hospital
Assessment Period	6 months
Assessment Cycle	Biennial
Assessment data source	Administrative data
Risk Adjustment	Y
Risk Adjustment Variable	■ Apply the RDRG (Refined Diagnosis Related Group) adjusted for each patient's main diagnosis, surgery, death status, age, and severity
Interpretation of output	■ If it exceeds 1.0, it means that the treatment cost is higher than the average, and if it is less than 1.0, it means that the treatment cost is low.
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Respiratory System
Background and reason for selection	■ To measure the relative efficiency of resources invested in medical services
Evidence and References	■ Relation between length of hospital stay and costs of care for patients with community-acquired pneumonia. Michael J Fine, et al; 2000

3.

Chronic disease

1) Hypertension

☐ Common Criteria

※ Apply as inclusion criteria for the numerator or denominator of each indicator

○ Criteria for the subject of assessment

- **(Target patient)** Patients who used outpatient treatment for hypertension (National Health Insurance and Medical Aid, Patriots and Veterans Insurance)
  - **(Patients treated for hypertension)** Patients age 30 years or older who received antihypertensive prescriptions at the outpatient clinic twice or more on different days, and the total number of days of antihypertensive administration was seven or more due to hypertension during the assessment period
  - **(Prescription continuity assessment)** Patients with hypertension who used only one institution during the assessment period and who last received antihypertensive treatment from the same institution during the year prior to assessment (single-institution user)
  - **(New patients with hypertension)** Patients treated for hypertension who used only one medical institution during the assessment period and did not have a statement of outpatient treatment for hypertension in the 1 year prior to the assessment period
- **(Target diagnosis and code)** Including principal/secondary diagnosis
  - Essential (primary) hypertension (I10)
  - Hypertensive heart disease (I11)
  - Hypertensive renal disease (I12)
  - Hypertensive heart and renal disease (I13)

○ Exclusion criteria for the subject of assessment

- Dead
- Users of closed institutions
- Patients under 30 years of age

Indicator numbers		01HTN0001
Indicator Name		Rate of prescription days
Indicator Definition		Proportion of the number of days for antihypertensive agents out-of-hospital prescription to the number of days to be assessed in patients subject to assessment on prescription continuity hypertension (using a single institution)
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	During the assessment period of persons subject to the denominator, total sum of the number of antihypertensive agents out-of-hospital prescription days
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Sum of the period subject to the assessment days for each subject of assessment for prescription continuity hypertension
	Inclusion Criteria	■ The sum of the number of days subject to assessment of users of a single institution. ■ Apply common criteria to the subject of assessment on hypertension ■ Subjects for assessment of prescription continuity ○ A patient who used only one institution during the assessment period and was last prescribed an antihypertensive agents at the same institution in the year prior to the assessment (single institution user)
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on hypertension ■ Multi-institution user
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System

Background and reason for selection	■ Low medication adherence (The extent to which the patient is taking the prescription medication) in patients with hypertension is a major cause of blood pressure control failure. Therefore, increasing adherence may have the greatest impact on patient health than any other medical treatment (WHO, 2003) ■ In the assessment, it is difficult to confirm the patient's actual medication adherence. Therefore, as in several studies, by indirectly confirming whether taking the drug is taken using the number of prescription days, the degree of continuity of taking the antihypertensive agents is identified
Evidence and References	■ WHO, 2003 World Health Orgaization (WHO)/ International Society of Hypertension (ISH) statement on management of hypertension. Journal of Hypertension, 2003. 21: p. 1983-1992

Indicator numbers		01HTN0002
Indicator Name		Rate of prescription continuity group
Indicator Definition		Proportion of patients with a rate of prescription days (Proportion of days for antihypertensive agents out-of-hospital prescription to number of days subject to assessment) greater than 80% among patients asssessed for prescription continuity hypertension (using a single institution)
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients for whom the proportion of days for which antihypertensive agents were prescribed during the assessment period was more than 80%
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of patients with prescription continuity hypertension (using a single institution)
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on hypertension ■ Subjects for assessment of prescription continuity ○ A patient who used only one institution during the assessment period and was last prescribed an antihypertensive agents at the same institution in the year prior to the assessment (single institution user)
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on hypertension ■ Multi-institution user
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System

Background and reason for selection	■ Patients with hypertension who were prescribed antihypertensive agents over 80% of the total number of days required to receive antihypertensive agents had a lower risk of hospitalization than those prescribed less. As a result, it has been reported that the occurrence of cost is also low (Sokol et al. 2005)
Evidence and References	■ Sokol et al., Impact of medication adherence on hospitalization risk and healthcare cost. Med Care, 2005. 43(6): p.521-30

Indicator numbers		01HTN0003
Indicator Name		Rate of duplicate prescription from the same ingredient group
Indicator Definition		Proportion of cases in which antihypertensive agents of the same ingredient group were prescribed duplicately among antihypertensive agents out-of-hospital prescriptions for hypertension patients
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of cases in which antihypertensive agents of the same ingredient group were prescribed duplicately
	Inclusion Criteria	■ In case of conjugate, apply each ingredient separately
	Exclusion Criteria	■ Cases using the same ingredient drug
	Denominator	Total number of out-of-hospital prescriptions for antihypertensive agents in patients treated for hypertension
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on hypertension
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on hypertension
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System
Background and reason for selection		■ If the first-line drug does not work, it should be replaced with another drug. If drugs with different actions are added in small amounts rather than increasing the drug dose, the antihypertensive effect and adherence are simultaneously improved, and side effects can be suppressed
Evidence and References		■ Hypertension treatment guidelines (last version based on assessment period), Korean Society of Hypertension

Indicator numbers		01HTN0006
Indicator Name		Rate of prescription for combination therapy not recommended (without comorbidities such as cardio-cerebrovascular diseases)
Indicator Definition		Proportion of cases in which a non-recommended type of combination therapy was prescribed among the cases where two ingredients of antihypertensive agents were prescribed to patients treated for hypertension without comorbidity such as cardio-cerebrovascular disease, etc.
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of cases in which a non-recommended type of combination therapy was prescribed
	Inclusion Criteria	■ In case of conjugate, apply each ingredient separately ■ Types of combination therapy not recommended ○ Diuretics+Alpha blocker ○ Beta blockers+ACE (angiotensin-converting enzyme) inhibitor ○ Beta blockers+ARB (angiotensin receptor blocker) ○ ACE inhibitor+ARB (angiotensin receptor blocker)
	Exclusion Criteria	
	Denominator	Number of prescriptions of antihypertensive agents in 2 ingredient group for hypertension patients without comorbidity such as cardio-cerebrovascular disease, etc.
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on hypertension ■ In the case of comorbidity of cardiovascular and cerebrovascular disease, if the main diagnosis and the 1st subdiagnosis are described, it is accepted. ■ The scope of comorbidity such as cardiovascular and cerebrovascular diseases ○ Cardiovascular disease (angina, myocardial infarction, left ventricular hypertrophy, heart failure, ischemic heart disease) ○ Cerebrovascular disease ○ Chronic kidney disease ○ Diabetes ○ Peripheral vascular disease ○ Arrhythmic disease ○ Thyrotoxicosis (hyperthyroidism)
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on hypertension

Things to be considered for calculation	
Institution subject to assessment	General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period	1 year
Assessment Cycle	Every year
Assessment data source	Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	Lower is better
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Circulatory System
Background and reason for selection	■ Combined modality therapy, which is not recommended as an initial combination, is suggested in the guidelines for hypertension treatment. Considering that additional combination is possible when blood pressure is not well controlled with only two drugs, the initial use was assessed by limiting the cases in which there was no comorbidity and when only 2 ingredient groups were prescribed
Evidence and References	■ Hypertension treatment guidelines (last version based on assessment period), Korean Society of Hypertension ■ European Society of Cardiology (ESC), 2013

Indicator numbers		01HTN0007
Indicator Name		Average number of hospital visits
Indicator Definition		The average number of hospital visits for hypertension morbidity per patient subject to assessment on prescription continuity hypertension (using a single institution)
Status of indicator use		Pilot Indicator
Quality components		Efficiency
Indicator type		Outcome
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Total number of hospital visits due to hypertension morbidity by the persons subject to the denominator
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of subjects to be assessed for prescription continuity hypertension
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on hypertension ■ Subjects for assessment of prescription continuity ○ A patient who used only one institution during the assessment period and was last prescribed an antihypertensive agents at the same institution in the year prior to the assessment (single institution user)
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on hypertension ■ Multi-institution user
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		■ To understand the current status of hospitalization visit of hypertension patients
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System
Background and reason for selection		■ To understand the status of use of medical institutions by monitoring the outpatient visit patterns of patients treated for hypertension
Evidence and References		

Indicator numbers		01HTN0008
Indicator Name		Average number of prescriptions of antihypertensive agents
Indicator Definition		The average number of cases of antihypertensive agents out-of-hospital prescriptions per patient subject to assessment on Prescription continuity hypertension (using a single institution)
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Total number of antihypertensive agent prescriptions for the persons subject to the denominator
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of subjects to be assessed for prescription continuity hypertension
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on hypertension ■ Subjects for assessment of prescription continuity ○ A patient who used only one institution during the assessment period and was last prescribed an antihypertensive agents at the same institution in the year prior to the assessment (single institution user)
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on hypertension ■ Multi-institution user
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		■ To understand the status of antihypertensive agents prescription
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System
Background and reason for selection		■ To understand the status of use of medical institutions by monitoring the outpatient visit patterns of patients treated for hypertension
Evidence and References		

Indicator numbers		01HTN0009
Indicator Name		Rate of blood test performed for new patients
Indicator Definition		Proportion of patients who have undergone a blood test for at least one item among new hypertension patients
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who have undergone blood tests of at least one item
	Inclusion Criteria	■ Blood test items ○ Glucose test (quantitative), hemoglobin (Hb), hematocrit (Hct), total cholesterol, HDL cholesterol (high-density lipoprotein cholesterol), triglycerides, potassium (K), creatinine, uric acid, LDL cholesterol (low-density lipoprotein cholesterol), electrolytes-Sodium (Na)
	Exclusion Criteria	
	Denominator	Number of new patients with prescription continuity (using a single institution) hypertension
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on hypertension ■ Subjects for assessment of prescription continuity ○ A patient who used only one institution during the assessment period and was last prescribed an antihypertensive agents at the same institution in the year prior to the assessment (single institution user) ■ New patient ○ Patients who have not had benefit cost claim specification (form) for outpatient for hypertension morbidity in the 1 year prior to assessment
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on hypertension ■ Multi-institution user
Things to be considered for calculation		■ The assessment period before 2014 was 6 months, but the result value is calculated on a yearly basis for the relevant indicator
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly

Clinical subject	Diseases and Disorders of the Circulatory System
Background and reason for selection	■ According to the hypertension treatment guidelines, it is recommended that a basic examination be performed at least at the time of diagnosis and every year
Evidence and References	■ Hypertension treatment guidelines (last version based on assessment period), Korean Society of Hypertension

Indicator numbers		01HTN0010
Indicator Name		Rate of urine analysis for new patients
Indicator Definition		Proportion of patients undergoing a urine analysis among patients with hypertension
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who took the urine analysis
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of new patients with prescription continuity (using a single institution) hypertension
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on hypertension ■ Subjects for assessment of prescription continuity ○ A patient who used only one institution during the assessment period and was last prescribed an antihypertensive agents at the same institution in the year prior to the assessment (single institution user) ■ New patient ○ Patients who have not had benefit cost claim specification (form) for outpatient for hypertension morbidity in the 1 year prior to assessment
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on hypertension ■ Multi-institution user
Things to be considered for calculation		■ The assessment period before 2014 was 6 months, but the result value is calculated on a yearly basis for the relevant indicator
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System

Background and reason for selection	■ According to the hypertension treatment guidelines, it is recommended that a basic examination be performed at least at the time of diagnosis and every year
Evidence and References	■ Hypertension treatment guidelines (last version based on assessment period), Korean Society of Hypertension

Indicator numbers		01HTN0011
Indicator Name		Rate of ECG test for new patients
Indicator Definition		Proportion of patients receiving at least one ECG test among new hypertension patients
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who took the ECG test
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of new patients with prescription continuity (using a single institution) hypertension
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on hypertension ■ Subjects for assessment of prescription continuity ○ A patient who used only one institution during the assessment period and was last prescribed an antihypertensive agents at the same institution in the year prior to the assessment (single institution user) ■ New patient ○ Patients who have not had benefit cost claim specification (form) for outpatient for hypertension morbidity in the 1 year prior to assessment
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on hypertension ■ Multi-institution user
Things to be considered for calculation		■ The assessment period before 2014 was 6 months, but the result value is calculated on a yearly basis for the relevant indicator
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System

Background and reason for selection	■ According to the hypertension treatment guidelines, it is recommended that a basic examination be performed at least at the time of diagnosis and every year
Evidence and References	■ Hypertension treatment guidelines (last version based on assessment period), Korean Society of Hypertension

Indicator numbers		01HTN0012
Indicator Name		Pharmaceutical cost per day of antihypertensive agent prescribed
Indicator Definition		The average drug cost per day of out-of-hospital prescription of antihypertensive agents for hypertension patients
Status of indicator use		Pilot Indicator
Quality components		Efficiency
Indicator type		Outcome
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Total drug cost of out-of-hospital prescription of the antihypertensive agents during the assessment period of persons subject to the denominator
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Total number of days of antihypertensive agents prescription in out-of-hospital prescriptions for hypertension patients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on hypertension
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on hypertension
Things to be considered for calculation		■ Suspension after application of preliminary assessment indicators, resumes as pilot indicators when the 3rd (Jan. 2011 ~ Jun. 2011) assessment is implemented
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		To understand the current status of antihypertensive agent pharmaceutical cost
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Circulatory System
Background and reason for selection		■ To enable medical institutions to improve the cost-effectiveness of antihypertensive agent administration by themselves
Evidence and References		

Indicator numbers		01HTN0015
Indicator Name		Prescription rate of four or more hypotensive ingredient groups (Without comorbidities such as cardio-cerebrovascular diseases)
Indicator Definition		Proportion of cases where antihypertensive agents of 4 or more ingredient groups were prescribed among out-of-hospital prescriptions of antihypertensive agents for hypertension patients without comorbidity such as cardio-cerebrovascular disease, etc.
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of cases where antihypertensive agents of 4 or more ingredient groups were prescribed
	Inclusion Criteria	■ In case of conjugate, apply each ingredient separately
	Exclusion Criteria	
	Denominator	Number of prescriptions of the antihypertensive agents for hypertension patients without comorbidity such as cardio-cerebrovascular disease, etc.
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on hypertension ■ In case of comorbidity of cardiovascular and cerebrovascular disease, if the main diagnosis and the 1st subdiagnosis are described, it is accepted ■ The scope of comorbidity such as cardiovascular and cerebrovascular diseases ○ Cardiovascular disease (angina, myocardial infarction, left ventricular hypertrophy, heart failure, ischemic heart disease) ○ Cerebrovascular disease ○ Chronic kidney disease ○ Diabetes ○ Peripheral vascular disease ○ Arrhythmic disease ○ Thyrotoxicosis (hyperthyroidism)
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on hypertension
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year

Assessment data source	Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	Lower is better
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Circulatory System
Background and reason for selection	■ When blood pressure is not controlled even when three or more antihypertensive agents with different mechanisms of action are used in combination, the most common cause is lack of adherence of patients who do not follow the drug intake instructions. This is to ensure that the drug is prescribed after accurate patient assessment, such as checking whether the patient is taking the prescribed antihypertensive agent well before adding ingredient
Evidence and References	■ Hypertension treatment guidelines (last version based on assessment period), Korean Society of Hypertension

Indicator numbers		01HTN0016
Indicator Name		Co-administration rate of diuretics (Without comorbidities such as cardio-cerebrovascular diseases)
Indicator Definition		Proportion of prescriptions containing diuretics among the cases in which 3 or more ingredient groups of antihypertensive agents were prescribed to hypertension patients without comorbidity such as cardio-cerebrovascular disease, etc.
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of prescriptions containing diuretics
	Inclusion Criteria	■ In case of conjugate, apply each ingredient separately
	Exclusion Criteria	
	Denominator	Number of combined prescription of antihypertensive agents in 3 ingredient group or more for hypertension patients without comorbidity such as cardio-cerebrovascular disease, etc.
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on hypertension ■ In case of comorbidity of cardiovascular and cerebrovascular disease, if the main diagnosis and the 1st subdiagnosis are described, it is accepted ■ The scope of comorbidity such as cardiovascular and cerebrovascular diseases ○ Cardiovascular disease (angina, myocardial infarction, left ventricular hypertrophy, heart failure, ischemic heart disease) ○ Cerebrovascular disease ○ Chronic kidney disease ○ Diabetes ○ Peripheral vascular disease ○ Arrhythmic disease ○ Thyrotoxicosis (hyperthyroidism)
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on hypertension
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year

Assessment data source	Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Circulatory System
Background and reason for selection	■ If blood pressure is not controlled below the target blood pressure even after using the dual therapy, the use of a triple therapy including thiazides diuretics is recommended unless contraindicated. ■ This has the advantage of being inexpensive and increasing the effectiveness of other drugs in combination therapy.
Evidence and References	■ Hypertension treatment guidelines (last version based on assessment period), Korean Society of Hypertension ■ USA JNC (Joint National Committee) 8, 2014

2) Diabetes

☐ Common Criteria

※ Apply as inclusion criteria for the numerator or denominator of each indicator

○ Criteria for the subject of assessment

- **(Target patient)** Patients who used outpatient treatment for diabetes (National Health Insurance and Medical Aid, Patriots and Veterans Insurance)
  - **(Patients treated for diabetes)** Among the patients who received outpatient prescription for a hypoglycemic agent during the 1 year prior to the assessment period, outpatients who have visited the hospital twice or more due to diabetes (excluding the deceased)
  - **(Single-institution user)** Among diabetic patients, who have received outpatient treatment from only one medical institution during the assessment period, or who have received an outpatient prescription for hypoglycemic agent from only one medical institution; those who were last prescribed a hypoglycemic agent at the same institution within 1 year before the assessment period (excluding users of closed institutions)
  - **(Assessed outpatient visit)** Patients with fewer than 90 total hospitalization days during the assessment period among users of a single institution
  - **(Prescription continuity assessment)** Patients with diabetes who received an outpatient prescription for an oral hypoglycemic agent during the assessment period among assessment subjects who visited the outpatient clinic
- **(Target diagnosis and code)** Including principal/secondary diagnosis
  - Type 1 diabetes mellitus (E10)
  - Type 2 diabetes mellitus (E11)
  - Malnutrition-related diabetes mellitus (E12)
  - Other specified diabetes mellitus (E13)
  - Unspecified diabetes mellitus (E14)

○ Exclusion criteria for the subject of assessment

- Dead
- Users of closed institutions
- Users of multiple institutions

Indicator numbers		01DMC0001
Indicator Name		Rate of patients visiting at least once per quarter
Indicator Definition		Proportion of patients who visited outpatients at least once every quarter during the assessment period among patients subject to outpatient diabetes assessment using single institution
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who were outpatients at least once every quarter during the assessment period
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of subjects to be assessed for outpatient visit diabetes
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on diabetes ■ Single institution user ○ The patient who was last prescribed a hypoglycemic agent at the same institution in the 1 year prior to the period subject to the assessment (excluding users of closed institutions) among patients with diabetes receiving outpatient treatment from one institution or an out-of-hospital prescription for hypoglycemic agent from one institution during the period subject to the assessment ■ Outpatient visit assessment subject ○ Patients with a total number of hospitalization days less than 90 days during the period subject to the assessment among single institution users
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on diabetes ■ Patients with a total number of hospitalization days greater than or equal to 90 days during the period subject to the assessment among single institution users
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		

Interpretation of output	The higher, the better.
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	Endocrine, Nutritional and Metabolic Diseases and Disorders
Background and reason for selection	■ According to the results of a previous study comparing medical use for two years and hospitalization, death, and cost for one year thereafter, it was found that hospitalization, death, and cost were higher for patients who did not regularly visit medical institutions than for patients who did visit medical institutions on a regular basis. Therefore, management is required
Evidence and References	■ Kim Jae-yong and 16 others. The effect of continuity of outpatient treatment by Korean diabetes patients on health outcomes and cost - Analysis of health insurance data, Korean Diabetes Association, the journal of the Korean Diabetes Association, etc. 2006 ; 30(5): 377-387

Indicator numbers		01DMC0002
Indicator Name		Rate of prescription days
Indicator Definition		Proportion of days for oral hypoglycemic agents out-of-hospital prescription among the days subject to assessment of patients with prescription continuity diabetes (using a single institution)
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	During the assessment period of persons subject to the denominator, the total number of hyperglycemic agents out-of-hospital prescription days
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Sum of the period subject to the assessment days for prescription continuity diabetes
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on diabetes ■ Subjects for assessment of prescription continuity ○ Patients whose total number of hospitalization days is less than 90 days and receiving an out-of-hospital prescription for an oral hypoglycemic agent during the assessment period among single institution users ■ Calculation formula: Number of subjects for assessment of prescription continuity × Total number of days of the period subject to the assessment (365 days)
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on diabetes ■ Patients with a total number of hospitalization days greater than or equal to 90 days during the period subject to the assessment among single institution users
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.

Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	Endocrine, Nutritional and Metabolic Diseases and Disorders
Background and reason for selection	■ Among the factors related to adherence, adherence to medication to diabetes treatment is considered the most important in diabetes management
Evidence and References	■ Hong Jae-seok and 3 others. Analysis of drug prescription status and medication adherence in diabetes patients. HIRA. 2009

Indicator numbers		01DMC0003
Indicator Name		Rate of HbA1c test
Indicator Definition		Proportion of patients undergoing HbA1c test among diabetes patients using a single institution
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients undergoing HbA1c test
	Inclusion Criteria	■ Medical fee code of the HbA1c test ○ D3061, D3062, D3063, D3064, D3065 ■ Patients undergoing HbA1c test at least once during period subject to the assessment (1 year) in hospitals and outpatients at the institution subject to the assessment and other institutions
	Exclusion Criteria	
	Denominator	Number of diabetes patients using a single institution
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on diabetes ■ Single institution user ○ The patient who was last prescribed a hypoglycemic agent at the same institution in the 1 year prior to the period subject to the assessment (excluding users of closed institutions) among patients with diabetes receiving outpatient treatment from one institution or an out-of-hospital prescription for hypoglycemic agent from one institution during the period subject to the assessment
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on diabetes
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		Endocrine, Nutritional and Metabolic Diseases and Disorders

Background and reason for selection	■ HbA1c is used to determine the degree of blood sugar control in diabetes and to monitor it. Strict management of HbA1c is known to reduce microvascular complications. ■ According to the guidelines of the Korean Diabetes Association, HbA1c is measured every 3 months, but the cycle can be determined according to the patient's condition, and it is recommended to be performed at least twice a year
Evidence and References	■ Korean Diabetes Association's guidelines

Indicator numbers		01DMC0004
Indicator Name		Rate of lipid test
Indicator Definition		Proportion of patients undergoing the lipid test among diabetes patients using a single institution
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients undergoing a lipid test at least once.
	Inclusion Criteria	■ Patients undergoing lipid test at least once during period subject to the assessment (1 year) in hospitals and outpatients at the institution subject to the assessment and other institutions ■ Implementation criteria of the lipid test ○ Where total cholesterol, HDL cholesterol, and triglycerides tests are all performed at least once or LDL cholesterol tests are performed at least once ■ Type of lipid test and medical fee code ○ Total cholesterol: D2611, D2616, D2617 ○ HDL cholesterol: D2613, D2618, D2619 ○ Triglycerides: D2263, D2265, D2266 ○ LDL cholesterol: D2614
	Exclusion Criteria	
	Denominator	Number of diabetes patients using a single institution
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on diabetes ■ Single institution user ○ The patient who was last prescribed a hypoglycemic agent at the same institution in the 1 year prior to the period subject to the assessment (excluding users of closed institutions) among patients with diabetes receiving outpatient treatment from one institution or an out-of-hospital prescription for hypoglycemic agent from one institution during the period subject to the assessment
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on diabetes
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data

Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	Endocrine, Nutritional and Metabolic Diseases and Disorders
Background and reason for selection	■ Diabetes patients are known to be at risk of macrovascular complications, so it is known that serum lipid abnormalities must be actively managed ■ The guidelines of the Korean Diabetes Association's recommend that a serum lipid test (Total Cholesterol, HDL-C, Triglyceride, Calculated LDL-C) be performed at least once a year and at the time of diagnosis of diabetes
Evidence and References	■ Korean Diabetes Association's guidelines

Indicator numbers		01DMC0006
Indicator Name		Rate of fundus exam
Indicator Definition		Proportion of patients undergoing funduscopy among diabetes patients using a single institution
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients undergoing fundus exam
	Inclusion Criteria	■ Patients undergoing fundus exam at least once in the period subject to the assessment and the previous 1 year (total 2 years) for inpatient and outpatient treatment at institutions subject to assessment and other institutions ■ Implementation criteria of the fundus exam ○ If one of the following is performed more than once; precise fundus exam, basic fundus photography, wide angle fundus photography, basic fluorescein angiography, wide angle fluorescein angiography ※ Wide angle fundus exam for the same purpose is reflected ■ Type of fundus exam and medical fee code ○ Precise fundus exam: E6660 ○ Basic fundus photography: E6670 ○ Wide angle fundus photography: E6674 ○ Basic fluorescein angiography: E6681 ○ Wide angle fluorescein angiography: E6682
	Exclusion Criteria	
	Denominator	Number of diabetes patients using a single institution
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on diabetes ■ Single institution user ○ The patient who was last prescribed a hypoglycemic agent at the same institution in the 1 year prior to the period subject to the assessment (excluding users of closed institutions) among patients with diabetes receiving outpatient treatment from one institution or an out-of-hospital prescription for hypoglycemic agent from one institution during the period subject to the assessment
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on diabetes
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution

Assessment Period	1 year
Assessment Cycle	Every year
Assessment data source	Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	Endocrine, Nutritional and Metabolic Diseases and Disorders
Background and reason for selection	■ Retinopathy is a major complication related to vision in diabetic patients, and the prevalence of retinopathy is known to be closely related to the duration of diabetes ■ The guidelines of the Korean Diabetes Association guidelines recommend that patients undergo a comprehensive ophthalmic examination immediately after diagnosis of diabetes, and have regular examinations every year after the first eye examination. And it also recommends that the examination be performed every two years if the initial examination shows normal findings
Evidence and References	■ Korean Diabetes Association's guidelines

Indicator numbers		01DMC0007
Indicator Name		Rate of duplicate prescriptions of same ingredient group
Indicator Definition		Proportion of cases in which oral hypoglycemic agents in the same ingredient group are prescribed duplicately among the hypoglycemic agents out-of-hospital prescription cases for diabetes patients
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of cases in which oral hypoglycemic agents in the same ingredient group are prescribed duplicately
	Inclusion Criteria	■ Criteria for the number of duplicate prescriptions ○ Cases where two or more different generic names corresponding to the same ingredient group were prescribed among oral hypoglycemic agents of the out-of-hospital prescription with the same period of assessment for prescriptions * Example of duplication of same ingredient group: Another common name for the same ingredient group of sulfonylurea (glimepiride + gliclazide) ■ In the case of conjugate, each ingredient is calculated separately
	Exclusion Criteria	
	Denominator	Total number of out-of-hospital prescriptions of hypoglycemic agents for diabetes patients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on diabetes ■ Criteria for the number of prescriptions of hypoglycemic agents ○ Total number of out-of-hospital prescriptions for hypoglycemic agents during the assessment period on the institution subject to the assessment with 30 or more hypoglycemic agents out-of-hospital prescriptions ■ In the case of conjugate, each ingredient is calculated separately
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on diabetes
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		

Interpretation of output	Lower is better
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	Endocrine, Nutritional and Metabolic Diseases and Disorders
Background and reason for selection	■ When combination therapy is required, it is recommended to use drugs with different mechanisms of action
Evidence and References	■ Korean Diabetes Association's guidelines

Indicator numbers		01DMC0008
Indicator Name		Prescription rate of more than 4 ingredient groups
Indicator Definition		Proportion of cases prescribed hypoglycemic agents in four or more ingredient groups among hypoglycemic agents out-of-hospital prescription cases for diabetes patients
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of cases prescribed hypoglycemic agents in four or more ingredient groups
	Inclusion Criteria	■ In case of conjugate, apply each ingredient separately
	Exclusion Criteria	
	Denominator	Total number of out-of-hospital prescriptions of hypoglycemic agents for diabetes patients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on diabetes ■ Criteria for the number of prescriptions of hypoglycemic agents ○ Total number of out-of-hospital prescriptions for hypoglycemic agents during the assessment period on the institution subject to the assessment with 30 or more hypoglycemic agents out-of-hospital prescriptions ■ In case of conjugate, apply each ingredient separately
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on diabetes
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		Endocrine, Nutritional and Metabolic Diseases and Disorders

Background and reason for selection	■ According to the guidelines of the Korean Diabetes Association, triple therapy can be attempted only if the patient strongly refuses insulin treatment. Even in the consensus of the American and European Diabetes Association on the treatment algorithm for type 2 diabetes, a large number of ingredients are recommended as oral triple therapy or triple therapy including insulin
Evidence and References	■ Korean Diabetes Association's guidelines

Indicator numbers		01DMC0009~0011 ※ Assigning indicator numbers for each route of diabetes drug administration.
Indicator Name		Pharmaceutical cost per day of hypoglycemic agent prescribed (Total/ Oral medicaton of a single prescription/Oral medication and injection of multiple prescriptions)
Indicator Definition		Per day of hypoglycemic agents out-of-hospital prescription administration (Total/Oral medicaton of a single prescription/Oral medication and injection of multiple prescriptions) in patients with diabetes average pharmaceutical cost
Status of indicator use		Pilot Indicator
Quality components		Efficiency
Indicator type		Outcome
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	During the assessment period, total pharmaceutical cost of hypoglycemic agents on out-of-hospital prescription (Total/Oral medicaton of a single prescription/Oral medication and injection of multiple prescriptions)
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Total number of out-of-hospital prescriptions days of hypoglycemic agents for diabetes patients (Total/Oral medicaton of a single prescription/Oral medication and injection of multiple prescriptions)
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on diabetes ■ Criteria for out-of-hospital prescription days ○ Number of days of out-of-hospital prescriptions for hypoglycemic agents of the institution subject to the assessment with 30 or more hypoglycemic agents out-of-hospital prescriptions during the assessment period
	Exclusion Criteria	■ The dead
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		■ To understand the current status of the pharmaceutical cost of hypoglycemic agents

Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	Endocrine, Nutritional and Metabolic Diseases and Disorders
Background and reason for selection	■ To provide information so that cost-effective aspects can be considered in improving treatment continuity and prescribing adequacy
Evidence and References	

Indicator numbers		01DMC0012
Indicator Name		Rate of combined prescription that does not meet the criteria
Indicator Definition		Proportion of combined prescriptions that do not meet the criteria among the cases of out-of-hospital prescriptions of hypoglycemic agents of two or more ingredient groups to patients with type 2 diabetes
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of combined prescriptions that do not meet the criteria
	Inclusion Criteria	■ Combination criteria that don't meet the criteria. ○ Number of prescriptions for combinations that do not meet the 'General Principles for Diabetes Agents' criteria among out-of-hospital prescriptions with hypoglycemic agents of 2 ingredient or more for type 2 diabetes patients
	Exclusion Criteria	
	Denominator	Number of out-of-hospital prescriptions of hypoglycemic agents in the 2 ingredient group or more for type 2 diabetes patients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on diabetes ■ Criteria for the number of cases prescribing hypoglycemic agents in 2 ingredients group and more ○ Number of out-of-hospital prescriptions of hypoglycemic agents in 2 ingredients group or more for type 2 diabetes patients (KCD code: E11) during the assessment period of the institution subject to the assessment with 30 or more hypoglycemic agents out-of-hospital prescriptions ■ In case of conjugate, apply each ingredient separately
	Exclusion Criteria	■ The dead
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better

Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	Endocrine, Nutritional and Metabolic Diseases and Disorders
Background and reason for selection	■ To identify and provide information on the prescription status of combination therapy that is not recognized among the general principles for diabetes drugs (based on pharmaceutical benefit)
Evidence and References	

Indicator numbers		01DMC0013
Indicator Name		Rate of patients experiencing inpatient due to diabetes
Indicator Definition		Proportion of diabetes patients who have experienced at least one hospitalization due to diabetes
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Outcome
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients hospitalized with diabetes as main diagnosis at least once during the assessment period
	Inclusion Criteria	■ A patient who has been hospitalized with diabetes (KCD code: E10~E14) as the main diagnosis more than once during the assessment period
	Exclusion Criteria	
	Denominator	Number of patients treated for diabetes
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on diabetes
	Exclusion Criteria	■ The dead
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		Endocrine, Nutritional and Metabolic Diseases and Disorders
Background and reason for selection		■ To prevent complications and hospitalization by continuous management of diabetes patients and to monitor the status of patients at the national level
Evidence and References		

Indicator numbers		01DMC0014
Indicator Name		Rate of screening test of the diabetic nephropathy
Indicator Definition		Proportion of patients receiving diabetic nephropathy screening test (urine albumin excretion test or glomerular filtration rate related test) among outpatient visit diabetes patients using a single health care institution
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients receiving diabetic nephropathy screening test (urine albumin excretion test or glomerular filtration rate related test) during the assessment period
	Inclusion Criteria	■ Patients who have received urine albumin excretion test or glomerular filtration rate related test at least once in inpatient, outpatient, and health checkups (National Health Insurance Service, NHIS) at the institution subject to assessment and other institutions during the assessment period ■ Types of diabetic nephropathy screening test and medical fee code ○ Quantitation of trace albumin: D3002 ○ Microalbumin nuclear medicine: D3003 ○ Creatinine: D2280, D2281 ○ Creatinine clearance test: D2321 ○ Cystatin: D2330
	Exclusion Criteria	
	Denominator	Number of diabetes patients using a single health care institution
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on diabetes ■ Single health care institution outpatient ○ The patient who was last prescribed a hypoglycemic agent at the same institution in the 1 year prior to the period subject to the assessment among patients with diabetes receiving outpatient treatment from one institution or an out-of-hospital prescription for hypoglycemic agent from one institution during the period subject to the assessment
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on diabetes ■ Dialysis patients (specific code: V001, V003)
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year

Assessment Cycle	Every year
Assessment data source	Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	Endocrine, Nutritional and Metabolic Diseases and Disorders
Background and reason for selection	■ According to the guidelines of the Korean Diabetes Association, it is recommended to assess urine albumin excretion and glomerular filtration rate at the time of diagnosis of diabetes and at least every year. ※ Diabetic nephropathy occurs in 20-40% of diabetes patients and is the most common cause of end-stage renal disease
Evidence and References	■ Korean Diabetes Association's guidelines

3) Asthma

☐ Common Criteria

※ Apply as inclusion criteria for the numerator or denominator of each indicator

○ Criteria for the subject of assessment

- **(Target patient)** As patients 15 years of age or older who used medical institution as principal diagnosis or primary sub-diagnosis of asthma during the assessment period
  - Patients who have received outpatient treatment twice or more using asthma medications*, or
  - Those who have received inpatient treatment using systemic steroids (including oral dose and injection) and have had at least one outpatients treatments with asthma medications

  * Ashtma Drugs
    - Corticosteoid (CS)
    - LTRA (leukotriene receptor antagonist)
    - LABA (long-acting beta2 agonist)
    - SABA (short-acting beta2 agonist)
    - Anticholinergic agent
    - Xanthine derviative
- **(Target diagnosis and code)** Including principal or primary sub-diagnosis
  - Asthma (J45, J46)

○ Exclusion criteria for the subject of assessment

- Dead
- Users of closed institutions

Indicator numbers		01AST0003
Indicator Name		Rate of patients prescribed SABA without ICS
Indicator Definition		Proportion of patients who were prescribed SABA (Short-Acting Beta2 Agonist) without ICS (Inhaled Corticosteroid) among asthma patients during the assessment period
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of asthma patients prescribed SABA where ICS has never been prescribed
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of outpatient asthma patients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on asthma
	Exclusion Criteria	■ Dead patient
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Children and Adolescents, Adult, Elderly
Clinical subject		Diseases and Disorders of the Respiratory System
Background and reason for selection		■ Inhaled SABA should be used at the lowest dose and frequency only when necessary, and regular daily use is not recommended. ■ In order to increase the therapeutic effect, regular modifier treatment should be started as soon as possible after the diagnosis of asthma. Early initiation of low-dose ICS in asthmatics improves lung function compared with those initiated after symptoms persist for 2-4 years or longer.
Evidence and References		■ 2014 asthma treatment guidelines

Indicator numbers		01AST0005
Indicator Name		Rate of pulmonary function test (2)
Indicator Definition		Proportion of patients receiving more than one pulmonary function test among asthma patients during the assessment period
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients receiving more than one pulmonary function test during the assessment period
	Inclusion Criteria	■ Types of the pulmonary function test and medical fee code ○ F6001 : Without basic pulmonary function test [Flow-volume curve test] ○ F6002 : Flow-volume curve test [Including the basic pulmonary function test] ○ F6012 : Cardiopulmonary exercise test ○ FX661 : Peak expiratory flow measurement (Portable) [Per 1 day] ○ E7122 : Bronchial Provocation Test (Specific, by antigen) ○ E7123 : Bronchial Provocation Test (Bronchodilator test) ○ E7128 : Bronchial Provocation Test (No-specific, mannitol) ○ E7119 : Bronchial Provocation Test (No-specific, using methacholine) ○ E7129 : Bronchial Provocation Test (No-specific) ■ Tests performed during hospitalization at other medical institutions or tests performed during outpatient treatment are also included in the calculation
	Exclusion Criteria	
	Denominator	Number of asthma patients treated at the same health care institution at the end of the previous assessment period
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on asthma ■ Subjects for assessment of treatment continuity ○ Patients with no morbidity except for pulmonary function test such as dementia, mental deterioration, facial palsy, etc. in inpatient or outpatient treatment during the assessment period
	Exclusion Criteria	■ Dead patient
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year

Assessment data source	Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Children and Adolescents, Adult, Elderly
Clinical subject	Diseases and Disorders of the Respiratory System
Background and reason for selection	■ If asthma is diagnosed, the most useful indicator of future risk is lung function. assessment is necessary not only at the time of diagnosis, but also at 3 to 6 months after treatment and periodically during follow-up. If symptoms and lung function do not match, additional tests are required.
Evidence and References	■ 2014 asthma treatment guidelines

Indicator numbers		01AST0006
Indicator Name		Proportion of patients visiting continuously
Indicator Definition		Proportion of patients with 3 or more outpatient visits to the same health care institution among asthma patients receiving treatment at the same institution even at the end of the previous assessment period during the assessment period
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of asthma patients who visited the same health care institution 3 or more times during the assessment period
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of asthma patients treated at the same institution at the end of the previous assessment period
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on asthma ■ Subjects for assessment of treatment continuity ○ Persons subject to assessment receiving treatment from the same health care institution during the assessment period and received treatment from the same institution at the end of the previous assessment period
	Exclusion Criteria	■ Dead patient ■ Patients who use multiple medical institutions outpatient facilities during the assessment period
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Children and Adolescents, Adult, Elderly
Clinical subject		Diseases and Disorders of the Respiratory System

Background and reason for selection	■ Asthma patients should be examined regularly to monitor symptoms, risk factors, and acute exacerbations, and to monitor response to treatment modifications
Evidence and References	■ 2014 asthma treatment guidelines

Indicator numbers		01AST0007
Indicator Name		Rate of patients prescribed ICS
Indicator Definition		Proportion of patients prescribed ICS (Inhaled Corticosteroid) among asthma patients
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients prescribed ICS
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of outpatient asthma patients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on asthma
	Exclusion Criteria	■ Dead patient
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Children and Adolescents, Adult, Elderly
Clinical subject		Diseases and Disorders of the Respiratory System
Background and reason for selection		■ ICS is the most effective prophylactic agent for maintaining asthma control and is used in all possible asthma patients.
Evidence and References		■ 2014 asthma treatment guidelines

Indicator numbers		01AST0008
Indicator Name		Rate of patients prescribed essential drugs (ICS or LTRA) (2)
Indicator Definition		Proportion of patients prescribed ICS (Inhaled Corticosteroid) and LTRA (Leukotriene Receptor Antagonist) among asthma patients during the assessment period
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of asthma patients receiving out-of-hospital prescriptions for ICS or LTRA
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of outpatient on asthma
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on asthma
	Exclusion Criteria	■ Dead patient
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Children and Adolescents, Adult, Elderly
Clinical subject		Diseases and Disorders of the Respiratory System
Background and reason for selection		■ ICS is the most effective prophylactic agent for maintaining asthma control and is used in all possible asthma patients. ■ If asthma is not controlled with moderate-dose ICS, the addition of inhaled SABA is recommended.
Evidence and References		■ 2014 asthma treatment guidelines

Indicator numbers		01AST0009
Indicator Name		Rate of patients prescribed LABA without ICS
Indicator Definition		Proportion of patients prescribed LABA (Long-Acting Beta2 Agonist) without ICS (Inhaled Corticosteroid) among asthma patients during the assessment period
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients with asthma who have never been prescribed ICS
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of outpatient on asthma
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on asthma
	Exclusion Criteria	■ Dead patient
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Children and Adolescents, Adult, Elderly
Clinical subject		Diseases and Disorders of the Respiratory System
Background and reason for selection		■ Patients whose asthma is not controlled by low-dose ICS treatment are advised to add inhalation SABA first.
Evidence and References		■ 2014 asthma treatment guidelines

Indicator numbers		01AST0011
Indicator Name		Rate of patients prescribed oral steroids without ICS (2)
Indicator Definition		Proportion of patients prescribed OCS (Oral Corticosteroid) without ICS (Inhaled Corticosteroid) among asthma patients during the assessment period.
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of asthma patients for whom OCS was prescribed at least once and ICS was never prescribed
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of outpatient on asthma
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on asthma
	Exclusion Criteria	■ Dead patient
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Children and Adolescents, Adult, Elderly
Clinical subject		Diseases and Disorders of the Respiratory System
Background and reason for selection		■ In patients with severe asthma symptoms or asthma acute exacerbation, it is recommended to start a regular modifier (high-dose ICS or medium-dose ICS/LABA) with short-term OCS.
Evidence and References		■ 2014 asthma treatment guidelines

Indicator numbers		01AST0012~0013 ※ Assigning indicator numbers for each patient type to be assessed
Indicator Name		Rate of prescription days of the ICS (Total/treatment continuity)
Indicator Definition		Proportion of days for which asthma patients (total/treatment continuity) were prescribed ICS (Inhaled Corticosteroid) out of the total number of days (365 days) under assessment
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Total number of ICS prescription days for asthma patients (total/treatment continuity) during the period subject to the denominator
	Inclusion Criteria	■ Apply common criteria to the subject of assessment of asthma ■ Subjects for assessment of treatment continuity ○ Persons subject to assessment receiving treatment from the same institution during the assessment period and received treatment from the same health care institution at the end of the previous assessment period ■ ICS type ○ (Single agent) ICS ○ (Conjugate) ICS + LABA ■ Including prescriptions from other health care institutions
	Exclusion Criteria	■ Dead patient
	Denominator	Total number of days for assessment period (365 days)
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Children and Adolescents, Adult, Elderly
Clinical subject		Diseases and Disorders of the Respiratory System

Background and reason for selection	■ ICS is the most effective prophylactic agent for maintaining asthma control and is used in all possible asthma patients. - Regular daily use of low-dose ICS reduces asthma symptoms and reduces the risk of asthma-related acute exacerbations, hospitalization, and death. ■ All asthma patients should be educated on inhalants, encouraged to maintain modifiers even if symptoms are intermittent, and self-management education for asthma should be provided.
Evidence and References	■ 2014 asthma treatment guidelines

Indicator numbers		01AST0014
Indicator Name		Rate of patients having inpatient experience with asthma
Indicator Definition		Proportion of patients hospitalized for asthma among asthma patients during the assessment period
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Outcome
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients hospitalized for asthma
	Inclusion Criteria	■ Patients with inpatient statements prescribed in the hospital for systemic steroids (including oral, injection) among the patients subject to asthma assessment ■ Hospitalization at another health care institution
	Exclusion Criteria	
	Denominator	Number of outpatient asthma patients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on asthma ■ 6 ingredient groups for asthma medicine ○ Steroids, leukotriene, LABAs, SABAs, anticholinergic, Xanthine Derivatives
	Exclusion Criteria	■ Dead patient
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Children and Adolescents, Adult, Elderly
Clinical subject		Diseases and Disorders of the Respiratory System

Background and reason for selection	■ Asthma is an outpatient-sensitive disease, and if it is treated effectively in an outpatient setting, the worsening of the disease and hospitalization can be prevented. ■ Severe acute exacerbation of asthma suggests a life-threatening situation and is a predictor of exacerbation or patient death. This suggests 'more than two emergency room visits or hospitalizations in the past year'.
Evidence and References	■ 2014 asthma treatment guidelines

Indicator numbers		01AST0015
Indicator Name		Rate of patients having emergency room visit experience with asthma
Indicator Definition		Proportion of patients having emergency room visit experience due to asthma among asthma patients during the assessment period
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Outcome
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients that have visited the emergency room due to asthma
	Inclusion Criteria	■ Patients with emergency room inpatient or outpatient statements prescribed inside and outside the hospital for systemic steroids (including oral medications, injections) among the patients subject to asthma assessment ■ Visiting the emergency room of another health care institution
	Exclusion Criteria	
	Denominator	Number of outpatient asthma patients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on asthma ■ 6 ingredient groups for asthma medicine ○ Steroids, leukotriene, LABAs, SABAs, anticholinergic, Xanthine Derivatives
	Exclusion Criteria	■ Dead patient
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Children and Adolescents, Adult, Elderly
Clinical subject		Diseases and Disorders of the Respiratory System

Background and reason for selection	■ Asthma is an outpatient-sensitive disease, and if it is treated effectively in an outpatient setting, the worsening of the disease and hospitalization can be prevented. ■ Severe acute exacerbation of asthma suggests a life-threatening situation and is a predictor of exacerbation or patient death. This suggests 'more than two emergency room visits or hospitalizations in the past year'.
Evidence and References	■ 2014 asthma treatment guidelines

4) COPD (chronic obstructive pulmonary disease)

☐ Common Criteria

※ Apply as inclusion criteria for the numerator or denominator of each indicator

○ Criteria for the subject of assessment

- **(Target patient)** As patients 40 years of age or older who used medical institution as principal diagnosis or primary sub-diagnosis of COPD during the assessment period
  - Patients who have received outpatient treatment twice or more using COPD medications*, or
  - Those who have received inpatient treatment using systemic steroids and have had at least one outpatients treatments with COPD medications

* COPD Drugs

Ingredient class		Remarks
CS (Corticosteroid)	Oral, Injection	Systemic steroid
	Inhalation	
Beta2 Agonist	Oral, Injection, Patch	Systemic bronchodilator
	Long-acting (LABA)	Inhaled bronchodilator
	Short-acting (SABA)	
Muscarinic Antagonist	Long-acting (LAMA)	
	Short-acting (SAMA)	
Beta2 Agonist/Muscarinic Antagonist combination drug	Inhaled (LABA/Muscarinic Antagonist)	Inhaled bronchodilator
	Inhaled (SABA/Muscarinic Antagonist)	
Beta2 Agonist/Corticosteroid combination drug	Inhaled (LABA/ICS)	
Methylxanthine derviative	Oral, Injection	
Phosphodiesterase4 (PDE4) inhibitor	Oral	

· LABA (Long-Acting Beta2 Agonist), SABA (Short-Acting Beta2 Agonist)

· LAMA (Long-Acting Muscarinic Antagonist), SAMA (Short-acting Muscarinic Antagonist)

- **(Target diagnosis and code)** Including principal or primary sub-diagnosis

Target diagnosis (code)		
Emphysema (J43)	J43.1	Panlobular emphysema
	J43.2	Centrilobular emphysema
	J43.8	Other emphysema
	J43.9	Emphysema, unspecified
Other chronic obstructive pulmonary disease (J44)	J44.1	Chronic obstructive pulmonary disease with acute lower respiratory infection
	J44.2	Chronic obstructive pulmonary disease with acute exacerbation, unspecified
	J44.8	Other specified chronic obstructive pulmonary disease
	J44.9	Chronic obstructive pulmonary disease, unspecified

· MacLeod's syndrome (J43.0) is excluded, as it is a rare disease
· Severity is indicated for J44.0-J44.9 starting Jan. 1, 2016. (0: mild, 1: moderate, 2: severe, 9: unspecified)

○ Exclusion criteria for the subject of assessment

- Dead
- Patients under 40 years of age

Indicator numbers		01COP0001
Indicator Name		Rate of pulmonary function test
Indicator Definition		Proportion of patients receiving a pulmonary function test at least once among the patients who visited the outpatient clinic with a COPD (Chronic obstructive pulmonary disease)
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients receiving a pulmonary function test at least once during the assessment period.
	Inclusion Criteria	■ Type of pulmonary function test and medical fee code ○ F6001: Basic pulmonary function test [When the flow-volume curve test is not performed] ○ F6002: Flow-volume curve test [Including the basic pulmonary function test] ■ Tests performed during hospitalization at other medical institutions or tests performed during outpatient treatment are also included in the calculation.
	Exclusion Criteria	
	Denominator	Number of COPD outpatients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on COPD
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on COPD
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Respiratory System

Background and reason for selection	■ Spirometry is required for the diagnosis of COPD. Spirometry is the most objective and reproducible test method for confirming airflow limitation. At least once a year, the degree of deterioration of lung function should be checked by a pulmonary function test.
Evidence and References	■ Clinical guidelines for chronic obstructive pulmonary disease, 2018

Indicator numbers		01COP0002
Indicator Name		Rate of patients prescribed inhaled bronchodilators
Indicator Definition		Proportion of patients prescribed inhaled bronchodilators among the patients who visited the outpatient clinic with COPD (Chronic obstructive pulmonary disease)
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of out-of-hospital prescriptions for inhaled bronchodilators
	Inclusion Criteria	■ Types of inhaled bronchodilators ○ LABA (Long-Acting Beta2 Agonist) ○ SABA (Short-Acting Beta2 Agonist) ○ LAMA (Long-Acting Muscarinic antagonist) ○ Including the conjugate agent (Inhaled LABA + ICS, Inhaled LABA + Inhaled LAMA)
	Exclusion Criteria	
	Denominator	Number of COPD outpatients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on COPD
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on COPD
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Respiratory System
Background and reason for selection		■ Bronchodilators are central to the treatment of COPD, and inhaled drugs should be used first in consideration of their effects and side effects.
Evidence and References		■ Clinical guidelines for chronic obstructive pulmonary disease, 2018

Indicator numbers		01COP0003
Indicator Name		Rate of patients visiting continuously
Indicator Definition		Proportion of patients who visited the same instuition more than 3 times among those subject to treatment-contiously COPD (Chronic obstructive pulmonary disease) assessment
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients with COPD who visited the outpatient clinic of the same institution more than three times during the assessment period
	Inclusion Criteria	■ Continuous visit patient ○ Patients receiving treatment for COPD at least 3 times in the same institution during the assessment period
	Exclusion Criteria	
	Denominator	Number of patients with COPD who were treated at the same institution at the end of the previous assessment period
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on COPD ■ Subjects for assessment of treatment continuity ○ Persons subject to assessment receiving treatment from the same institution during the assessment period and received treatment from the same institution at the end of the previous assessment period
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on COPD ■ Patients who use outpatient services at multiple institutions during the assessment period
Things to be considered for calculation		■ According to the opinion of experts, considering the outpatient treatment behavior of Korean medical institutions, a visit cycle of 3-6 months would be appropriate for patients with stable COPD. In addition, as the definition of a patient has the condition of two or more outpatient visits, a continuous visit patient is defined as a case in which outpatient visits are made more than 3 times per year rather than every 6 months. - A patient newly diagnosed with COPD during the assessment period cannot be regarded as fully participating in COPD treatment during the assessment period, and it is difficult to consider it as a continuous visit if the medical institution is changed. Therefore, the target patients are those receiving treatment at a single institution that is the same institution as the institution that last prescribed drugs for COPD in the year prior to the year of assessment

Institution subject to assessment	General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period	1 year
Assessment Cycle	Every year
Assessment data source	Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Respiratory System
Background and reason for selection	■ For patients with chronic obstructive pulmonary disease, regular follow-up is essential. In these patients, it is necessary to regularly check the occurrence of complications because the lung function gradually deteriorates even with appropriate treatment.
Evidence and References	■ Clinical guidelines for chronic obstructive pulmonary disease, 2018

Indicator numbers		01COP0005
Indicator Name		Rate of patients with inpatient experience
Indicator Definition		Proportion of patients who have been hospitalized more than once due to a COPD (Chronic obstructive pulmonary disease) among the patients who visited the outpatient clinic with COPD
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Outcome
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who have been hospitalized more than once due to a COPD
	Inclusion Criteria	■ Recognition criteria for hospitalization for chronic obstructive pulmonary disease ○ In the case of COPD (KCD code J43~J44, except J43.0) as the main diagnosis and the 1st sub diagnosis and there is a hospitalization statement of prescribing COPD drug in the hospital ■ Calculation including hospitalization at other health care institutions
	Exclusion Criteria	
	Denominator	Number of chronic obstructive pulmonary disease outpatients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on COPD
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on COPD
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Respiratory System
Background and reason for selection		■ Hospitalization or emergency room visits in patients with COPD are likely to indicate an acute exacerbation, which is considered an important indicator for outpatient-based COPD management. Thus, it allows monitoring of the effectiveness of COPD management.
Evidence and References		■ A study on assessment methods for chronic obstructive pulmonary disease, 2013

Indicator numbers		01COP0006
Indicator Name		Rate of patients having emergency room visit experience
Indicator Definition		Proportion of patients having emergency room visit experience more than once with a COPD (Chronic obstructive pulmonary disease) among the patients who visited the outpatient clinic with a COPD
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Outcome
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients with COPD visiting the emergency room more than once
	Inclusion Criteria	■ Recognition criteria for emergency department visits for COPD ○ In case of COPD (KCD code J43~J44, except for J43.0) as the main diagnosis and the 1st sub diagnosis and there is an emergency room outpatient statement or hospitalization statement (emergency medical care payment incurred) prescribing COPD in-hospital or out-of-hospital ■ Calculation including hospitalization at other health care institutions
	Exclusion Criteria	
	Denominator	Number of COPD outpatients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on COPD
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on COPD
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Respiratory System
Background and reason for selection		■ Hospitalization or emergency room visits in patients with COPD are likely to indicate an acute exacerbation, which is considered an important indicator for outpatient-based COPD management. Thus, it allows monitoring of the effectiveness of COPD management.
Evidence and References		■ A study on assessment methods for chronic obstructive pulmonary disease, 2013

Indicator numbers		01COP0010~0011 ※ Assigning indicator numbers for each patient type to be assessed
Indicator Name		Rate of prescription days of the inhaled bronchodilators (using all health care institution / a single health care institution)
Indicator Definition		Proportion of the number of days in which COPD (Chronic obstructive pulmonary disease) patients (using all health care institution / a single health care institution) were prescribed inhaled bronchodilators out of the total number of days in the assessment period (1 year)
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Number of days in which COPD patients (using all health care institution / a single health care institution) were prescribed inhaled bronchodilators during the period subject to the denominator.
	Inclusion Criteria	■ Apply common criteria to the subject of assessment of COPD ■ Criteria for using a single institution ○ This refers to patients subject to assessment receiving treatment from the same institution during the assessment period and who also received treatment from the same institution at the end of the previous assessment period. ■ Calculation including prescriptions from other medical institutions ■ Types of inhaled bronchodilators ○ LABA (Long-Acting Beta2 Agonist) ○ SABA (Short-Acting Beta2 Agonist) ○ LAMA (Long-Acting Muscarinic antagonist) ○ Including the conjugate agent (Inhaled LABA + ICS, Inhaled LABA + Inhaled LAMA)
	Exclusion Criteria	■ Subjects who use drugs for nebulizer alone ■ Dead patient ■ Patients under the age of 40 ■ Inpatient and in-hospital prescription medications
	Denominator	Total number of days for assessment period (365 days)
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Public health institution
Assessment Period		1 year

Assessment Cycle	Every year
Assessment data source	Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Respiratory System
Background and reason for selection	■ Low adherence to medication has adverse health consequences, which increases the possibility of additional cost and premature death. Therefore, it is necessary to assess the quality of medical care related to medication adherence. ■ Pharmacotherapy can reduce the patient's symptoms, prevent acute exacerbation, and improve motor performance.
Evidence and References	■ Clinical guidelines for chronic obstructive pulmonary disease, 2018 ■ OECD (Organization for Economic Cooperation and Development), 2017 ■ GOLD (Global Initiative for Chronic Obstructive Lung Disease), 2020

4.

Infectious disease

1) Tuberculosis

☐ Common Criteria

※ Apply as inclusion criteria for the numerator or denominator of each indicator

○ Criteria for the subject of assessment

- **(Target patient)** New tuberculosis patients reported to the KCDC (Korea Centers for Disease Control & Prevention) during the assessment period (National Health Insurance and Medical Aid, Patriots and Veterans Insurance)
- **(Target diagnosis and code)** Tuberculosis (A15-A19)

  ※ Based on the third-level morbidity of the KCD (Korean Standard Classification of Disease)

  - Respiratory tuberculosis, bacteriologically and histologically confirmed (A15)
  - Respiratory tuberculosis, not confirmed bacteriologically or histologically (A16)
  - Tuberculosis of nervous system (A17)
  - Tuberculosis of other organs (A18)
  - Miliary tuberculosis (A19)

○ Exclusion criteria for the subject of assessment

- Patients with multidrug resistance and extensive drug resistance
- Patients with a report to public health agency

Indicator numbers		01TBC0004
Indicator Name		Rate of AFB smear test
Indicator Definition		Proportion of patients undergoing AFB (Acid-Fast Bacillus) smear test among new patients with respiratory tuberculosis
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		In-patient, Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients undergoing AFB smear test
	Inclusion Criteria	■ AFB smear test types and medical fee codes ○ D6001: Observation judgment-microscope-acid-fast bacterium microscopic inspection (normal dyeing) ○ D6002: Observation judgment-microscope-acid-fast bacilli smear microscopy (normal dyeing) ○ D6003: Observation judgment-microscope-acid-fast bacilli smear microscopy (fluorescent staining) ※ Irrespective of the sample type and sample collection method ■ Test recognition criteria ○ Period: Tests performed 60 days before to 14 days at the time of confirmation of tuberculosis ○ Including tests conducted by the relevant institution and other institutions
	Exclusion Criteria	
	Denominator	Number of new respiratory tuberculosis patients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on tuberculosis ■ Respiratory tuberculosis morbidity and KCD code ○ A15: Bacterial and histologically confirmed respiratory tuberculosis ○ A16: Bacterial and histological unconfirmed respiratory tuberculosis ○ A19: Miliary tuberculosis ※ Base on the 3rd level morbidity of the Korean Standard Classification of Disease (KCD)
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on tuberculosis
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Long-term care hospital, Clinic
Assessment Period		6 months
Assessment Cycle		Every year
Assessment data source		Administrative data

Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	Infectious and Parasitic Diseases
Background and reason for selection	■ AFB smear test is an essential test item for accurate tuberculosis diagnosis
Evidence and References	■ Treatment Guidelines for Tuberculosis (3rd Edition), 2017

Indicator numbers		01TBC0005
Indicator Name		Rate of AFB culture test
Indicator Definition		Proportion of patients undergoing AFB (Acid-Fast Bacillus) culture test among new patients with respiratory tuberculosis
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		In-patient, Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients undergoing AFB culture test
	Inclusion Criteria	■ AFB culture test types and medical fee codes ○ D6011: Special culture-AFB culture and identification-solid medium ○ D6012: Special culture-AFB culture and identification-liquid medium ※ Irrespective of the sample type and sample collection method ■ Test recognition criteria ○ Period: Tests performed 60 days before to 14 days at the time of confirmation of tuberculosis ○ Including tests conducted by the relevant institution and other institutions
	Exclusion Criteria	
	Denominator	Number of new respiratory tuberculosis patients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on tuberculosis ■ Respiratory tuberculosis morbidity and KCD code ○ A15: Bacterial and histologically confirmed respiratory tuberculosis ○ A16: Bacterial and histological unconfirmed respiratory tuberculosis ○ A19: Miliary tuberculosis ※ Base on the 3rd level morbidity of the Korean Standard Classification of Disease (KCD)
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on tuberculosis
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Long-term care hospital, Clinic
Assessment Period		6 months
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.

Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	Infectious and Parasitic Diseases
Background and reason for selection	■ AFB culture test is an essential test item for accurate tuberculosis diagnosis
Evidence and References	■ Treatment Guidelines for Tuberculosis (3rd Edition), 2017

Indicator numbers		01TBC0006
Indicator Name		Rate of nucleic acid amplification test (NAT)
Indicator Definition		Proportion of patients undergoing tubercle bacillus NAT among new patients with respiratory tuberculosis
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		In-patient, Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients undergoing NAT
	Inclusion Criteria	■ NAT types and medical fee codes ○ D6041 (01): Nucleic acid amplification-qualitative group 2 (tubercle bacillus [PRC (polymerase chain reaction)]) ○ D6042 (01): Nucleic acid amplification-qualitative group 3 (tubercle bacillus [PRC (double polymerase chain reaction)]) ○ D6042 (02): Nucleic acid amplification-qualitative group 3 (tubercle bacillus [PCR-hybridization]) ○ D6043 (01): Nucleic acid amplification-qualitative group 4 (tubercle bacillus and rifampicin resistance test [Real-time double PRC (polymerase chain reaction)]) ※ Irrespective of the sample type and sample collection method ■ Test recognition criteria ○ Period: Tests performed 60 days before to 14 days at the time of confirmation of tuberculosis ○ Including tests conducted by the relevant institution and other institutions
	Exclusion Criteria	
	Denominator	Number of new respiratory tuberculosis patients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on tuberculosis ■ Respiratory tuberculosis morbidity and KCD code ○ A15: Bacterial and histologically confirmed respiratory tuberculosis ○ A16: Bacterial and histological unconfirmed respiratory tuberculosis ○ A19: Miliary tuberculosis ※ Base on the 3rd level morbidity of the Korean Standard Classification of Disease (KCD)
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on tuberculosis
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Long-term care hospital, Clinic

Assessment Period	6 months
Assessment Cycle	Every year
Assessment data source	Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	Infectious and Parasitic Diseases
Background and reason for selection	■ NAT is a scan with very high specificity and short scan time. This should be performed along with smears and cultures when tuberculosis is suspected
Evidence and References	■ Treatment Guidelines for Tuberculosis (3rd Edition), 2017

Indicator numbers		01TBC0007
Indicator Name		Compliance rate of standard prescription for initial treatment
Indicator Definition		Proportion of patients who adhered to standard initial treatment regimen among new tuberculosis patients
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		In-patient, Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who adhered to the standard initial treatment regimen
	Inclusion Criteria	■ Initial treatment standard prescription (3rd, 4th) ○ If one of the following drug combinations is prescribed - HREZ - HRE - HEZ+Rfb - HE+Rfb ※ H: isoniazid, R: rifampicin (rifampin), E: ethambutol, Z: pyrazinamide, Rfb: rifabutin ■ Recognition criteria for initial treatment standard prescription ○ Period: Initial treatment standard prescription before 14 days to after 14 days at the time of confirmation of tuberculosis ○ Including drugs prescribed by the relevant institution and other institutions
	Exclusion Criteria	
	Denominator	Number of new tuberculosis patients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on tuberculosis (A15~A19)
	Exclusion Criteria	■ Drug-resistant tuberculosis patients ○ Multi-drug resistance (MDR), extensive drug resistance (XDR), H single tolerance, R single tolerance ■ Kidney disease, severe liver disease, eye disease ○ Kidney disease: Kidney disease and I120, I131 by the Charlson Cormobidity indicator ○ Severe liver disease: moderate or severe liver disease by the Charlson Cormobidity indicator ○ Ophthalmic diseases: Diseases of the eyes and appendages of the eyes according to the Korean Standard Classification of Disease (KCD) (H00~H59) ■ Patients who have reported to health institutions
Things to be considered for calculation		

Institution subject to assessment	General Hospital, Hospital, Long-term care hospital, Clinic
Assessment Period	6 months
Assessment Cycle	Every year
Assessment data source	Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	Infectious and Parasitic Diseases
Background and reason for selection	■ If the initial treatment fails and multiple drug resistant tuberculosis occurs, treatment becomes very difficult and the treatment success rate also decreases
Evidence and References	■ Treatment Guidelines for Tuberculosis (3rd Edition), 2017

Indicator numbers		01TBC0009
Indicator Name		Visit rate of tuberculosis patients
Indicator Definition		Proportion of the average number of visits per tuberculosis patient to the standard number of visits (once a month, total 6 times) during the assessment period (6 months)
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		In-patient, Out-patient
Calculation formula	Numerator	Average number of hospital visits per tuberculosis patient
	Inclusion Criteria	■ Apply common criteria to the subject of assessment of tuberculosis (A15~A19) ■ Calculation formula of the average number of hospital visits ○ Sum of number of hospital visits of new tuberculosis patients/ Number of new tuberculosis patients ■ Recognition criteria of the number of hospital visits ○ Based on the month including the time when tuberculosis was confirmed; check the presence or absence of visits at monthly intervals for 6 months including that month ○ More than one visit per month is counted as 1 visit, and a total of 6 or more visits is counted as 6 visits ○ Including visits to the relevant institution and other institutions
	Exclusion Criteria	■ Patients who died within 6 months after confirmation of tuberculosis ■ Multi-drug resistance (MDR) patients and extensive drug resistance (XDR) patients ■ Patients who have reported to health institutions
	Denominator	6 times (number of visits per month during the assessment period)
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Long-term care hospital, Clinic
Assessment Period		6 months
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.

Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	Infectious and Parasitic Diseases
Background and reason for selection	
Evidence and References	■ Treatment Guidelines for Tuberculosis (3rd Edition), 2017

Indicator numbers		01TBC0010
Indicator Name		Rate of prescription days
Indicator Definition		Proportion of the number of days of prescribed tuberculosis drugs during the assessment period (6 months, 180 days)
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		In-patient, Out-patient
Calculation formula	Numerator	Among the number of days subject to the denominator, total number of days a tuberculosis drug was prescribed to a new patient with tuberculosis
	Inclusion Criteria	■ Apply common criteria to the subject of assessment of tuberculosis (A15~A19) ■ Total number of prescription days of the tuberculosis drug ○ Number of prescription days for one or more of the following five drugs included in the standard prescription of initial treatment ○ Criteria for five drugs included in the standard prescription of initial treatment ① H: isoniazid ② R: rifampicin ③ E: ethambutol ④ Z: pyrazinamide ⑤ Rfb: rifabutin ○ If the total number of prescription days for tuberculosis drugs is 180 days or more, it is considered 180 days ※ Standard prescription of initial treatment: HERZ, HRE, HEZ+Rfb, HE+Rfb ■ Recognition criterion for the number of prescription days ○ Period: As of 6 months (180 days) from the date of prescription of the drug before 14 days to after 14 days at the time of confirmation of tuberculosis ○ Including drugs prescribed by the relevant institution and other institutions
	Exclusion Criteria	■ Patients who died within 6 months of confirmation of tuberculosis ■ Multi-drug resistance (MDR) patients and extensive drug resistance (XDR) patients ■ Patients who have reported to health institutions
	Denominator	Sum of the number of days (180 days) subject to assessment by each new tuberculosis patient
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Long-term care hospital, Clinic

Assessment Period	6 months
Assessment Cycle	Every year
Assessment data source	Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	Infectious and Parasitic Diseases
Background and reason for selection	■ For tuberculosis to be cured, it is important for the patient to receive continuous treatment, and the standard period of initial treatment for susceptible tuberculosis patients is 6 months
Evidence and References	■ Treatment Guidelines for Tuberculosis (3rd Edition), 2017

Indicator numbers		01TBC0012
Indicator Name		Rate of drug sensitivity test
Indicator Definition		Proportion of patients receiving a drug sensitivity test among the new patients with confirmed respiratory tuberculosis according to the tubercle bacillus culture test result
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		In-patient, Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients receiving a drug sensitivity test
	Inclusion Criteria	■ Drug sensitivity test types and medical fee codes ○ D6013: Special culture-acid-fast bacterium drug sensitivity (regardless of the number of drugs)-solid medium ○ D6014: Special culture-acid-fast bacterium drug sensitivity (regardless of the number of drugs)-liquid medium ※ Irrespective of the sample type and sample collection method ■ Test recognition criteria ○ Period: Test within 60 days before and after the date of tuberculosis diagnosis ○ Including tests conducted by the relevant institution and other institutions
	Exclusion Criteria	
	Denominator	Number of new respiratory tuberculosis patients with positive tubercle bacillus culture
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on tuberculosis ■ Respiratory tuberculosis morbidity and KCD code ○ A15: Bacterial and histologically confirmed respiratory tuberculosis ○ A16: Bacterial and histological unconfirmed respiratory tuberculosis ○ A19: Miliary tuberculosis ※ Base on the 3rd level morbidity of the Korean Standard Classification of Disease (KCD)
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on tuberculosis
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Long-term care hospital, Clinic
Assessment Period		6 months
Assessment Cycle		Every year
Assessment data source		Administrative data

Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	Infectious and Parasitic Diseases
Background and reason for selection	■ The drug sensitivity test is an essential test for diagnosing drug-resistant tuberculosis and selecting therapeutic agents ■ Drug sensitivity test for anti-tuberculosis drugs should be performed on the first culture strain of all tuberculosis patients
Evidence and References	■ Treatment Guidelines for Tuberculosis (3rd Edition), 2017

5.

Mental health

1) Psychiatric care for Medical Aid beneficiaries

☐ Common Criteria

※ Apply as inclusion criteria for the numerator or denominator of each indicator

○ Criteria for the subject of assessment

- **(Target diagnosis and code)** Based on the principle diagnosis of hospitalization on the statement of benefit claim specification
  - Schizophrenia, Schizotypal and Delusional disorder (F20-F29)
  - Alcohol and Drug disorders (F100-F109)

Indicator numbers		01PSY0018
Indicator Name		Median of hospitalization days of patients with schizophrenia staying in hospital
Indicator Definition		Median of cumulative hospitalization days for each medical aid psychiatric patient with schizophrenia, schizotypal disorder and delusional disorder
Status of indicator use		Regular Indicator
Quality components		Patient-centeredness
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Median of cumulative hospitalization days for each medical aid psychiatric patient with schizophrenia, schizotypal disorder and delusional disorder
	Inclusion Criteria	■ Patients subject to assessment ○ The medical aid psychiatric patient hospitalized with schizophrenia, schizotypal and delusional disorder (KCD code: F20~F29) as the main diagnosis ■ In the case of patients hospitalized before the period subject to assessment, the cumulative number of days of hospitalization is calculated from the date of initial hospitalization
	Exclusion Criteria	■ Transfer/return/death patients ■ Patients discharged during the assessment period ■ Patients who have been hospitalized for more than 10 years
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Mental hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		Mental Diseases and Disorders

Background and reason for selection	■ If the hospitalization period of the mental illness is prolonged, chronic institutionalized syndrome may occur, and it is easy to be exposed to situations in which human rights are not guaranteed, and the possibility of being exposed to clinically unnecessary hospitalization may increase ■ In Korea, the average length of hospital stay for mentally ill patients is much longer than in OECD countries, so it is necessary to find out whether there are efforts to efficiently use financial resources and allow patients to return to society appropriately
Evidence and References	■ Jinseok Lee et al., Institutional Improvement Plan for Health Promotion of Mental Illnesses, 2009 ■ Seo Dong-woo et al., Mental health programs in mental health facilities nationwide and a survey on the mental health of re-visit patients, 1999 ■ Baek Jong-woo et al., OECD (Organization for Economic Cooperation and Development), HCQI (Health Care Quality Indicator), Mental health indicator development research, 「2009 OECD Health Care Quality Indicator Production and Development Research」, Ministry of Health and Welfare·HIRA, 2009

Indicator numbers		01PSY0019
Indicator Name		Median of hospitalization days of patients with alcoholic disorder staying in hospital
Indicator Definition		Median of cumulative hospitalization days for each medical aid psychiatric patient with the alcoholic disorder
Status of indicator use		Regular Indicator
Quality components		Patient-centeredness
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Median of cumulative hospitalization days for each medical aid psychiatric patient with the alcoholic disorder
	Inclusion Criteria	■ Patients subject to assessment ○ The medical aid psychiatric patient hospitalized with alcoholic disorder (KCD code: F100-F109) as main diagnosis ■ In the case of patients hospitalized before the period subject to assessment, the cumulative number of days of hospitalization is calculated from the date of initial hospitalization
	Exclusion Criteria	■ Transfer/return/death patients ■ Patients discharged during the assessment period ■ Patients who have been hospitalized for more than 10 years
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Mental hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		Mental Diseases and Disorders

Background and reason for selection	■ According to research on the alcoholics, the admission rate of alcoholics in psychiatric hospitals continues to increase, and 50-60% of treated alcoholics recur within 3 months ■ Therefore, alcoholism is progressive and chronic, and the relapse rate is high, resulting in a large economic burden due to long-term hospitalization and loss of income. Therefore, it is necessary to make efforts to efficiently utilize financial resources and induce patients to return to society properly
Evidence and References	■ Yoon Myung-sook et al., Research on the actual condition of alcoholics and the development of rehabilitation models, Chonbuk National University·Health Promotion Support Group

Indicator numbers		01PSY0020
Indicator Name		Readmission rate of patient with schizophrenia within 30 days of discharge
Indicator Definition		Proportion of patients re-hospitalized within 30 days of discharge among medical aid psychiatric patients after receving inpatient treatment with schizophrenia, schizotypal disorder and delusional disorder
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients re-hospitalized to the same or other institutions due to schizophrenia, schizotypal and delusional disorder within 30 days of discharge from the hospital
	Inclusion Criteria	■ Patients who re-admitted due to the diseases in the same category as the subject of the denominator (schizophrenia, schizotypal and delusional disorder, KCD code: F20~F29) as main diagnosis
	Exclusion Criteria	
	Denominator	Total number of medical aid psychiatry patients discharged for schizophrenia, schizotypal and delusional disorder during the assessment period
	Inclusion Criteria	■ Patients subject to assessment ○ Medical aid psychiatric patient discharged with schizophrenia, schizotypal and delusional disorder (KCD code: F20~F29) as main diagnosis
	Exclusion Criteria	■ Transfer/return/death patients
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Mental hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		Mental Diseases and Disorders

Background and reason for selection	■ A readmission within 30 days after discharge is considered an unplanned readmission and reflects the appropriate treatment plan and preparation level at the time of discharge, as well as the support base after discharge
Evidence and References	■ Baek Jong-woo et al., OECD (Organization for Economic Cooperation and Development), HCQI (Health Care Quality Indicator), Mental health indicator development research, 「2009 OECD Health Care Quality Indicator Production and Development Research」, Ministry of Health and Welfare·HIRA, 2009 ■ OECD·WHO (World Health Organization)/OECD Korea Policy center, Health at a Glance 2012 Asia/Pacific Edition, 2013

Indicator numbers		01PSY0025
Indicator Name		Number of psychotherapy conducted per week
Indicator Definition		Number of psychotherapy conducted per week for the medical aid psychiatric inpatients
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	A value obtained by multiplying the total number of executed psychotherapy by 7 days
	Inclusion Criteria	■ Benefit-for-service list and benefit relative value scale ○ Chapter 8 psychotherapy fees
	Exclusion Criteria	■ Individual psychotherapy (NN001~NN005)
	Denominator	Total number of hospitalization days of the medical aid psychiatric patients
	Inclusion Criteria	
	Exclusion Criteria	■ Number of days staying out overnight
Things to be considered for calculation		■ Converted into weekly basis by dividing the sum of the number of psychotherapy conducted during the assessment period by the sum of the number of hospitalization days for patients hospitalized during the same period.
Institution subject to assessment		General Hospital, Hospital, Clinic, Mental hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		Mental Diseases and Disorders
Background and reason for selection		■ The treatment of mental illness is characterized by the need to be individualized centered on the patient as the individual, family, and social environment is different for each patient. Also, psychosocial treatment is important to speed up recovery and prevent recurrence ■ Considering that psychotherapy, other than drug therapy, plays a large role in psychiatric treatment, it is necessary to examine the level of implementation because it appears that medical aid patients do not receive sufficient treatment compared to NHI (National health insurance) patients in terms of the number of treatments

Evidence and References	■ Lee Hong-sik and Kim Jae-jin, 「Schizophrenia」 ■ Min Seong-gil, 「The 5th edition of the latest psychiatry」 ■ Kim Jun-hong et al., A fact-finding survey on medical aid in psychiatric hospitals and clinics

Indicator numbers		01PSY0026
Indicator Name		Number of individual psychotherapy sessions per week
Indicator Definition		Number of individual psychotherapy sessions per week for the medical aid psychiatric inpatients
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	The value obtained by multiplying the total number of executed individual psychotherapy by 7 days during the number of days subject to the denominator
	Inclusion Criteria	■ The scope and fee classification code ○ Supportive care ○ Intensive therapy ○ In-depth analysis therapy ■ Individual psychotherapy (NN001~NN005)
	Exclusion Criteria	
	Denominator	Total number of hospitalization days of the medical aid psychiatric patients
	Inclusion Criteria	
	Exclusion Criteria	■ Number of days staying out overnight
Things to be considered for calculation		■ Converted into weekly basis by dividing the sum of the number of individual psychotherapy conducted during the assessment period by the sum of the number of hospitalization days for patients hospitalized during the same period
Institution subject to assessment		General Hospital, Hospital, Clinic, Mental hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		Mental Diseases and Disorders

Background and reason for selection	■ In the treatment of mental illness, it is important to rehabilitate the patient so that he or she can function at the best possible level, and to implement psychosocial treatment including pharmacotherapy and individual psychotherapy to prevent recurrence of the acute phase. ■ Considering that psychotherapy, other than drug therapy, plays a large role in psychiatric treatment, it is necessary to examine the level of implementation because it appears that medical aid patients do not receive sufficient treatment compared to NHI (National health insurance) patients in terms of the number of treatments
Evidence and References	■ Lee Hong-sik and Kim Jae-jin, 「Schizophrenia」 ■ Min Seong-gil, 「The 5th edition of the latest psychiatry」 ■ Kim Jun-hong et al., A fact-finding survey on medical aid in psychiatric hospitals and clinics

Indicator numbers		01PSY0031
Indicator Name		Rate of referring schizophrenics to community service
Indicator Definition		Proportion patients with records of being referred to community service at discharg after receving inpatient treatment among medical aid psychiatric patients with schizophrenia, schizotypal disorder and delusional disorder
Status of indicator use		Regular Indicator
Quality components		Coordination
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the proportion of patients with records of being referred to community service at discharge
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Total number of medical aid psychiatry patients discharged for schizophrenia, schizotypal and delusional disorder during the assessment period
	Inclusion Criteria	■ Patients subject to assessment ○ Medical aid psychiatric patient discharged with schizophrenia, schizotypal and delusional disorder (KCD code: F20~F29) as main diagnosis
	Exclusion Criteria	■ Among the subject of the denominator, the number of patients who were rejected for community connection referrals upon discharge ■ Deceased patient
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Mental hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form), Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		Mental Diseases and Disorders

Background and reason for selection	■ Patients with mental illness need continuous treatment and community service linkage for adaptation to social life even after discharge. Therefore, it is possible to reduce the recurrence rate and increase the possibility of a complete recovery through community service. ■ Medical institutions have a legal obligation to refer mentally ill patients to community mental health welfare centers, etc.
Evidence and References	■ Article 52 of the Act On The Improvement Of Mental Health And The Support For Welfare Services For Mental Patients, Article 41 of the Enforcement Rule Of the Act On The Improvement Of Mental Health And The Support For Welfare Services For Mental Patients (Notification of facts such as discharge, etc.)

Indicator numbers		01PSY0034
Indicator Name		Median of hospitalization days of patients discharged with schizophrenia
Indicator Definition		Median of cumulative hospitalization days for each medical aid psychiatric patients being discharged after receving inpatient treatment for schizophrenia, schizotypal disorder and delusional disorder
Status of indicator use		Regular Indicator
Quality components		Patient-centeredness
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Median of cumulative hospitalization days for each medical aid psychiatric patients being discharged with schizophrenia, schizotypal disorder and delusional disorder during the assessment period
	Inclusion Criteria	■ Patients subject to assessment ○ Medical benefit psychiatric patients discharged with schizophrenia, schizotypal, or delusional disorder (KCD code: F20~F29) as the main diagnosis ■ In the case of patients hospitalized before the period subject to assessment, the cumulative number of days of hospitalization is calculated from the date of initial hospitalization
	Exclusion Criteria	■ Transfer/return/death patients ■ Patients who have been hospitalized for more than 10 years
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Mental hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		Mental Diseases and Disorders

Background and reason for selection	■ If the hospitalization period of the mentally illness is prolonged, chronic institutionalized syndrome may occur, and it is easy to be exposed to situations in which human rights are not guaranteed, and the possibility of being exposed to clinically unnecessary hospitalization may increase ■ In Korea, the average length of hospital stay for mentally ill patients is much longer than in OECD countries, so it is necessary to find out whether there are efforts to efficiently use financial resources and allow patients to return to society appropriately
Evidence and References	■ Jinseok Lee et al., Institutional Improvement Plan for Health Promotion of Mental Illnesses, 2009 ■ Seo Dong-woo et al., Mental health programs in mental health facilities nationwide and a survey on the mental health of re-visit patients, 1999 ■ Baek Jong-woo et al.,, OECD (Organization for Economic Cooperation and Development), HCQI (Health Care Quality Indicator), Mental health indicator development research, 「2009 OECD Health Care Quality Indicator Production and Development Research」, Ministry of Health and Welfare·HIRA, 2009

Indicator numbers		01PSY0035
Indicator Name		Median of hospitalization days of patient discharged with alcohol use disorder
Indicator Definition		Median of cumulative hospitalization days for each medical aid psychiatric patients being discharged after receiving inpatient treatment for the alcoholic disorder
Status of indicator use		Regular Indicator
Quality components		Patient-centeredness
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Median of cumulative hospitalization days for each medical aid psychiatric patients being discharged with the alcoholic disorder during the assessment period
	Inclusion Criteria	■ Patients subject to assessment ○ The medical aid psychiatric patient discharged with alcoholic disorder (KCD code: F100~F109) as main diagnosis ■ In the case of patients hospitalized before the period subject to assessment, the cumulative number of days of hospitalization is calculated from the date of initial hospitalization
	Exclusion Criteria	■ Transfer/return/death patients ■ Patients who have been hospitalized for more than 10 years
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Mental hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		Mental Diseases and Disorders

Background and reason for selection	■ According to research on the alcoholics, the admission rate of alcoholics in psychiatric hospitals continues to increase, and 50-60% of treated alcoholics recur within 3 months ■ Therefore, alcoholism is progressive and chronic, and the relapse rate is high, resulting in a large economic burden due to long-term hospitalization and loss of income. Therefore, it is necessary to make efforts to efficiently utilize financial resources and induce patients to return to society properly
Evidence and References	■ Yoon Myung-sook et al., Research on the actual condition of alcoholics and the development of rehabilitation models, Chonbuk National University·Health Promotion Support Group

Indicator numbers		01PSY0038
Indicator Name		Rate of performing patient experience surveys
Indicator Definition		Proportion of patients receiving a patient experience survey when discharged after receving inpatient treatment among medical aid psychiatric patients
Status of indicator use		Pilot Indicator
Quality components		Patient-centeredness
Indicator type		Patient experience
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who were subjected to patient experience survey when discharged from the hospital
	Inclusion Criteria	■ Contents of patient experience survey ○ Treatment staff's attitude, quality of treatment, environment, etc. ■ Patient experience survey tool ○ Provide the standard questionnaire of the HIRA ○ Institutions can use the questionnaire by modifying it, including adding questions to the questionnaire
	Exclusion Criteria	
	Denominator	Total number of medical aid psychiatry patients discharged from hospital during the assessment period
	Inclusion Criteria	
	Exclusion Criteria	■ Deceased patient
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Mental hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form), Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		Mental Diseases and Disorders

Background and reason for selection	■ It is important to collect opinions to improve the quality of medical services centered on medical service users, and it is in line with the international trend that emphasizes the improvement of the medical service environment and quality improvement through medical service users
Evidence and References	

Indicator numbers		01PSY0039
Indicator Name		Rate of patients with schizophrenia or alcoholic disorder who visited the day ward or outpatients clinic within 30 days of discharge
Indicator Definition		Proportion of patients who visited the day ward or receiving outpatient treatment within 30 days after discharge among medical aid psychiatric patients who are hospitalized with schizophrenia, schizotypal disorder and delusional disorder
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who visited the day ward of the same or other institutions or receiving outpatient treatment due to schizophrenia, schizotypal and delusional disorder or alcoholic disorder
	Inclusion Criteria	■ A medical aid psychiatric patient who visited the day ward or received outpatient treatment for schizophrenia, schizotypal disorder and delusional disorder (KCD code: F20~F29) or alcoholic disorder (KCD code: F100~F109) as the main diagnosis in the same category with the subject of the denominator ■ If the day ward and outpatient visit were overlapped, counted as one patient
	Exclusion Criteria	
	Denominator	Total number of medical aid psychiatry patients discharged with schizophrenia, schizotypal and delusional disorder or alcoholic disorder during the assessment period
	Inclusion Criteria	■ Patients subject to assessment ○ medical aid psychiatric patient discharged with main diagnosis of schizophrenia, schizotypal and delusional disorder (KCD code: F20~F29) or alcoholic disorder (KCD code: F100~F109)
	Exclusion Criteria	■ Transfer·return·death patients
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Mental hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		

Interpretation of output	The higher, the better.
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	Mental Diseases and Disorders
Background and reason for selection	■ If a discharged patient visits an outpatient or day ward within 30 days, the follow-up treatment connection proceeds smoothly and the possibility of readmission can be lowered ■ Therefore, the mentally illness should receive continuous treatment and management through outpatient and day ward care so that they can return to the community after discharge
Evidence and References	

Indicator numbers		01PSY0040
Indicator Name		Rate of voluntary admission
Indicator Definition		Proportion of voluntarily hospitalized patients among hospitalized medical aid psychiatric patients
Status of indicator use		Pilot Indicator
Quality components		Patient-centeredness
Indicator type		Patient experience
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of voluntarily hospitalized patients by voluntary consent
	Inclusion Criteria	■ Voluntary hospitalization patients. ○ Cases listed as 'voluntary hospitalization' in the hospitalization type* on the medical aid claim specification (form) * Type of hospitalization · Voluntary hospitalization · Hospitalization by a guardian · Hospitalization by the head of a Si/Gun/Gu · Emergency hospitalization · Others
	Exclusion Criteria	
	Denominator	Total number of hospitalized patients in medical aid psychiatry
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Mental hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		Mental Diseases and Disorders
Background and reason for selection		■ In order to strengthen the motivation for treatment through voluntary hospitalization and protect human rights, it is necessary to increase rate of voluntary hospitalization and keep pace with the international trend of reducing involuntary hospitalization

Evidence and References	■ Article 41 (Voluntary Hospitalization, etc.) and 42 (Hospitalization, etc. with Consent) of the Act On The Improvement Of Mental Health And The Support For Welfare Services For Mental Patients

Indicator numbers		01PSY0041
Indicator Name		Rate of oral atypical drug received for the schizophrenics
Indicator Definition		Proportion of oral atypical drug administration days out of number of oral antipsychotic drug administration days for the medical aid psychiatric patient with schizophrenia, schizotypal disorder and delusional disorder
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of administration days subject to denominator, the number of oral atypical drug administration days
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of days of oral antipsychotic drug administration in medical aid psychiatric patients hospitalized for schizophrenia, schizotypal & delusional disorder
	Inclusion Criteria	■ Patients subject to assessment ○ Medical aid psychiatric patient discharged with schizophrenia, schizotypal and delusional disorder (KCD code: F20~F29) as main diagnosis
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Mental hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		Mental Diseases and Disorders

Background and reason for selection	■ The development of atypical antipsychotic drugs has greatly expanded the range of drug selection, and the treatment goal has also been greatly expanded to include not only positive symptoms of schizophrenia, but also negative symptoms, cognitive function, and quality of life, improving the overall quality of treatment for schizophrenia ■ Compared to typical antipsychotic drugs, atypical antipsychotic drugs have a lower risk of extrapyramidal symptoms and a tendency to reduce the recurrence rate
Evidence and References	■ Kim Yong-sik et al., Clinical trial of atypical antipsychotics, Seoul National University Press, 2004 ■ Kim Chanh-yung, Biological Therapy, 「The 5th edition of the latest psychiatry」, Min Seong-gil

Indicator numbers		01PSY0042
Indicator Name		Readmission rate of alcohol use disorder patients within 30 days after discharge
Indicator Definition		Proportion of patients re-hospitalized within 30 days of discharge among medical aid psychiatric patients after receving inpatient treatment with the alcoholic disorder
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients re-hospitalized to the same or other institutions within 30 days of discharge due to the alcoholic disorder
	Inclusion Criteria	■ A patient rehospitalized with alcoholic disorder in the same category as the subject of the denominator as the main diagnosis (KCD code: F100~F109)
	Exclusion Criteria	
	Denominator	Total number of medical aid psychiatry patients discharged for alcoholic disorder during the assessment period
	Inclusion Criteria	■ Patients subject to assessment ○ Patients discharged with main diagnosis of alcoholic disorder (KCD code: F100~F109)
	Exclusion Criteria	■ Transfer·return·death patients
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Mental hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		Mental Diseases and Disorders
Background and reason for selection		■ A readmission within 30 days after discharge is considered an unplanned readmission and reflects the appropriate treatment plan and preparation level at the time of discharge, as well as the support base after discharge

Evidence and References	■ Ashton, CM,. And Wray, N.P, A conceptual framework for the study of early readmission as an indicator of quality of care. SOC Sci Med, 1996 ■ Baek Jong-woo et al., OECD (Organization for Economic Cooperation and Development), HCQI (Health Care Quality Indicator), Mental health indicator development research, 「2009 OECD Health Care Quality Indicator Production and Development Research」, Ministry of Health and Welfare·HIRA, 2009

2) Psychiatric hospitalization

☐ Common Criteria

※ Apply as inclusion criteria for the numerator or denominator of each indicator

○ Criteria for the subject of assessment

- **(Target patient)** Health insurance patients admitted to the psychiatry ward due to mental and behavioral disorders during the assessment period
- **(Target diagnosis and code)** Mental and behavioral disorders (F00-F99) (based on principal diagnosis at discharge)

Indicator numbers		01MHH0001
Indicator Name		Rate of performing the functional outcome scale at hospitalization
Indicator Definition		Proportion of patients receiving a functional outcome scale at hospitalization among hospitalized patients with mental and behavioral disorders
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients receiving a functional outcome scale at hospitalization
	Inclusion Criteria	■ If the functional outcome scale was performed within 3 days after hospitalization (including holidays) ■ Types of tools for functional outcome scale ○ HoNOS (Health of nation outcome scale) ○ GAF (Global Assessment of Functioning) ○ CGI (The Clinical Global Impressions) ○ WHODAS 2.0 (WHO Disability Assessment Schedule 2.0)
	Exclusion Criteria	
	Denominator	Number of patients hospitalized with mental and behavioral disorders
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on mental health hospitalization
	Exclusion Criteria	■ Patients discharged·dead·transferred·returned within 3 days of hospitalization
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Mental hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		Mental Diseases and Disorders
Background and reason for selection		■ In case of hospitalization of mentally ill patients, essential screening tests should be performed for patient safety and treatment plan establishment

Evidence and References	■ Lee Hae-jeong and Kim Da-jeong. The World Health Organization's Functional Constraint Assessment List 2.0: 12-item-version of Hangul tool development and reliability test. Journal of the Korean Physical Society 2011;6(4). ■ The Joint Commission. Specifications Manual for Joint Commission National Quality Measures Version 2017A. [Available from: https://www.jointcommission.org/specifications_manual_joint_commission_national_quality_core_measures.aspx] ■ Jacobs, R. Investigating Outcome Measures in Mental Health: CHE Research Paper No.48. 2009. [Available from: http://eprints.whiterose.ac.kr/139380/1/CHERP48.pdf]

Indicator numbers		01MHH0002
Indicator Name		Rate of performing the functional outcome scale at discharge
Indicator Definition		Proportion of patients receiving a functional outcome scale at discharge among patients discharged after receiving inpatient treatment for mental and behavioral disorders
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients receiving a functional outcome scale at discharge
	Inclusion Criteria	■ If the functional outcome scale was performed within 7 days before discharge (including holidays) ■ Types of tools for functional outcome scale ○ HoNOS (Health of nation outcome scale) ○ GAF (Global Assessment of Functioning) ○ CGI (The Clinical Global Impressions) ○ WHODAS 2.0 (WHO Disability Assessment Schedule 2.0)
	Exclusion Criteria	
	Denominator	Total number of patients discharged for mental and behavioral disorders
	Inclusion Criteria	■ Patients subject to assessment ○ NHI (National health insurance) patients discharged from psychiatry with mental and behavioral disorders (KCD code: F00~F99, based on main diagnosis) during the period subject to the assessment
	Exclusion Criteria	■ Patients discharged/dead/transferred/returned within 7 days of hospitalization ■ Dead patient
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Mental hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		Mental Diseases and Disorders

Background and reason for selection	■ It is necessary to re-assess whether the function and symptoms have improved before discharge for community adaptation and follow-up treatment
Evidence and References	■ Lee Hae-jeong and Kim Da-jeong. The World Health Organization's Functional Constraint Assessment List 2.0: 12-item-version of Hangul tool development and reliability test. Journal of the Korean Physical Society 2011;6(4). ■ Jacobs, R. Investigating Outcome Measures in Mental Health: CHE Research Paper No.48. 2009. [Available from: http://eprints.whiterose.ac.kr/139380/1/CHERP48.pdf]

Indicator numbers		01MHH0003
Indicator Name		Rate of performing assessment on psychiatric symptoms or abnormal reaction of the schizophrenic
Indicator Definition		Proportion of patients receiving psychological symptoms and abnormal reaction assessment among patients hospitalized for the schizophrenia
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients receiving psychological symptoms and abnormal reaction assessment
	Inclusion Criteria	■ In the case where the assessment of psychiatric symbols or abnormal reaction is performed more than once ■ Assessment tool for psychiatric symptoms and abnormal reaction ○ (Assessment tool for psychiatric symptoms) Positive and negative syndrome scale (PANSS, FY721), Brief psychiatric rating scale (BPRS, FY722) ○ (Assessment tool for adverse reaction) Extrapyramidal symtoms rating scale (ESRS, FY735)
	Exclusion Criteria	
	Denominator	Number of patients hospitalized with schizophrenia during the period subject to the assessment
	Inclusion Criteria	■ NHI (National health insurance) patients admitted to psychiatry with schizophrenia (KCD code: F20~F29, based on main diagnosis) during the period subject to the assessment
	Exclusion Criteria	■ Dead·transferred·returned patiens
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Mental hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		Mental Diseases and Disorders

Background and reason for selection	■ Periodic assessment of psychiatric symptoms is necessary during inpatient treatment to establish and change a treatment plan ■ Abnormal reaction of antipsychotic drugs is known to be associated with a decrease in quality of life, drug non-compliance, induction of physical disease complications, and increase in excess mortality. Therefore, it is necessary to assess abnormal reactions in pharmacotherapy patients
Evidence and References	■ National Institute for health Clinical Excellence (NICE). Psychosis and schizophrenia in adults: Prevention and management. NICE clinical guideline 178. 2014.[Available from: https://www.nice.org.uk/guidance/cg178]

Indicator numbers		01MHH0004
Indicator Name		Number of psychotherapy per week
Indicator Definition		Number of psychotherapy per week for patients hospitalized with mental and behavioral disorders
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	The value obtained by multiplying the total number of executed psychotherapy by 7 days during the number of days subject to the denominator
	Inclusion Criteria	■ The sum of the number of psychotherapy conducted during the assessment period is divided by the sum of the number of hospitalization days of patients hospitalized during the same period and converted into a weekly basis ■ Recognition criteria of psychotherapy ○ Group psychotherapy [NN021 supportive-expression group psychotherapy, NN022 dynamic interactive group psychotherapy, NN023 psychodrama)] ○ Family therapy [NN031 individual, NN032 family] ○ Occupational and Recreational Therapy [NN040] ○ Group Cognitive Behavioral Therapy [NN062] ○ Psychiatric rehabilitation [NN090] ○ Psychiatric social work [NN111 personal history survey, NN112 social work guidance, NN113 social survey, NN114 home visit]
	Exclusion Criteria	■ Psychotherapy exclusion criteria ○ Individual psychotherapy [NN001~NN005] ○ Drug use interview [NN050] ○ Individual cognitive behavioral therapy [NN061] ○ Electroshock therapy [NN071, NN072] ○ Continuous sleep therapy [NN081~NN083] ○ Psychiatric first aid [NN100]
	Denominator	Total number of hospitalization days of patients hospitalized for mental and behavioral disorders
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on mental health hospitalization
	Exclusion Criteria	■ Number of days staying out overnight ■ Patients with actual hospitalization days less than 7 days
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Mental hospital

Assessment Period	6 months
Assessment Cycle	Undecided
Assessment data source	Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	Mental Diseases and Disorders
Background and reason for selection	■ In addition to drug therapy, psychotherapy accounts for a large proportion of psychiatric treatment. This is because it is important to speed up patient recovery and prevent recurrence
Evidence and References	■ Min Seong-gil et al. Latest Psychiatry 6th Edition. Iljogak. 2016.

Indicator numbers		01MHH0005
Indicator Name		Number of individual psychotherapy per week
Indicator Definition		Number of individual psychotherapy per week for patients hospitalized with mental and behavioral disorders
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	The value obtained by multiplying the total number of executed individual psychotherapy by 7 days during the number of days subject to the denominator
	Inclusion Criteria	■ The sum of the number of individual psychotherapy performed during the assessment period is divided by the total number of days of hospitalization for patients hospitalized during the same period and converted into a weekly basis ■ Recognition criteria of the individual psychotherapy ○ Individual psychotherapy [NN001 individual psychotherapy Ⅰ, NN002 individual psychotherapy Ⅱ, NN003 individual psychotherapy Ⅲ, NN004 individual psychotherapy Ⅳ, NN005 individual psychotherapy Ⅴ] ○ Individual cognitive behavioral therapy [NN061]
	Exclusion Criteria	
	Denominator	Total number of hospitalization days of patients hospitalized for mental and behavioral disorders
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on mental health hospitalization
	Exclusion Criteria	■ Number of days staying out overnight ■ Patients with actual hospitalization days less than 7 days
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Mental hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		Mental Diseases and Disorders

Background and reason for selection	■ In addition to drug therapy, psychotherapy accounts for a large proportion of psychiatric treatment. This is because it is important to speed up patient recovery and prevent recurrence
Evidence and References	■ Min Seong-gil et al. Latest Psychiatry 6th Edition. Iljogak. 2016.

Indicator numbers		01MHH0007
Indicator Name		Median of hospitalization days of patients staying in hospital
Indicator Definition		Median cumulative hospitalization days for each patient who is hospitalized due to mental and behavioural disorders
Status of indicator use		Regular Indicator
Quality components		Patient-centeredness
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Median of cumulative hospitalization days for each patient who is hospitalized due to mental and behavioural disorders
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on mental health hospitalization ■ For patients who have been hospitalized since the period subject to the assessment, the cumulative number of hospitalization days is calculated from the first hospitalization date
	Exclusion Criteria	■ Dead·transferred·returned patiens ■ Patients discharged during the assessment period ■ Hospitalized patients over 3 years
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Mental hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		Mental Diseases and Disorders

Background and reason for selection	■ If the hospitalization period of the mentally illness is prolonged, chronic institutionalized syndrome may occur, and it is easy to be exposed to situations in which human rights are not guaranteed, and the possibility of being exposed to clinically unnecessary hospitalization may increase ■ In Korea, the average length of hospital stay for mentally ill patients is much longer than in OECD countries, so it is necessary to find out whether there are efforts to efficiently use financial resources and allow patients to return to society appropriately
Evidence and References	■ OECD. Raising awareness of the importance of mental health care. OECD Korea Policy Centre. 2015. ■ Lee Jin-seok et al. A study to develop assessment indicatores for psychiatric institutions and establish an assessment system. Seoul National University·Health Promotion Project Group. 2010. ■ Kim Seon-min et al. 2009 OECD Health Care Quality Indicator Production and Development Study. Ministry of Health and Welfare· HIRA. 2009.12. ■ Kim Jun-Hong et al. A survey on current status of the medical aid in psychiatric hospitals and clinics-price system and system improvement plan. Korea Hospital Management Research Institute·Health Promotion Project Support Group. 2007.5. ■ World Health Organization (WHO). Mental Health ATLAS 2017. WHO. 2018.

Indicator numbers		01MHH0008
Indicator Name		Median of hospitalization days of patients being discharged
Indicator Definition		Median of cumulative hospitalization days per patient discharged after inpatient treatment for mental and behavioral disorders
Status of indicator use		Regular Indicator
Quality components		Patient-centeredness
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Median of cumulative hospitalization days of patients discharged with mental and behavioral disorders
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on mental health hospitalization ■ For patients who have been hospitalized since the period subject to the assessment, the cumulative number of hospitalization days is calculated from the first hospitalization date
	Exclusion Criteria	■ Dead·transferred·returned patiens ■ Continuous hospitalization patient during the assessment period. ■ Patients discharged within 3 days of hospitalization. ■ Discharged patients who have been hospitalized for more than 3 years.
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Mental hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		Mental Diseases and Disorders

Background and reason for selection	■ If the hospitalization period of the mentally illness is prolonged, chronic institutionalized syndrome may occur, and it is easy to be exposed to situations in which human rights are not guaranteed, and the possibility of being exposed to clinically unnecessary hospitalization may increase. ■ In Korea, the average length of hospital stay for mentally ill patients is much longer than in OECD countries, so it is necessary to find out whether there are efforts to efficiently use financial resources and allow patients to return to society appropriately
Evidence and References	■ OECD. Raising awareness of the importance of mental health care. OECD Korea Policy Centre. 2015. ■ Lee Jin-seok et al. A study to develop assessment indicatores for psychiatric institutions and establish an assessment system. Seoul National University·Health Promotion Project Group. 2010. ■ Kim Seon-min et al. 2009 OECD Health Care Quality Indicator Production and Development Study. Ministry of Health and Welfare· HIRA. 2009.12. ■ Kim Jun-Hong et al. A survey on current status of the medical aid in psychiatric hospitals and clinics-price system and system improvement plan. Korea Hospital Management Research Institute·Health Promotion Project Support Group. 2007.5. ■ World Health Organization (WHO). Mental Health ATLAS 2017. WHO. 2018.

Indicator numbers		01MHH0009
Indicator Name		Rate of outpatient or day care ward visits within 30 days of discharge
Indicator Definition		Proportion of patients who visited the day ward or receiving outpatient treatment within 30 days after discharge Among patients discharged after inpatient treatment for mental and behavioral disorders
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients re-hospitalized to the same or other institutions within 30 days of discharge
	Inclusion Criteria	■ Patients with mental and behavioral disorders (KCD code: F00~F99, based on the main diagnosis) who visited the day ward or outpatient department of the same or other institutions due to illness ■ Multiple visits to the outpatient and day ward are counted as one patient
	Exclusion Criteria	
	Denominator	Total number of patients discharged for mental and behavioral disorders
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on mental health hospitalization
	Exclusion Criteria	■ Patients re-admitted for mental illness to the same or another medical institution within 30 days of discharge (KCD code: F00~F09, F20~F99, criteria for main diagnosis upon discharge) ■ Dead·transferred·returned patiens
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Mental hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		Mental Diseases and Disorders

Background and reason for selection	■ If a discharged patient visits an outpatient or day ward within 30 days, the follow-up treatment connection proceeds smoothly and the possibility of readmission can be lowered ■ Therefore, the mentally illness should receive continuous treatment and management through outpatient and day ward care so that they can return to the community after discharge
Evidence and References	■ National Center for Mental Health. 3rd Preliminary Survey Results Report on National Mental Health Status. Ministry of Health and Welfare·National Center for Mental Health. 2017. ■ OECD. Raising awareness of the importance of mental health care. OECD Korea Policy Centre. 2015. ■ Center for Medicare & Medicaid Services (CMS). Inpatient Psychiatric Facility Quality Reporting Program Manual Version 3.0. 2017.6.13. [Available from: https://www.qualitynet.org/dcs/ContentServer?cid=1228772864255&pagename=QnetPublic%2FPage%2FQnetTier4&c=Page]

Indicator numbers		01MHH0011
Indicator Name		Readmission rate within 30 days after discharge
Indicator Definition		Proportion of patients re-hospitalized within 30 days of discharge among patients discharged after inpatient treatment for mental and behavioral disorders
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients re-hospitalized to the same or other institutions within 30 days of discharge due to the mental illness
	Inclusion Criteria	■ A patient admitted to the same or another medical institution with mental and behavioral disorders (KCD code: F00~F99, based on main diagnosis) within 30 days of discharge
	Exclusion Criteria	■ A patient re-admitted to the day ward
	Denominator	Total number of patients discharged for mental and behavioral disorders
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on mental health hospitalization
	Exclusion Criteria	■ Dead·transferred·returned patiens ■ Alcohol and drug disorder patients (KCD code: F10~F19, criteria for main diagnosis upon discharge)
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Mental hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		Mental Diseases and Disorders
Background and reason for selection		■ A readmission within 30 days after discharge is considered an unplanned readmission and reflects the appropriate treatment plan and preparation level at the time of discharge, as well as the support base after discharge

Evidence and References	■ National Center for Mental Health. 3rd Preliminary Survey Results Report on National Mental Health Status. Ministry of Health and Welfare·National Center for Mental Health. 2017. ■ OECD. Raising awareness of the importance of mental health care. OECD Korea Policy Centre. 2015. ■ Lee Jin-seok et al. A study to develop assessment indicatores for psychiatric institutions and establish an assessment system. Seoul National University·Health Promotion Project Group. 2010. ■ Center for Medicare & Medicaid Services (CMS). Inpatient Psychiatric Facility Quality Reporting Program Manual Version 3.0. 2017.6.13. [Available from: https://www.qualitynet.org/dcs/ContentServer?cid=1228772864255&pagename=QnetPublic%2FPage%2FQnetTier4&c=Page]

Indicator numbers		01MHH0017
Indicator Name		Rate of performing patient experience surveys at discharge
Indicator Definition		Proportion of patients receiving a patient experience survey at discharge among patients discharged after voluntary hospitalized due to mental and behavioral disorders
Status of indicator use		Pilot Indicator
Quality components		Patient-centeredness
Indicator type		Patient experience
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients receiving patient experience survey at discharge
	Inclusion Criteria	■ Contents of patient experience survey ○ Treatment staff's attitude, quality of treatment, environment, etc. ■ Patient experience survey tool ○ Institutions can use the questionnaire by modifying it, including adding questions to the questionnaire
	Exclusion Criteria	
	Denominator	Number of patients discharged after voluntary hospitalization for mental and behavioral disorders
	Inclusion Criteria	■ Patients subject to assessment ○ NHI (National Health insurance) patients discharged after voluntary (with voluntary consent) hospitalization for mental and behavioral disorders (KCD code: F00~F99, based on main diagnosis) during the assessment period
	Exclusion Criteria	■ Discharged patients who are against medical recommendations ■ Patients who reject or do not respond to questionnaires
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Mental hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		Mental Diseases and Disorders

Background and reason for selection	■ It is important to collect opinions to improve the quality of medical services with a focus on medical service users, and it is in line with the international trend that emphasizes improvement of the medical service environment and quality improvement through medical service users ■ This is to induce psychiatric institutions to conduct patient experience survey on items such as the attitude of the medical staff, quality of treatment, and environment, and to create an environment in which the results of the research can be reflected in treatment
Evidence and References	

3) Depression (out-patient)

☐ Common Criteria

※ Apply as inclusion criteria for the numerator or denominator of each indicator

○ Criteria for the subject of assessment

- **(Target patient)** New outpatients over the age of 18 with depression* (National Health Insurance and Medical Aid, Patriots and Veterans Insurance)

  * Operational Definition of "New Outpatient with Depression"

  · Patients with no history of prescribed antidepressants or psychotherapy for a depressive disorder (both principal/secondary diagnosis) during the period six months prior to the first visit of the assessment period

- **(Target diagnosis and code)** Principal diagnosis and up to the second sub-diagnosis

  • Depressive episode* (F32)
  • Recurrent depressive disorder* (F33)
  • Other mood [affective] disorders* (F38)
  • Unspecified mood [affective] disorder* (F39)
  • Dysthymia (Persistent depression disorder) (F341)
  • Other persistent mood[affective] disorders (F348)
  • Persistent mood[affective] disorder, unspecified (F349)
  • Mixed anxiety and depressive disorder (F412)

  * Including the sub-codes of diseases

○ Exclusion criteria for the subject of assessment

- Depressed outpatients who have been hospitalized for depression within the assessment period
- Depressed patients who received hospitalization or outpatient treatment for schizophrenia (F20-F28), manic episode (F30), bipolar affective disorder (F31)
- Depressed patients who received hospitalization or outpatient treatment for unspecified nonorganic psychosis (F29, principal diagnosis only)

- Depressed outpatients who use more than one medical institution or have returned
- Patients who died within the assessment period

Indicator numbers		01DEP0001
Indicator Name		Return rate within 3 weeks after first visit
Indicator Definition		Proportion of new depression outpatients who re-visited hospital within 3 weeks after the first visit
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of outpatient revisits within 3 weeks of the first visit
	Inclusion Criteria	■ Definition of first visit ○ A case where the first outpatient treatment is implemented within the assessment period due to depression ■ Definition of re-visit ○ In the case that antidepressant prescription and/or psychotheraphy is performed by visiting same institution due to deprresion within 3 weeks (21days) from the day after the first visit ■ Recognition criteria of the antidepressant ○ Antidepressant listed on National health insurance drug price - Citalopram, Escitalopram, Fluoxetine, Fluvoxamine, Paroxetine, Sertraline, Desvenlafaxine, Duloxetine, Milnacipran, Venlafaxine, Moclobemide, Amitriptyline, Amoxapine, Clomipramine, Doxepin, Imipramine, Nortriptyline, Agomelatine, Bupropion, Mirtazapine, Tianeptine, Trazodone, Vortioxetine, Hypericin herba ■ Recognition criteria of the psychotherapy ○ Psychotherapy listed in National health insurance benefit ① Individual psychotherapy - Individual psychotherapy Ⅰ (NN001), Individual psychotherapy Ⅱ (NN002), Individual psychotherapy Ⅲ (NN003), Individual psychotherapy Ⅳ (NN004), Individual psychotherapy Ⅴ (NN005) ② Group psychotherapy - Supportive expression group psychotherapy (NN021), Dynamic interactive group psychotherapy (NN022), Psychotherapeutic drama (NN023) ③ Family therapy: Individual (NN031), Group (NN032) ④ Occupational and Recreational Therapy (NN040) ⑤ Drug use interview (NN050) ⑥ Cognitive behavioral therapy: Individual (NN061), Group (NN062) ⑦ Electroshock therapy: General electroshock therapy (NN071), Special electroshock therapy (NN072) ⑧ Continuous sleep therapy: Electricity (NN081), Drugs (NN082), Anesthesia (NN083) ⑨ Psychiatric rehabilitation (NN090)

		⑩ Psychiatric first aid (NN100) ⑪ Psychiatric social work: Personal history survey (NN111), Social work guidance (NN112), Social survey (NN113), Home visit (NN114)
	Exclusion Criteria	
	Denominator	Number of new depression outpatients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on depression outpatient ■ Criteria for new depression outpatients ○ Patients with no history of prescribing antidepressants or psychotherapy for 6 months prior to the first visit during the period subject to the assessment
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on depression outpatient
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Long-term care hospital, Clinic
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Mental Diseases and Disorders
Background and reason for selection		■ The treatment of depression is largely divided into pharmacotherapy and psychotherapy. In the case of pharmacotherapy, the initial step-by-step increase and management of side effects affect future drug effects or drug adherence. In the case of psychotherapy, the higher the frequency at the beginning of treatment, the more helpful it is to improve depression. ■ Since rate of remission varies depending on the response of the initial treatment, it is necessary to monitor the initial treatment response and side effects as soon as possible after the initial prescription of the antidepressant and adjust the drug accordingly.
Evidence and References		■ HIRA. Preparation of measures to assess the quality of treatment for depression outpatients. 2019. ■ Kim Young-sik. Guidelines for the treatment of depression in primary care. 2011 Fall Integrated Conference Training Lecture Collection of the Korean Society for Health Promotion and Diseases Prevention. 2011.

	■ Working committee of Korean-style depressive disorder pharmacotherapy algorithm. Guideline on pharmacotherapy for Korean depressive disorder 2017. Korean Soceity for Affective Disorders, Korean College of Neuropsychopharmacology. 2017. ■ American Psychiatric Association (APA). Practice Guideline for the Treatment of Patients With Major Depressive Disorder, Third Edition. 2010. ■ Center for quality assessment and Improvement in mental health (CQAIMH). Quality Measure/Follow-up visits in antidepressant treatment. APA_CQAIMH. 2000. [available from] http://www.cqaimh.org/searchmeasures.asp ■ National Institute for Health and Care Excellence (NICE). Depression in adults: recognition and management. NICE. 2019. ■ Peter Voore et al. Quality Standards Major Depression: Care for Adults and Adolescents. Health Quality Ontario (Toronto, Ontario). 2016.

Indicator numbers		01DEP0002
Indicator Name		Rate of 3 or more visits within 8 weeks after the first visit
Indicator Definition		Proportion of new depression outpatients who visited the hospital 3 or more times within 8 weeks after the first visit
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Number of outpatients who visited the hospital 3 or more times within 8 weeks after the first visit
	Inclusion Criteria	■ Definition of first visit ○ A case where the first outpatient treatment is implemented within the assessment period due to depression ■ Definition of 3 or more visits. ○ Cases of 3 or more outpatient visits with antidepressant prescription and/or psychotherapy at the same institution due to depressive within 8 weeks (56 days) from the day after the first visit ■ Recognition criteria of the antidepressant ○ Antidepressant listed on National health insurance drug price - Citalopram, Escitalopram, Fluoxetine, Fluvoxamine, Paroxetine, Sertraline, Desvenlafaxine, Duloxetine, Milnacipran, Venlafaxine, Moclobemide, Amitriptyline, Amoxapine, Clomipramine, Doxepin, Imipramine, Nortriptyline, Agomelatine, Bupropion, Mirtazapine, Tianeptine, Trazodone, Vortioxetine, Hypericin herba ■ Recognition criteria of the psychotherapy ○ Psychotherapy listed in National health insurance benefit ① Individual psychotherapy - Individual psychotherapy Ⅰ (NN001), Individual psychotherapy Ⅱ (NN002), Individual psychotherapy Ⅲ (NN003), Individual psychotherapy Ⅳ (NN004), Individual psychotherapy Ⅴ (NN005) ② Group psychotherapy - Supportive expression group psychotherapy (NN021), Dynamic interactive group psychotherapy (NN022), Psychotherapeutic drama (NN023) ③ Family therapy: Individual (NN031), Group (NN032) ④ Occupational and Recreational Therapy (NN040) ⑤ Drug use interview (NN050) ⑥ Cognitive behavioral therapy: Individual (NN061), Group (NN062) ⑦ Electroshock therapy: General electroshock therapy (NN071), Special electroshock therapy (NN072) ⑧ Continuous sleep therapy: Electricity (NN081), Drugs (NN082), Anesthesia (NN083) ⑨ Psychiatric rehabilitation (NN090)

		⑩ Psychiatric first aid (NN100) ⑪ Psychiatric social work: Personal history survey (NN111), Social work guidance (NN112), Social survey (NN113), Home visit (NN114)
	Exclusion Criteria	
	Denominator	Number of new depression outpatients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on depression outpatient ■ Criteria for new depression outpatients ○ Patients with no history of prescribing antidepressants or psychotherapy for 6 months prior to the first visit during the period subject to the assessment
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on depression outpatient
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Long-term care hospital, Clinic
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Mental Diseases and Disorders
Background and reason for selection		■ The initial step-by-step antidepressant increase and side effects management affect drug adherence and treatment effect in the future. Psychotherapy is effective in improving depressive symptoms only when the initial frequency is increased. ■ It is also necessary to monitor the risk of suicide regularly at the beginning of treatment.
Evidence and References		■ HIRA. Preparation of measures to assess the quality of treatment for depression outpatients. 2019. ■ Kim Young-sik. Guidelines for the treatment of depression in primary care. 2011 Fall Integrated Conference Training Lecture Collection of the Korean Society for Health Promotion and Diseases Prevention. 2011. ■ Working committee of Korean-style depressive disorder pharmacotherapy algorithm. Guideline on pharmacotherapy for Korean depressive disorder 2017. Korean Soceity for Affective Disorders, Korean College of Neuropsychopharmacology. 2017.

	■ American Psychiatric Association (APA). Practice Guideline for the Treatment of Patients With Major Depressive Disorder, Third Edition. 2010. ■ Center for quality assessment and Improvement in mental health (CQAIMH). Quality Measure/Follow-up visits in antidepressant treatment. APA_CQAIMH. 2000. [available from] http://www.cqaimh.org/searchmeasures.asp ■ National Institute for Health and Care Excellence (NICE). Depression in adults: recognition and management. NICE. 2019. ■ Peter Voore et al. Quality Standards Major Depression: Care for Adults and Adolescents. Health Quality Ontario (Toronto, Ontario). 2016.

Indicator numbers		01DEP0003
Indicator Name		Rate of performing initial assessments on patients with depressive symptoms
Indicator Definition		Proportion of new depression outpatients for whom depressive symptoms were initially assessed using the depressive symptoms scale
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients for whom depressive symptoms were initially assessed using the depressive symptoms scale
	Inclusion Criteria	■ Assessment scale of depressive symptoms ○ Assessment scale of depressive symptoms listed in NHI (National health insurance) benefit - BECK Depression Assessment (FY711) - Hamilton Depression Test (FY712) - Other examinations (FY719) ■ Definition of the initial assessment period ○ Within 1 month (30 days) from the first outpatient visit for depression
	Exclusion Criteria	
	Denominator	Number of new depression outpatients
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on depression outpatient ■ Criteria for new depression outpatients ○ Patients with no history of prescribing antidepressants or psychotherapy for 6 months prior to the first visit during the period subject to the assessment
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on depression outpatient
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Long-term care hospital, Clinic
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.

Population subject to assessment	Adult, Elderly
Clinical subject	Mental Diseases and Disorders
Background and reason for selection	■ Effective and efficient treatment of depression can be achieved by predicting the severity of depression, co-morbidities, and treatment prognosis using the depressive symptoms assessment scale at the initial stage of depression, and planning a patient-specific treatment strategy based on this. ■ After treatment, it is possible to confirm the objective level of treatment through re-assessment using the depressive symptoms assessment scale
Evidence and References	■ HIRA. Preparation of measures to assess the quality of treatment for depression outpatients. 2019. ■ Kim Young-sik. Guidelines for the treatment of depression in primary care. 2011 Fall Integrated Conference Training Lecture Collection of the Korean Society for Health Promotion and Diseases Prevention. 2011. ■ Working committee of Korean-style depressive disorder pharmacotherapy algorithm. Guideline on pharmacotherapy for Korean depressive disorder 2017. Korean Soceity for Affective Disorders, Korean College of Neuropsychopharmacology. 2017. ■ American Psychiatric Association (APA). Practice Guideline for the Treatment of Patients With Major Depressive Disorder, Third Edition. 2010. ■ Center for quality assessment and Improvement in mental health (CQAIMH). Quality Measure/Follow-up visits in antidepressant treatment. APA_CQAIMH. 2000. [available from] http://www.cqaimh.org/searchmeasures.asp ■ National Institute for Health and Care Excellence (NICE). Depression in adults: recognition and management. NICE. 2019. ■ Peter Voore et al. Quality Standards Major Depression: Care for Adults and Adolescents. Health Quality Ontario (Toronto, Ontario). 2016.

Indicator numbers		01DEP0004
Indicator Name		Rate of re-assessing depressive symptoms
Indicator Definition		Proportion of patients for whom depressive symptoms were re-assessed among new depression outpatients undergoing initial assessment of depressive symptoms
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients for whom depressive symptoms were re-assessed
	Inclusion Criteria	■ Definition of the initial re-assessment period ○ Within 2 weeks (15 days) from the date of initial assessment as depression and within 4 months (120 days) from the first visit
	Exclusion Criteria	
	Denominator	Number of new depression outpatients who initially assessed depressive symptoms using the depressive symptoms assessment scale
	Inclusion Criteria	■ Criteria for new depression outpatients ○ Patients with no history of being prescribed antidepressants or psychotherapy for 6 months prior to the first visit during the period subject to the assessment ■ Definition of the initial assessment period ○ Within 1 month (30 days) from the first outpatient visit for depression ■ Assessment scale of depressive symptoms ○ Assessment scale of depressive symptoms listed in health insurance medical care benefit - BECK Depression Assessment (FY711) - Hamilton Depression Test (FY712) - Other examinations (FY719)
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on depression outpatient
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Long-term care hospital, Clinic
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.

Population subject to assessment	Adult, Elderly
Clinical subject	Mental Diseases and Disorders
Background and reason for selection	■ Monitoring of the patient's condition is very important in the treatment of depression, and it is necessary to objectively confirm the patient's condition using the depressive symptoms assessment scale and provide appropriate treatment accordingly
Evidence and References	■ HIRA. Preparation of measures to assess the quality of treatment for depression outpatients. 2019. ■ Kim Young-sik. Guidelines for the treatment of depression in primary care. 2011 Fall Integrated Conference Training Lecture Collection of the Korean Society for Health Promotion and Diseases Prevention. 2011. ■ Working committee of Korean-style depressive disorder pharmacotherapy algorithm. Guideline on pharmacotherapy for Korean depressive disorder 2017. Korean Soceity for Affective Disorders, Korean College of Neuropsychopharmacology. 2017. ■ American Psychiatric Association (APA). Practice Guideline for the Treatment of Patients With Major Depressive Disorder, Third Edition. 2010. ■ Center for quality assessment and Improvement in mental health (CQAIMH). Quality Measure/Follow-up visits in antidepressant treatment. APA_CQAIMH. 2000. [available from] http://www.cqaimh.org/searchmeasures.asp ■ National Institute for Health and Care Excellence (NICE). Depression in adults: recognition and management. NICE. 2019. ■ Peter Voore et al. Quality Standards Major Depression: Care for Adults and Adolescents. Health Quality Ontario (Toronto, Ontario). 2016.

Indicator numbers		01DEP0005
Indicator Name		Rate of sustaining antidepressant prescriptions for more than 84 days
Indicator Definition		Proportion of new depression outpatients who were prescribed antidepressants for more than 84 days
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients continuously prescribed antidepressant for more than 84 days
	Inclusion Criteria	■ Criteria for prescribing antidepressant over 84 days ○ Cases in which the sum of the total number of days of antidepressant administration in the same institution is 84 days (12 weeks) or more within 114 days (for a total of 115 days) from the day after the first antidepressant was prescribed to an outpatient with depression
	Exclusion Criteria	
	Denominator	Number of new depression outpatients for whom antidepressants are prescribed
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on depression outpatient ■ Criteria for new depression outpatients ○ Patients with no history of prescribing antidepressants or psychotherapy for 6 months prior to the first visit during the period subject to the assessment ■ Recognition criteria of the antidepressant ○ Antidepressant listed on National health insurance drug price - Citalopram, Escitalopram, Fluoxetine, Fluvoxamine, Paroxetine, Sertraline, Desvenlafaxine, Duloxetine, Milnacipran, Venlafaxine, Moclobemide, Amitriptyline, Amoxapine, Clomipramine, Doxepin, Imipramine, Nortriptyline, Agomelatine, Bupropion, Mirtazapine, Tianeptine, Trazodone, Vortioxetine, Hypericin herba
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on depression outpatient
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Long-term care hospital, Clinic
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Administrative data
Risk Adjustment		N

Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Adult, Elderly
Clinical subject	Mental Diseases and Disorders
Background and reason for selection	■ The duration of acute phase treatment to achieve remission, which is the goal of acute phase depression treatment, is less than 3 months, and continuous administration of antidepressant is required for initial response
Evidence and References	■ HIRA. Preparation of measures to assess the quality of treatment for depression outpatients. 2019. ■ Kim Young-sik. Guidelines for the treatment of depression in primary care. 2011 Fall Integrated Conference Training Lecture Collection of the Korean Society for Health Promotion and Diseases Prevention. 2011. ■ Working committee of Korean-style depressive disorder pharmacotherapy algorithm. Guideline on pharmacotherapy for Korean depressive disorder 2017. Korean Soceity for Affective Disorders, Korean College of Neuropsychopharmacology. 2017. ■ American Psychiatric Association (APA). Practice Guideline for the Treatment of Patients With Major Depressive Disorder, Third Edition. 2010. ■ Center for quality assessment and Improvement in mental health (CQAIMH). Quality Measure/Follow-up visits in antidepressant treatment. APA_CQAIMH. 2000. [available from] http://www.cqaimh.org/searchmeasures.asp ■ National Institute for Health and Care Excellence (NICE). Depression in adults: recognition and management. NICE. 2019. ■ Peter Voore et al. Quality Standards Major Depression: Care for Adults and Adolescents. Health Quality Ontario (Toronto, Ontario). 2016.

Indicator numbers		01DEP0006
Indicator Name		Rate of sustaining antidepressant prescriptions for more than 180 days
Indicator Definition		Proportion of new depression outpatients who were prescribed antidepressants for more than 180 days
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients continuously prescribed antidepressants for more than 180 days
	Inclusion Criteria	■ Criteria for prescribing antidepressant over 180 days ○ Cases in which the sum of the total number of days of antidepressant administration in the same institution is 180 days (6 months) or more within 231 days (for a total of 232 days) from the day after the first antidepressant was prescribed to an outpatient with depress
	Exclusion Criteria	
	Denominator	Number of new depression outpatients for whom the antidepressants is prescribed
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on depression outpatient ■ Criteria for new depression outpatients ○ Patients with no history of prescribing antidepressants or psychotherapy for 6 months prior to the first visit during the period subject to the assessment ■ Recognition criteria of the antidepressant ○ Antidepressant listed on National health insurance drug price - Citalopram, Escitalopram, Fluoxetine, Fluvoxamine, Paroxetine, Sertraline, Desvenlafaxine, Duloxetine, Milnacipran, Venlafaxine, Moclobemide, Amitriptyline, Amoxapine, Clomipramine, Doxepin, Imipramine, Nortriptyline, Agomelatine, Bupropion, Mirtazapine, Tianeptine, Trazodone, Vortioxetine, Hypericin herba
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on depression outpatient
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Long-term care hospital, Clinic
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Administrative data
Risk Adjustment		N

Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Adult, Elderly
Clinical subject	Mental Diseases and Disorders
Background and reason for selection	■ The average duration of one episode of depression is about 6 months, and according to most clinical guidelines, the recommended maintenance treatment period is about 6 months ■ Sufficient treatment for 6-12 months or longer is required for symptom improvement, remission and recovery without recurrence of acute phase depressive episode. Patients who continued antidepressant treatment for more than 180 days had a lower recurrence rate or higher likelihood of social function recovery
Evidence and References	■ HIRA. Preparation of measures to assess the quality of treatment for depression outpatients. 2019. ■ Kim Young-sik. Guidelines for the treatment of depression in primary care. 2011 Fall Integrated Conference Training Lecture Collection of the Korean Society for Health Promotion and Diseases Prevention. 2011. ■ Working committee of Korean-style depressive disorder pharmacotherapy algorithm. Guideline on pharmacotherapy for Korean depressive disorder 2017. Korean Soceity for Affective Disorders, Korean College of Neuropsychopharmacology. 2017. ■ American Psychiatric Association (APA). Practice Guideline for the Treatment of Patients With Major Depressive Disorder, Third Edition. 2010. ■ Center for quality assessment and Improvement in mental health (CQAIMH). Quality Measure/Follow-up visits in antidepressant treatment. APA_CQAIMH. 2000. [available from] http://www.cqaimh.org/searchmeasures.asp ■ National Institute for Health and Care Excellence (NICE). Depression in adults: recognition and management. NICE. 2019. ■ Peter Voore et al. Quality Standards Major Depression: Care for Adults and Adolescents. Health Quality Ontario (Toronto, Ontario). 2016.

6.

Drugs

1) Pharmaceutical benefits

(antibiotics prescription rate, injection prescription rate, number of pharmaceutical products, pharmaceutical cost)

Indicator numbers		01MED0004
Indicator Name		(Injection) Rate of injection prescriptionate
Indicator Definition		Proportion of prescriptions for injections (in-hospital administration) among benefit cost claim specification (form) for outpatent
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Number of claim specification (form) containing injection prescriptions administered in the hospital
	Inclusion Criteria	
	Exclusion Criteria	■ Injections administered for examination and treatment purposes ■ Some injections that are difficult to substitute for oral use in outpatient settings ○ Erythropoietin, antihemophilic factor, insulin, anticancer drug, growth hormone, etc.
	Denominator	Number of benefit cost claim specification (form) for outpatent
	Inclusion Criteria	■ Regardless of drug administration ■ Including patients with health insurance and medical aid
	Exclusion Criteria	■ When the subdiagnosis is a disease to be adjusted for severity ○ Disease to be adjusted for severity - Severe diseases such as cancer diseases and organ transplants, rare and intractable diseases, etc. - Diseases that require high-cost growth hormone administration, such as disorders of puberty (KCD code: E30), etc. ■ Cases where the main sub diagnosis is hemophilia (KCD code: D66~D69, M36.2)

Things to be considered for calculation	■ In the case of the pharmaceutical benefit quality assessment sequence, a sequence is given for each actual execution cycle performed quarterly ('01) → semi-annual ('09) → annual ('17) while rearranging the assessment history. Example) 4 sequences were given per each quarter in 2001 2 sequences were given per each half year in 2009 1 sequence is given per year in 2017
Institution subject to assessment	General Hospital, Hospital, Clinic, Long-term care hospital
Assessment Period	1 year
Assessment Cycle	Every year
Assessment data source	Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	Lower is better
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	(not applicable)
Background and reason for selection	■ Injections are limited to the following cases; When oral administration is not possible, when there is a risk of side effects such as gastrointestinal disorders during administration, when it is not possible to expect a therapeutic effect with oral administration, or when it is necessary to expect a rapid therapeutic effect for emergency patients ■ Injections have faster onset of effect than oral drugs, but faster disappearance, and the risk of side effects is greater than oral drugs. In Korea, the injection prescription rate is excessively high, so management is necessary
Evidence and References	

Indicator numbers		01MED0005
Indicator Name		(Pharmaceutical cost) Pharmaceutical cost per administration days
Indicator Definition		Average pharmaceutical cost per administration days for out-of-hospital prescriptions
Status of indicator use		Regular Indicator
Quality components		Efficiency
Indicator type		Outcome
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Total pharmaceutical cost of outpatient in-hospital and out-of-hospital drug prescription cases
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Total number of administration days for outpatient in-hospital and out-of-hospital drug prescriptions
	Inclusion Criteria	■ Including patients with health insurance and medical aid
	Exclusion Criteria	■ Drugs administered for examination and treatment purposes ■ When the subdiagnosis is a disease to be adjusted for severity ○ Disease to be adjusted for severity - Severe diseases such as cancer diseases and organ transplants, rare and intractable diseases, etc. - Diseases that require high-cost growth hormone administration, such as disorders of puberty (KCD code: E30), etc. ■ Cases where the main sub diagnosis is hemophilia (KCD code: D66~D69, M36.2)
Things to be considered for calculation		■ In the case of the pharmaceutical benefit quality assessment sequence, a sequence is given for each actual execution cycle performed quarterly ('01) → semi-annual ('09) → annual ('17) while rearranging the assessment history. Example) 4 sequences were given per each quarter in 2001 2 sequences were given per each half year in 2009 1 sequence is given per year in 2017
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better

Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	(not applicable)
Background and reason for selection	■ To analyze outpatient prescription drug cost trends
Evidence and References	

Indicator numbers		01MED0007
Indicator Name		(Number of medicine items) Number of medicine items per prescription for all diseases
Indicator Definition		Average number of medicine items for outpatient prescriptions
Status of indicator use		Regular Indicator
Quality components		Efficiency
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Number of medicine items for outpatient prescriptions of claim specification (form) subject to the denominator
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of outpatient drug prescriptions of benefit cost claim specification (form) for outpatent for the all diseases
	Inclusion Criteria	■ Including patients with health insurance and medical aid
	Exclusion Criteria	■ When the subdiagnosis is a disease to be adjusted for severity ○ Disease to be adjusted for severity - Severe diseases such as cancer diseases and organ transplants, rare and intractable diseases, etc. - Diseases that require high-cost growth hormone administration, such as disorders of puberty (KCD code: E30), etc. ■ Cases where the main sub diagnosis is hemophilia (KCD code: D66~D69, M36.2)
Things to be considered for calculation		■ If the ingredient and formulation are the same but only the content is different, it is calculated as one item ■ In the case of the pharmaceutical benefit quality assessment sequence, a sequence is given for each actual execution cycle performed quarterly ('01) → semi-annual ('09) → annual ('17) while rearranging the assessment history. Example) 4 sequences were given per each quarter in 2001 2 sequences were given per each half year in 2009 1 sequence is given per year in 2017
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Dentistry, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		

Interpretation of output	Lower is better
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	(not applicable)
Background and reason for selection	■ An increase in the number of drugs may increase the risk of abnormal drug reactions and drug interactions, affect drug adherence, and increase medical costs. Therefore, it is necessary to manage the appropriate number of drug items
Evidence and References	

Indicator numbers		01MED0020
Indicator Name		(Antibiotics) Antibiotics prescription rate for all diseases (2)
Indicator Definition		Proportion of outpatient benefit cost claim specification (form) for which antibiotics are prescribed
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the claim specification (form) subject to the denominator, the number of claim specification (form) with prescriptions for outpatient antibiotics for in-hospital injection and outpatient antibiotics
	Inclusion Criteria	■ The scope of outpatient antibiotics for in-hospital injection and outpatient antibiotics ○ Quinolone family antibiotics among drug classification numbers 611~615, 618, 619, 621 (except Sulfasalazine), 625 and 629 & metronidazole family antibiotics among 641
	Exclusion Criteria	
	Denominator	Number of outpatient benefit cost claim specification (form) for all diseases
	Inclusion Criteria	■ Regardless of drug administration ■ Including patients with health insurance and medical aid
	Exclusion Criteria	■ When the subdiagnosis is a disease to be adjusted for severity ○ Disease to be adjusted for severity - Severe diseases such as cancer diseases and organ transplants, rare and intractable diseases, etc. - Diseases that require high-cost growth hormone administration, such as disorders of puberty (KCD code: E30), etc. ■ Cases where the main sub diagnosis is hemophilia (KCD code: D66~D69, M36.2)
Things to be considered for calculation		■ In the case of the pharmaceutical benefit quality assessment sequence, a sequence is given for each actual execution cycle performed quarterly ('01) → semi-annual ('09) → annual ('17) while rearranging the assessment history. Example) 4 sequences were given per each quarter in 2001 2 sequences were given per each half year in 2009 1 sequence is given per year in 2017
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data

Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	Lower is better
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	(not applicable)
Background and reason for selection	■ Antibiotics have contributed greatly to the treatment of bacterial infections, but in Korea, rate of penicillin resistance to pneumococcus is high at 71.7%, causing side effects ■ Antibiotics usage and resistance development are reported to be proportional to each other, so it is necessary to manage the proper use of antibiotics to suppress the inappropriate use of antibiotics
Evidence and References	■ Assessment plan for the upper respiratory system antibiotics (Korea Diseases Control and Prevention Agency, HIRA)

Indicator numbers		01MED0021
Indicator Name		(Antibiotics) Rate of antibiotic prescription for acute upper respiratory infections (URI) (2)
Indicator Definition		Proportion of acute URI outpatient benefit cost claim specification (form) for which antibiotics are prescribed
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the claim specification (form) subject to the denominator, the number of claim specification (form) with prescriptions for outpatient antibiotics for in-hospital injection and outpatient antibiotics
	Inclusion Criteria	■ The scope of outpatient antibiotics for in-hospital injection and outpatient antibiotics ○ Quinolone family antibiotics among drug classification numbers 611~615, 618, 619, 621 (except Sulfasalazine), 625 and 629 & metronidazole family antibiotics among 641
	Exclusion Criteria	
	Denominator	Number of outpatient benefit cost claim specification (form) for acute URI morbidity
	Inclusion Criteria	■ Regardless of drug administration ■ Diagnostic code of the acute URI ○ J00~J06 ■ Including patients with health insurance and medical aid
	Exclusion Criteria	■ When the subdiagnosis is a disease to be adjusted for severity ○ Disease to be adjusted for severity - Severe diseases such as cancer diseases and organ transplants, rare and intractable diseases, etc. - Diseases that require high-cost growth hormone administration, such as disorders of puberty (KCD code: E30), etc. ■ Cases where the main sub diagnosis is hemophilia (KCD code: D66~D69, M36.2)
Things to be considered for calculation		■ In the case of the pharmaceutical benefit quality assessment sequence, a sequence is given for each actual execution cycle performed quarterly ('01) → semi-annual ('09) → annual ('17) while rearranging the assessment history. Example) 4 sequences were given per each quarter in 2001 2 sequences were given per each half year in 2009 1 sequence is given per year in 2017
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital

Assessment Period	1 year
Assessment Cycle	Every year
Assessment data source	Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	Lower is better
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	(not applicable)
Background and reason for selection	■ Antibiotics have contributed greatly to the treatment of bacterial infections, but in Korea, rate of penicillin resistance to pneumococcus is high at 71.7%, causing side effects ■ Antibiotics usage and resistance development are reported to be proportional to each other, so it is necessary to manage the proper use of antibiotics to suppress the inappropriate use of antibiotics
Evidence and References	■ Assessment plan for the upper respiratory system antibiotics (Korea Diseases Control and Prevention Agency, HIRA)

Indicator numbers		01MED0023~0024, 0033 ※ Assigning indicator numbers by the antibiotics ingredient category subject to assessment
Indicator Name		(Antibiotics) Prescription rate of broad-spectrum antibiotics for acute URI (3rd or higher generation cephalosporin family/quinolone family/macrolides family)
Indicator Definition		Proportion of antibiotics prescribed by ingredient family (3rd or higher generation cephalosporin family/quinolone family/macrolides family) among antibiotics prescribed for outpatient acute URI
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Number of antibiotics prescriptions per ingredient family (3rd or higher generation cephalosporin family/quinolone family/macrolides family) of claim specification (form) subject to the denominator
	Inclusion Criteria	■ The 3rd or higher generation cephalosporin family antibiotics ○ Cephalosporin family antibiotics among drug classification number 612, 613, 618, 619 - 3rd generation cepha · (Oral) cefdinir, cefditoren, cefetamet, cefixime, cefpodoxime, ceftreram, etc. · (Injection) cefmenoxime, cefodizime, cefoperazone, cefotaxime 등 - 4th generation cepha · (Injection) cefepime, cefpirome, cefozoran ■ Quinolone family antibiotics ○ Quinolone family antibiotics among drug classification number 612, 629 - Ciprofloxacin, levofloxacin, moxifloxacin, etc. ■ Macrolides family antibiotics ○ Macrolides Macrolides family antibiotics among drug classification number 614, 619
	Exclusion Criteria	
	Denominator	Number of prescription of antibiotics for injection administered in hospital and antibiotics prescribed out-of-hospital of an outpatient benefit cost claim specification (form) for acute URI morbidity
	Inclusion Criteria	■ The scope of outpatient antibiotics for in-hospital injection and outpatient antibiotics ○ Quinolone family antibiotics among drug classification numbers 611~615, 618, 619, 621 (except sulfasalazine), 625 and 629 and metronidazole family antibiotics among 641

		■ Diagnostic code of the acute URI ○ J00~J06 ■ Including patients with health insurance and medical aid
	Exclusion Criteria	■ When the subdiagnosis is a disease to be adjusted for severity ○ Disease to be adjusted for severity - Severe diseases such as cancer diseases and organ transplants, rare and intractable diseases, etc. - Diseases that require high-cost growth hormone administration, such as disorders of puberty (KCD code: E30), etc. ■ Cases where the main sub diagnosis is hemophilia (KCD code: D66~D69, M36.2)
Things to be considered for calculation		■ In the case of the pharmaceutical benefit quality assessment sequence, a sequence is given for each actual execution cycle performed quarterly ('01) → semi-annual ('09) → annual ('17) while rearranging the assessment history. Example) 4 sequences were given per each quarter in 2001 2 sequences were given per each half year in 2009 1 sequence is given per year in 2017
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		(not applicable)
Background and reason for selection		■ Antibiotics usage and resistance development are reported to be proportional to each other, so it is necessary to manage the proper use of antibiotics to suppress the inappropriate use of antibiotics ■ Acute URI is often caused by viruses, so it was selected as the subject of assessment for proper use and management of antibiotics used in bacterial infections
Evidence and References		■ The Korean Society of Infectious Diseases, 2008 ■ Assessment plan for the upper respiratory system antibiotics (Korea Diseases Control and Prevention Agency, HIRA)

Indicator numbers		01MED0025
Indicator Name		(Number of medicine items) Prescription rate of more than 6 items
Indicator Definition		Proportion of cases with more than 6 items in the number of medical items among the out-of-hospital prescription cases
Status of indicator use		Regular Indicator
Quality components		Efficiency
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of prescriptions for 6 items or more.
	Inclusion Criteria	■ If the ingredient and formulation are the same but only the content is different, it is calculated as one item.
	Exclusion Criteria	
	Denominator	Number of out-of-hospital drug prescriptions in the outpatient benefit cost claim specification (form)
	Inclusion Criteria	■ Including patients with health insurance and medical aid
	Exclusion Criteria	■ When the subdiagnosis is a disease to be adjusted for severity ○ Disease to be adjusted for severity - Severe diseases such as cancer diseases and organ transplants, rare and intractable diseases, etc. - Diseases that require high-cost growth hormone administration, such as disorders of puberty (KCD code: E30), etc. ■ Cases where the main sub diagnosis is hemophilia (KCD code: D66~D69, M36.2)
Things to be considered for calculation		■ In the case of the pharmaceutical benefit quality assessment sequence, a sequence is given for each actual execution cycle performed quarterly ('01) → semi-annual ('09) → annual ('17) while rearranging the assessment history. Example) 4 sequences were given per each quarter in 2001 2 sequences were given per each half year in 2009 1 sequence is given per year in 2017
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Dentistry, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better

Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	(not applicable)
Background and reason for selection	■ It is to prioritize the management of relative over-prescription based on the average number of drugs by disease, etc. according to the analysis results of the claim specification (form)
Evidence and References	

Indicator numbers		01MED0026
Indicator Name		(Number of medicine items) Number of medicine items per prescription for respiratory diseases
Indicator Definition		Average number of medicine items for out-of-hospital prescriptions for respiratory diseases
Status of indicator use		Regular Indicator
Quality components		Efficiency
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Number of medicine items for outpatient prescriptions of claim specification (form) subject to the denominator
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of out-of-hospital drug prescriptions in outpatient benefit cost claim specification (form) for respiratory diseases morbidity
	Inclusion Criteria	■ Including patients with health insurance and medical aid ■ Respiratory diseases morbidity subject to assessment ○ (Acute URI) J00~J06 ○ (Other than acute URI) - Other ALRTI (J20~J22) - Other diseases of URT (J30~J39)
	Exclusion Criteria	■ Part of respiratory diseases morbidity ○ Other than acute upper respiratory infections (URI) - Influenza & Pneumonia (J09~J18) - Chronic LRT disease (J40~J47) ■ When the subdiagnosis is a disease to be adjusted for severity ○ Disease to be adjusted for severity - Severe diseases such as cancer diseases and organ transplants, rare and intractable diseases, etc. - Diseases that require high-cost growth hormone administration, such as disorders of puberty (KCD code: E30), etc. ■ Cases where the main sub diagnosis is hemophilia (KCD code: D66~D69, M36.2)
Things to be considered for calculation		■ In the case of the pharmaceutical benefit quality assessment sequence, a sequence is given for each actual execution cycle performed quarterly ('01) → semi-annual ('09) → annual ('17) while rearranging the assessment history. Example) 4 sequences were given per each quarter in 2001 2 sequences were given per each half year in 2009 1 sequence is given per year in 2017

Institution subject to assessment	General Hospital, Hospital, Clinic, Long-term care hospital, Dentistry, Public health institution
Assessment Period	1 year
Assessment Cycle	Every year
Assessment data source	Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	Lower is better
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	(not applicable)
Background and reason for selection	■ An increase in the number of drugs may increase the risk of abnormal drug reactions and drug interactions, affect drug adherence, and increase medical costs. Therefore, it is necessary to manage the appropriate number of drug items.
Evidence and References	

Indicator numbers		01MED0027
Indicator Name		(Number of medicine items) Number of medicine items per prescription for musculoskeletal system diseases
Indicator Definition		Average number of medicine items for out-of-hospital prescriptions for musculoskeletal system diseases
Status of indicator use		Regular Indicator
Quality components		Efficiency
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Number of medicine items for outpatient prescriptions of claim specification (form) subject to the denominator
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of out-of-hospital drug prescriptions in outpatient benefit cost claim specification (form) for musculoskeletal system diseases morbidity
	Inclusion Criteria	■ Including patients with health insurance and medical aid ■ Diseases morbidity of the musculoskeletal system ○ Arthrosis (M15~M19) ○ Other back pain (M50~M54)
	Exclusion Criteria	■ When the subdiagnosis is a disease to be adjusted for severity ○ Disease to be adjusted for severity - Severe diseases such as cancer diseases and organ transplants, rare and intractable diseases, etc. - Diseases that require high-cost growth hormone administration, such as disorders of puberty (KCD code: E30), etc. ■ Cases where the main sub diagnosis is hemophilia (KCD code: D66~D69, M36.2)
Things to be considered for calculation		■ In the case of the pharmaceutical benefit quality assessment sequence, a sequence is given for each actual execution cycle performed quarterly ('01) → semi-annual ('09) → annual ('17) while rearranging the assessment history. Example) 4 sequences were given per each quarter in 2001 2 sequences were given per each half year in 2009 1 sequence is given per year in 2017
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital, Dentistry, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N

Risk Adjustment Variable	
Interpretation of output	Lower is better
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	(not applicable)
Background and reason for selection	■ An increase in the number of drugs may increase the risk of abnormal drug reactions and drug interactions, affect drug adherence, and increase medical costs. Therefore, it is necessary to manage the appropriate number of drug items
Evidence and References	

Indicator numbers		01MED0028
Indicator Name		(Number of medicine items) Prescription rate of digestive organ medicine
Indicator Definition		Proportion of cases in which digestive organ medicine was prescribed among outpatient prescription cases
Status of indicator use		Regular Indicator
Quality components		Efficiency
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of cases where oral medicine for digestive organ is prescribed
	Inclusion Criteria	■ The scope of the digestive organ medicine ○ Drug classification number 232 (peptic ulcer drugs), 234 (antacid), 236 (cholagogues), 237 (digestive), 239 (other digestive organ medicine) ■ If the ingredient and formulation are the same but only the content is different, it is calculated as one item.
	Exclusion Criteria	
	Denominator	Number of out-of-hospital drug prescriptions in the outpatient benefit cost claim specification (form)
	Inclusion Criteria	■ Including patients with health insurance and medical aid
	Exclusion Criteria	■ When the subdiagnosis is a disease to be adjusted for severity ○ Disease to be adjusted for severity - Severe diseases such as cancer diseases and organ transplants, rare and intractable diseases, etc. - Diseases that require high-cost growth hormone administration, such as disorders of puberty (KCD code: E30), etc. ■ Cases where the main sub diagnosis is hemophilia (KCD code: D66~D69, M36.2) ■ Cases that require a prescription for digestive organ medicine ○ Digestive system disease (K20~K93) ○ Gastrointestinal malignant neoplasm (C15~C26) ○ Arthropathy (M00~M25) ○ Dorsopathy (M40~M54)
Things to be considered for calculation		■ In the case of the pharmaceutical benefit quality assessment sequence, a sequence is given for each actual execution cycle performed quarterly ('01) → semi-annual ('09) → annual ('17) while rearranging the assessment history. Example) 4 sequences were given per each quarter in 2001 2 sequences were given per each half year in 2009 1 sequence is given per year in 2017

Institution subject to assessment	General Hospital, Hospital, Clinic, Long-term care hospital
Assessment Period	1 year
Assessment Cycle	Every year
Assessment data source	Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	Lower is better
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	(not applicable)
Background and reason for selection	■ Number of items in the digestive organ medicine increases in proportion to the number of medical items per prescription (analyzed as a drug highly correlated with the number of medicine items). Therefore, the purpose of this is to provide detailed information for preventing unnecessary use by analyzing the prescription tendency of digestive organ medicine.
Evidence and References	

Indicator numbers		01MED0031
Indicator Name		(Antibiotics) Prescription rate of respiratory disease antibiotics
Indicator Definition		Proportion of claim specification (form) prescribed antibiotics among respiratory diseases outpatient benefit cost claim specification (form)
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the claim specification (form) subject to the denominator, the number of claim specification (form) with prescriptions for outpatient antibiotics for in-hospital injection and outpatient antibiotics
	Inclusion Criteria	■ The scope of outpatient antibiotics for in-hospital injection and outpatient antibiotics ○ Quinolone family antibiotics among drug classification numbers 611~615, 618, 619, 621 (except sulfasalazine), 625 and 629 and metronidazole family antibiotics among 641
	Exclusion Criteria	
	Denominator	Number of outpatient benefit cost claim specification (form) for respiratory diseases morbidity
	Inclusion Criteria	■ Regardless of drug administration ■ Including patients with health insurance and medical aid ■ Diagnostic code of respiratory diseases ○ (Acute URI) J00~J06 ○ (Other than acute URI) - Influenza & Pneumonia (J09~J18) - Other Acute LRI (J20~J22) - Other diseases of URT (J30~J39) - Chronic LRT disease (J40~J47)
	Exclusion Criteria	■ When the subdiagnosis is a disease to be adjusted for severity ○ Disease to be adjusted for severity - Severe diseases such as cancer diseases and organ transplants, rare and intractable diseases, etc. - Diseases that require high-cost growth hormone administration, such as disorders of puberty (KCD code: E30), etc. ■ Cases where the main sub diagnosis is hemophilia (KCD code: D66~D69, M36.2)

Things to be considered for calculation	■ In the case of the pharmaceutical benefit quality assessment sequence, a sequence is given for each actual execution cycle performed quarterly ('01) → semi-annual ('09) → annual ('17) while rearranging the assessment history. Example) 4 sequences were given per each quarter in 2001 2 sequences were given per each half year in 2009 1 sequence is given per year in 2017
Institution subject to assessment	General Hospital, Hospital, Clinic, Long-term care hospital
Assessment Period	1 year
Assessment Cycle	Every year
Assessment data source	Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	Lower is better
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	(not applicable)
Background and reason for selection	■ Antibiotics have contributed greatly to the treatment of bacterial infections, but in Korea, rate of penicillin resistance to pneumococcus is high at 71.7%, causing side effects. ■ Antibiotics usage and resistance development are reported to be proportional to each other, so it is necessary to manage the proper use of antibiotics to suppress the inappropriate use of antibiotics.
Evidence and References	■ Assessment plan for the upper respiratory system antibiotics (Korea Diseases Control and Prevention Agency, HIRA)

Indicator numbers		01MED0034~0038 ※ Assigning indicator numbers for each disease to be assessed
Indicator Name		(Antibiotics) Proportion of diseases by the respiratory disease (Acute URI/ Influenza & Pneumonia/Other Acute LRI/Other diseases of the URT/ Chronic LRT disease)
Indicator Definition		Proportion of statements by the respiratory disease (Acute URI/Influenza & Pneumonia/Other Acute LRI/Other diseases of the URT/Chronic LRT disease) among respiratory diseases outpatient benefit cost claim specification (form)
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the claim specification (form) subject to the denominator, the number of benefit cost specification (form) claimed as morbidity by the respiratory disease (Acute URI/Influenza & Pneumonia/Other Acute LRI/ Other diseases of the URT/Chronic LRT disease)
	Inclusion Criteria	■ Diagnostic code of acute upper repiratory infection (Acute URI) ○ J00~J06 ■ Diagnostic code of influenza & pneumonia ○ J09~J18 ■ Diagnostic code of other acute lower respiratory infection (Other Acute LRI) ○ J20~J22 ■ Diagnostic code of other upper respiratory tract diseases (Other diseases of the URT) ○ J30~J39 ■ Diagnostic code of chronic lower respiratory tract disease (Chronic LRT disease) ○ J40~J47
	Exclusion Criteria	
	Denominator	Number of outpatient benefit cost claim specification (form) for total respiratory diseases morbidity
	Inclusion Criteria	■ Regardless of drug administration ■ Including patients with health insurance and medical aid ■ Diagnostic code of respiratory diseases ○ (Acute URI) J00~J06 ○ (Other than acute URI) - Influenza & Pneumonia (J09~J18) - Other Acute LRI (J20~J22) - Other diseases of URT (J30~J39) - Chronic LRT disease (J40~J47)

	Exclusion Criteria	■ When the subdiagnosis is a disease to be adjusted for severity ○ Disease to be adjusted for severity - Severe diseases such as cancer diseases and organ transplants, rare and intractable diseases, etc. - Diseases that require high-cost growth hormone administration, such as disorders of puberty (KCD code: E30), etc. ■ Cases where the main sub diagnosis is hemophilia (KCD code: D66~D69, M36.2)
Things to be considered for calculation		■ In the case of the pharmaceutical benefit quality assessment sequence, a sequence is given for each actual execution cycle performed quarterly ('01) → semi-annual ('09) → annual ('17) while rearranging the assessment history. Example) 4 sequences were given per each quarter in 2001 2 sequences were given per each half year in 2009 1 sequence is given per year in 2017
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		■ To understand the current status of the claimed morbidity proportion.
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		(not applicable)
Background and reason for selection		■ To analyze the proportion of acute URI morbidity among all respiratory diseases
Evidence and References		■ Review on introduction of quality assessment for other ALRTI antibiotics (2018, HIRA)

Indicator numbers		01MED0039
Indicator Name		(Antibiotics) Prescription rate of other respiratory disease antibiotics
Indicator Definition		Proportion of claim specification (form) prescribed antibiotics among respiratory diseases (excepting acute URI and acute LRI outpatient) benefit cost claim specification (form)
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the claim specification (form) subject to the denominator, the number of claim specification (form) with prescriptions for outpatient antibiotics for in-hospital injection and outpatient antibiotics
	Inclusion Criteria	■ The scope of outpatient antibiotics for in-hospital injection and outpatient antibiotics ○ Quinolone family antibiotics among drug classification numbers 611~615, 618, 619, 621 (except Sulfasalazine), 625 and 629 & metronidazole family antibiotics among 641
	Exclusion Criteria	
	Denominator	Number of outpatient benefit cost claim specification (form) for respiratory diseases morbidity excluding acute upper respiratory infection and acute lower respiratory infection
	Inclusion Criteria	■ Regardless of drug administration ■ Including patients with health insurance and medical aid ■ Respiratory diseases morbidity except acute URI and acute LRI ○ Influenza & Pneumonia (J09~J18) ○ Other diseases of URT (J30~J39) ○ Chronic LRT disease (J40~J47)
	Exclusion Criteria	■ When the subdiagnosis is a disease to be adjusted for severity ○ Disease to be adjusted for severity - Severe diseases such as cancer diseases and organ transplants, rare and intractable diseases, etc. - Diseases that require high-cost growth hormone administration, such as disorders of puberty (KCD code: E30), etc. ■ Cases where the main sub diagnosis is hemophilia (KCD code: D66~D69, M36.2) ■ Acute URI and acute LRI morbidity ○ Acute URI (J00~J06) ○ Acute LRI (J20~J22)

Things to be considered for calculation	■ In the case of the pharmaceutical benefit quality assessment sequence, a sequence is given for each actual execution cycle performed quarterly ('01) → semi-annual ('09) → annual ('17) while rearranging the assessment history. Example) 4 sequences were given per each quarter in 2001 2 sequences were given per each half year in 2009 1 sequence is given per year in 2017
Institution subject to assessment	General Hospital, Hospital, Clinic, Long-term care hospital
Assessment Period	1 year
Assessment Cycle	Every year
Assessment data source	Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	Lower is better
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	(not applicable)
Background and reason for selection	■ Antibiotics have contributed greatly to the treatment of bacterial infections, but in Korea, rate of penicillin resistance to pneumococcus is high at 71.7%, causing side effects. ■ Antibiotics usage and resistance development are reported to be proportional to each other, so it is necessary to manage the proper use of antibiotics to suppress the inappropriate use of antibiotics.
Evidence and References	■ Assessment plan for the upper respiratory system antibiotics (Korea Diseases Control and Prevention Agency, HIRA)

Indicator numbers		01MED0040
Indicator Name		(Antibiotics) Prescription rate of acute LRI antibiotics
Indicator Definition		Proportion of claim specification (form) prescribed antibiotics among acute lower respiratory infection morbidity outpatient benefit cost claim specification (form)
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the claim specification (form) subject to the denominator, the number of claim specification (form) with prescriptions for outpatient antibiotics for in-hospital injection and outpatient antibiotics
	Inclusion Criteria	■ The scope of outpatient antibiotics for in-hospital injection and outpatient antibiotics ○ Quinolone family antibiotics among drug classification numbers 611~615, 618, 619, 621 (except Sulfasalazine), 625 and 629 & metronidazole family antibiotics among 641
	Exclusion Criteria	
	Denominator	Number of outpatient benefit cost claim specification (form) for acute lower respiratory infection morbidity
	Inclusion Criteria	■ Regardless of drug administration ■ Diagnostic code of Acute LRI ○ J20~J22 ■ Including patients with health insurance and medical aid
	Exclusion Criteria	■ When the subdiagnosis is a disease to be adjusted for severity ○ Disease to be adjusted for severity - Severe diseases such as cancer diseases and organ transplants, rare and intractable diseases, etc. - Diseases that require high-cost growth hormone administration, such as disorders of puberty (KCD code: E30), etc. ■ Cases where the main sub diagnosis is hemophilia (KCD code: D66~D69, M36.2)
Things to be considered for calculation		■ In the case of the pharmaceutical benefit quality assessment sequence, a sequence is given for each actual execution cycle performed quarterly ('01) → semi-annual ('09) → annual ('17) while rearranging the assessment history. Example) 4 sequences were given per each quarter in 2001 2 sequences were given per each half year in 2009 1 sequence is given per year in 2017
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital

Assessment Period	1 year
Assessment Cycle	Every year
Assessment data source	Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	Lower is better
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	(not applicable)
Background and reason for selection	■ Antibiotics have contributed greatly to the treatment of bacterial infections, but in Korea, rate of penicillin resistance to pneumococcus is high at 71.7%, causing side effects. ■ Antibiotics usage and resistance development are reported to be proportional to each other, so it is necessary to manage the proper use of antibiotics to suppress the inappropriate use of antibiotics.
Evidence and References	■ Assessment plan for the upper respiratory system antibiotics (Korea Diseases Control and Prevention Agency, HIRA)

Indicator numbers		01MED0041
Indicator Name		(Antibiotics) Prescription rate of antibiotics for acute otitis media in infants and children
Indicator Definition		Proportion of claim specification (form) prescribed antibiotics among otitis media outpatient benefit cost claim specification (form) for infant and child
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the claim specification (form) subject to the denominator, the number of claim specification (form) with prescriptions for outpatient antibiotics for in-hospital injection and outpatient antibiotics
	Inclusion Criteria	■ Recognition criteria of the antibiotics ○ Quinolone family antibiotics among drug classification numbers 611~615, 618, 619, 621 (except Sulfasalazine), 625 and 629
	Exclusion Criteria	
	Denominator	Number of outpatient benefit cost claim specification (form) for acute otitis media morbidity of infant and child
	Inclusion Criteria	■ Benefit cost specification (form) for acute otitis media morbidity (H650, H651, H660) claimed as main diagnosis or 1st sub diagnosis ■ Including patients with health insurance and medical aid
	Exclusion Criteria	■ Cases claimed for morbidity such as hemophilia, severe or intractable disease
Things to be considered for calculation		■ After performing up to the 7th assessment within the existing infant and child acute otitis media antibiotics assessment item ('10.1.~'18.12.), it was absorbed into the assessment item for Pharmaceutical benefits (the 53rd) and continued assessment ■ In the case of the pharmaceutical benefit quality assessment sequence, a sequence is given for each actual execution cycle performed quarterly ('01) → semi-annual ('09) → annual ('17) while rearranging the assessment history. Example) 4 sequences were given per each quarter in 2001 2 sequences were given per each half year in 2009 1 sequence is given per year in 2017
Institution subject to assessment		General Hospital, Hospital, Clinic, Public health institution
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		

Interpretation of output	Lower is better
Population subject to assessment	Newborn baby, Children and Adolescents
Clinical subject	Diseases and Disorders of the Ear, Nose, Mouth and Throat
Background and reason for selection	■ Acute otitis media is one of the morbidities in which the appropriate use of antibiotics is managed according to clinical practice guidelines in developed countries such as the United States, Europe, and Japan. In most countries, antibiotics treatment is recommended for children under 24 months of age, and for children over 2 years of age, it is recommended to prescribe antibiotics after monitoring the progress while giving priority to symptomatic treatment within 48-72 hours.
Evidence and References	■ Medical guidelines for infant and child acute otitis media (revision in 2014, Korean Academy of Sciences)

Indicator numbers		01MED0042
Indicator Name		(Antibiotics) Prescription rate of antibiotics for unspecified acute otitis media in infants and children
Indicator Definition		Proportion of claim specification (form) prescribed antibiotics among unspecified otitis media outpatient benefit cost claim specification (form) for infants and children
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the claim specification (form) subject to the denominator, the number of claim specification (form) with prescriptions for outpatient antibiotics for in-hospital injection and outpatient antibiotics
	Inclusion Criteria	■ Recognition criteria of the antibiotics ○ Quinolone family antibiotics among drug classification numbers 611~615, 618, 619, 621 (except Sulfasalazine), 625 and 629
	Exclusion Criteria	
	Denominator	Number of outpatient benefit cost claim specification (form) for unspecified otitis media morbidity of infant and child
	Inclusion Criteria	■ Morbidity and codes of unspecified otitis media ○ H659 (Unspecified nonsuppurative otitis media) ○ H664 (Unspecified suppurative otitis media) ○ H669 (Unspecified otitis media) ○ H670 (Otitis media in bacterial diseases classified differently) ○ H671 (Otitis media in viral diseases classified differently) ○ H678 (Otitis media in other diseases classified differently) ■ Including patients with health insurance and medical aid
	Exclusion Criteria	■ Cases claimed for morbidity such as hemophilia, severe or intractable disease
Things to be considered for calculation		■ After performing up to the 7th assessment within the existing infant and child acute otitis media antibiotics assessment item ('17.1.~'18.12.), it was absorbed into the assessment item for pharmaceutical benefit (the 53rd) and continued assessment ■ In the case of the pharmaceutical benefit quality assessment sequence, a sequence is given for each actual execution cycle performed quarterly ('01) → semi-annual ('09) → annual ('17) while rearranging the assessment history. Example) 4 sequences were given per each quarter in 2001 2 sequences were given per each half year in 2009 1 sequence is given per year in 2017
Institution subject to assessment		General Hospital, Hospital, Clinic, Public health institution

Assessment Period	1 year
Assessment Cycle	Every year
Assessment data source	Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	Lower is better
Population subject to assessment	Newborn baby, Children and Adolescents
Clinical subject	Diseases and Disorders of the Ear, Nose, Mouth and Throat
Background and reason for selection	■ As the proportion of unspecified otitis media increases, the need for management is being raised. Therefore, it is intended to manage the antibiotics prescription for unspecified otitis media in infants and children under 15 years of age.
Evidence and References	■ Medical guidelines for infant and child acute otitis media (revision in 2014, Korean Academy of Sciences)

Indicator numbers		01MED0043~0045 ※ Assigning indicator numbers for each disease to be assessed
Indicator Name		(Antibiotics) Proportion of otitis media morbidity in infants and children (Acute otitis media/Chronic otitis media/Unspecified otitis media)
Indicator Definition		Proportion of claim specification (form) by the otitis media diseases among otitis media outpatient benefit cost claim specification (form) of infants and children
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the claim specification (form) subject to the denominator, the number of benefit cost specification (form) claimed by the otitis media disease (Acute otitis media/Chronic otitis media/Unspecified otitis media)
	Inclusion Criteria	■ Acute otitis media diagnostic code ○ (Pyogenic) H660 ○ (Nonpyogenic) H650, H651 ■ Chronic otitis media diagnostic code ○ (Pyogenic) H661, H662, H663 ○ (Nonpyogenic) H652, H653, H654 ■ Unspecified otitis media diagnostic code ○ (Pyogenic) H664, H669, H670, H678 ○ (Nonpyogenic) H659, H671
	Exclusion Criteria	
	Denominator	Number of outpatient benefit cost claim specification (form) for total otitis media morbidity of infant and child
	Inclusion Criteria	■ Morbidity and diagnostic code codes of otitis media ○ H65 (Nonsuppurative otitis media) ○ H66 (Suppurative and unspecified otitis media) ○ H67 (Otitis media in other diseases classified differently) ■ Including patients with health insurance and medical aid
	Exclusion Criteria	■ Cases claimed for morbidity such as hemophilia, severe or intractable disease

Things to be considered for calculation	■ After performing up to the 7th assessment within the existing infant and childacute otitis media antibiotics assessment item ('12.1.~'18.12.), it was absorbed into the assessment item for pharmaceutical benefits (the 53rd) and continued assessment ■ In the case of the pharmaceutical benefit quality assessment sequence, a sequence is given for each actual execution cycle performed quarterly ('01) → semi-annual ('09) → annual ('17) while rearranging the assessment history. Example) 4 sequences were given per each quarter in 2001 2 sequences were given per each half year in 2009 1 sequence is given per year in 2017
Institution subject to assessment	General Hospital, Hospital, Clinic, Public health institution
Assessment Period	1 year
Assessment Cycle	Every year
Assessment data source	Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	■ To understand the current status of the claimed morbidity proportion.
Population subject to assessment	Newborn baby, Children and Adolescents
Clinical subject	Diseases and Disorders of the Ear, Nose, Mouth and Throat
Background and reason for selection	■ To analyze the proportion of acute otitis media morbidity among all infant and child otitis media
Evidence and References	

7.

Medical institution

1) Use of prophylactic antibiotics for surgery

☐ Common Criteria

※ Apply as inclusion criteria for the numerator or denominator of each indicator

○ Surgeries subject of assessment (Total 18)

- Craniotomy, Shoulder surgery, Hip arthroplasty, Fracture surgery, Gallbladder surgery, Colorectal surgery, Knee arthroplasty, Breast surgery, Pacemaker implantation, Hysterectomy, Prostatectomy, Cesarean section, Spine surgery, Appendectomy, Lung resection, Hernia surgery, Laryngeal surgery, Vascular surgery

Subject	Code	Surgery name
Craniotomy	N0331, N0333-N0335	Craniotomy or Craniectomy
	S4621, S4622, S4634-S4637	Craniotomy for Evacuation of Hematoma (Subdural or Extradural, Intracerebral, Supratentorial, infratentorial)
	S4641, S4642	Cerebral Aneurysm (simple, complex)
	S4653-S4658	Operation of Cerebral Arteriovenous Malformation (Intracerebral, Dural, Cerebral Cavernous Malformation)
	S4661, S4662	Intracerebral Vascular Anastomosis (Direct, Indirect)
	S4733-S4737	Operation of Epilepsy (Temporal Lobectomy, Transection of Corpus Callosum, Cerebral Lobectomy, Multiple Subpial Transection)
	S4760	Cerebral Lobotomy
	S4780	Cerebral Lobectomy
	S4792-S4794, S4796-S0479	Operation of Intracranial Cerebral Nerve (Neurectomy, Microdecompression)
Shoulder surgery	N0935	Acromioplasty
	N0936-N0938	Acromioplasty and Repair of Ruptured Shoulder Rotator Cuff
Hip arthroplasty	N0711, N0715, N2070, N2710	Arthroplasty-Hip (Total arthroplasty, Hemiarthroplasty)
Fracture surgery	N0601, N0602, N0604-N0606, N1601-N1606, N0991, N0992, N0995-N1001	Open Reduction of Fracture Extremity (Open, Closed pinning)
Gallbladder surgery	Q7380	Cholecystectomy

Subject	Code	Surgery name
Colorectal surgery	Q1261, Q1262, Q2671-Q2673, Q2679, QA671-QA673, QA679	Colectomy (Right or Left, Subtotal, Total, Segmental Resection, Colectomy with Proximal Colostomy and Distal Stump)
	Q2921-Q2924, Q2928, QA921-QA924, QA928,	Rectal and Sigmoid Resection (Anterior Resection, Low Anterior Resection, Ultralow Anterior Resection, A-P Resection (Mile's Operation), A-P Resection (Mile's Operation) or A-S Resection, Abdominal Pull Through Operation)
	Q2925, Q2926, QA925, QA926	Total Coloprotectomy (with Ileostomy, with Ileal Pouch-Anal Anastomosis)
Knee arthroplasty	N2072, N2077	Arthroplasty-Knee (Total arthroplasty)
Breast surgery	N7121, N7122	Excision of Benign Breast Tumor (Single, Multiple)
	N7131-N7134, N7136-N7139	Mastectomy (Benign, Malignant)
Pacemaker implantation	O0203-O0207	Transvenous Implantation of Internal PulseGenerator (Replacement, Upgrade of Implanted Pacemaker System)
Hysterectomy	R4147, R4149, R0141	Total Hysterectomy-without Lymphadenectomy (Abdominal approach, Vaginal approach, Laparoscopic approach)
	R4202, R4203	Operation on Procidentia (Vaginal Total Hysterectomy, Vaginal Total Hysterectomy and A-P Repair)
Prostatectomy	R3975	Transurethral Resection of Prostate
	R3976	Photoselective vaporization of the prostate
	R3977	Holmium laser enucleation of the prostate (HoLEP)
Cesarean section	R4517, R4518,	Cesarean Section Delivery-First Fetus, Initial
	R4514	Cesarean Section Delivery-First Fetus, Repeat
Spine surgery	N2462, N2463	Arthrodesis of spine-Anterior technique (Cervical Spine)
	N0468, N0469, N1460 N1469, N2469, N2470	Arthrodesis of Spine-Posterior Technique (Cervical, Thoracic, Lumbar spine)
	N0471, N0472	Percutaneous Vertebroplasty
	N0473, N0474	Percutaneous Balloon Kyphoplasty
	N1491-N1493	Percutaneous vertebroplasty [Including Diskectomy] (Cervical, Thoracic, Lumbar spine)
	N1494	Diskectomy-by Endoscopy [Including Diskectomy]
	N1495	Diskectomy-Injection Procedure for Chemonucleolysis
	N1496	Aspiration Procedure of Nucleus Pulposus of Intervertebral Disk [Neucleotomy with neucleotome etc]
	N1497-N1499, N2497-N2499	Laminectomy (Cervical, Thoracic, Lumbar spine)
	N2491, N2492	Cervical Laminoplasty
Appendectomy	Q2861	Appendectomy (Simple)

Subject	Code	Surgery name
Lung resection	O1401-O1405	Wedge Resection of Lung
	O1410	Segmentectomy of Lung
	O1421	Single Lobectomy of Lung
	O1422	Bilobectomy of Lung
	O1423	Lobectomy and Segmentectomy
	O1440	Repair of Lung
	O1570	Resection of Bullae
Hernia surgery	Q2722	Operation of Umbilical Hernia (Others)
	Q2732	Operation of Incisional Hernia (Others)
	Q2755, Q2756	Operation of Inguinal Hernia
	Q2757	Operation of Femoral Hernia
Laryngeal surgery	O1221, O1222	Resection of Laryngeal Benign Tumor (Under Suspension Laryngoscopy, Under Flexible Endoscopy)
	O1231	Removal of Vocal Nodule or Polyp
	O1232	Removal of Intracordal Cyst
	O1233	Diffuse Vocal Polyposis Incision and Suction
Vascular surgery	O1643	Vascular Bypass Operation (Aorta-Renal, Thoracic, Abdominal Aorta-Femoral, Aorta-Splanchnic, Autologous Vessel)
	O0161, O0163, O0165, O0167, O0169, O1645	Vascular Bypass Operation (Artery) (Femoral to Femoral, Subclavina-Subclavian, Femoral to Tibial, Peroneal Arteries, Popliteal to Tibial, Peroneal Arteries Femoral to Popliteal Artery, Axilla-Axillary Artery, Others)
	OB641, OB642	Vasular Bypass Operation (Inferior vena cava-Vena cava, Femoro-Femoral vein)
	O2011, O2012, O2081	AV Shunt for Hemodialysis (External, internal, Fistula Formation: Autologus vein for Hemodialysis)
	O2083	Repair of Arterio-Venous Fistula for Hemodialysis
	O0261-O0267	Varicose Vein Operation [Stripping]

○ Exclusion criteria for the subject of assessment

1) Overall indicator area (patient status before and after surgery, surgery performed during hospitalization)

- Patients under the age of 18
- Patients with ASA Score Class 4, 5, or 6
- Cases where antibiotics were used due to infection before surgery
  - Cases in which antibiotics were administered after confirming the infection
  - Cases in which antibiotics were administered because there was a record written by a medical doctor or an infectious disease doctor pertaining to the patient's condition requiring antibiotics

- Emergency surgery (other than appendectomy)
  - In cases of Cesarean section, if the cervix is open more than 4 cm
- In cases of two or more surgeries performed within the same hospitalization period
  - In cases where the operation subject to assessment has been performed twice or more
  - In cases where basic anesthesia was administered once or more at a time different from the time at which the operation subject to assessment was performed
- In cases where another operation is performed at the same time as the operation subject to assessment
  - In cases where two or more types of operations subject to assessment are performed
  - In the case of surgery on different organs by two or more departments
  - In cases where the operation subject to assessment is the second operation

2) Indicator area related to antibiotics (antibiotic selection and administration period)

- Cases with antibiotic allergy
- Patients who transfused more than 4 pints of blood within 24 hours after surgery
- Cases using antibiotics due to infection after surgery
  - Surgical site infection
  - Infection outside the surgical site after surgery
    - Cases with confirmed infection after surgery
    - In cases where there are records from the doctor who treated the patient or an infectious disease physician that necessitate antibiotics

Indicator numbers		01SIP0190~0195, 0197~0198, 0239~0241, 0268~0269, 0271, 0345~0348 ※ Assigning indicator numbers by surgery subject to assessement
Indicator Name		Exclusion rate related to postoperative infection
Indicator Definition		Proportion of patients excluded from the selection of anibiotics and the calculation of administration period indicator due to infection of the surgical site, etc after surgery among the patients undergoing surgery that is subject to the assessment
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Number of patients excluded from the selection of anibiotics and the calculation of administration period indicator due to infection at the surgical site and non-surgical site postoperative infection, etc
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Total number of patients undergoing the surgery subject to assessment
	Inclusion Criteria	■ Type of surgery subject to assessment (Total 18) ○ Colon surgery, Gallbladder surgery, Total hip replacement, Knee replacement, Hysterectomy, Hysterotokotomy, Craniotomy, Prostatic resection, Brest surgery, Spine surgery, Shoulder surgery, Larynx surgery, Hernia surgery, Pneumonectomy, Fracture surgery, Pacemaker implantation, Appendectomy, Vascular surgery ※ Refer to the common criteria for detailed operations for each operation subject to assessment, refer to the common criteria
	Exclusion Criteria	■ Applying exclusion criteria for assessment of prophylactic antibiotics in surgery
Things to be considered for calculation		■ ASA (American Society of Anesthesiologist's) Score Class ○ Patient condition as determined by anesthesiologist before surgery - Class 1 A person who has a disease that requires surgery, but does not affect the patient's general condition and is no different from a normal person - Class 2 Patients with mild or moderate systemic disease and no restrictions on activities - Class 3 Cases with restriction on activity as patients with moderate systemic disease - Class 4 A patient with a life-threatening, moderate systemic disease that cannot necessarily be cured by surgery

	- Class 5 A patient who came to the operating room in a hopeless state as a terminally ill patient whose life was difficult to prolong, patients who are on the brink of death with a mortality rate of 50% within 24 hours irrespective of surgery - Class 6 A patient who has been declared dead and has undergone surgery for the purpose of organ donation - Class E Patients requiring emergency surgery
Institution subject to assessment	General Hospital, Hospital
Assessment Period	3 months
Assessment Cycle	Biennial
Assessment data source	Medical records (Survey form)
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	Lower is better
Population subject to assessment	Adult, Elderly
Clinical subject	
Background and reason for selection	
Evidence and References	

Indicator numbers		01SIP0272~0289 ※ Assigning indicator numbers by surgery subject to assessement
Indicator Name		First administration rate of prophylactic antibiotics within an hour before a skin incision
Indicator Definition		Proportion of patients who were first administered propylactic anibiotics parenterally within 1 hour prior to skin incision of the surgical site among the patients undergoing surgery that is subject to the assessment
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who were first administered propylactic anibiotics parenterally within 1 hour prior to skin incision
	Inclusion Criteria	■ In the case of vancomycin, quinolone, and metronidazole antibiotics, administration takes a long time, so administration within 2 hours before skin incision is also included.
	Exclusion Criteria	
	Denominator	Total number of patients undergoing the surgery subject to assessment
	Inclusion Criteria	■ Type of surgery subject to assessment (Total 18) ○ Colon surgery, Gallbladder surgery, Total hip replacement, Knee replacement, Hysterectomy, Hysterotokotomy, Craniotomy, Prostatic resection, Brest surgery, Spine surgery, Shoulder surgery, Larynx surgery, Hernia surgery, Pneumonectomy, Fracture surgery, Pacemaker implantation, Appendectomy, Vascular surgery ※ Refer to the common criteria for detailed operations for each operation subject to assessment, refer to the common criteria
	Exclusion Criteria	■ Applying exclusion criteria for assessment of prophylactic antibiotics in surgery
Things to be considered for calculation		■ ASA (American Society of Anesthesiologist's) Score Class ○ Patient condition as determined by anesthesiologist before surgery - Class 1 A person who has a disease that requires surgery, but does not affect the patient's general condition and is no different from a normal person - Class 2 Patients with mild or moderate systemic disease and no restrictions on activities - Class 3 Cases with restriction on activity as patients with moderate systemic disease - Class 4 A patient with a life-threatening, moderate systemic disease that cannot necessarily be cured by surgery

	- Class 5 A patient who came to the operating room in a hopeless state as a terminally ill patient whose life was difficult to prolong, patients who are on the brink of death with a mortality rate of 50% within 24 hours irrespective of surgery - Class 6 A patient who has been declared dead and has undergone surgery for the purpose of organ donation - Class E Patients requiring emergency surgery
Institution subject to assessment	General Hospital, Hospital
Assessment Period	3 months
Assessment Cycle	Biennial
Assessment data source	Medical records (Survey form)
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Adult, Elderly
Clinical subject	
Background and reason for selection	■ In the case of the first administration of prophylactic antibiotics during surgery, it is most effective to administer antibiotics parenterally within 30 minutes or 1 hour before skin incision so that the concentration of antibiotics in serum and tissuesis sufficiently maintained at the time of surgery is being reported. Therefore, administration of antibiotics is recommended once anesthesia is initiated ■ Exceptionally, in the case of vancomycin or quinolone, it takes a long time to administer, so it is recommended to inject it within 2 hours before incision at the surgical site
Evidence and References	■ Bratzler DW. Houck PM. Antimicrobial prophylaxis for surgery: an advisory statement from the National Surgical Infection Prevention Project. Clinical Infectious Diseases, 2004;38(12):1706-1715 ■ Page CP, Bohnen JM, Pletcher JR, McManus AT, Solomkin JS, & Wittmann DH, Antimicrobial prophylaxis for surgical wounds. Guidelines for clinical care. Arch Surg, 1993;128:79-88 ■ ASHP Commission on Therapeutics. ASHP Therapeutic Guidelines on Antimicrobial Prophylaxis in Surgery. Am J. Health-Syst. Pharm, 1999;56:1839-1888 ■ Wood RK, Dellinger EP. Current guidelines for antibiotic prophylaxis of surgical wounds. American family physician. 1998;57;2731-40

Indicator numbers		01SIP0290~0307 ※ Assigning indicator numbers by surgery subject to assessement
Indicator Name		Recommended administration rate of prophylactic antibiotics
Indicator Definition		Proportion of patients receiving antibiotics, which recommended for surgery among the patients undergoing surgery that is subject to the assessment
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the proportion of patients receiving antibiotics recommended for surgery
	Inclusion Criteria	■ Prophylactic antibiotics recommended for craniotomy and fracture surgery ○ 1st generation cephalosporin ■ Prophylactic antibiotics recommended for shoulder surgery, spinal surgery, lung resection, laryngeal surgery, pacemaker implantation, and vascular surgery ○ 1st generation cephalosporin ○ 2nd generation cephalosporin ■ Prophylactic antibiotics recommended for hip arthroplasty and knee replacement ○ 1st generation cephalosporin ○ 2nd generation cephalosporin ※ Even if there are two or more types of recommended prophylactic antibiotics, combined administration is prohibited. ■ Prophylactic antibiotics recommended for gallbladder surgery ○ Not administered ○ 1st generation cephalosporin ○ 2nd generation cephalosporin ○ Combinations of penicillins, inclusion. β-lactamase inhibitors ※ Even if there are two or more types of recommended prophylactic antibiotics, combined administration is prohibited. ■ Prophylactic antibiotics recommended for colon surgery ○ 1st generation cephalosporin ○ 1st generation cephalosporin+Metronidazole ○ 2nd generation cephalosporin ○ Combinations of penicillins, inclusion. β-lactamase inhibitors ※ Even if there are two or more types of recommended prophylactic antibiotics, combined administration is prohibited. However, 1st generation “Cephalosporin + Metronidazole” can be combined for colon surgery and appendix resection. ※ Including patients who are not treated with prophylactic antibiotics for whom surgery without antibiotics is recommended

		■ Prophylactic antibiotics recommended for breast surgery ○ Not administered ○ 1st generation cephalosporin ■ Prophylactic antibiotics recommended for hysterectomy ○ 1st generation cephalosporin ○ 2nd generation cephalosporin ○ Combinations of penicillins, incl. β-lactamase inhibitors ○ Lincosamudes ※ Even if there are two or more types of recommended prophylactic antibiotics, combined administration is prohibited. ■ Prophylactic antibiotic recommended for prostate resections ○ 1st generation cephalosporin ○ 2nd generation cephalosporin ○ Fluoroquinolone ○ Combinations of sulfonamides & trimethoprim, incl. Derivatives ※ Even if there are two or more types of recommended prophylactic antibiotics, combined administration is prohibited. ■ Prophylactic antibiotics recommended for cesarean section ○ 1st generation cephalosporin ○ 2nd generation cephalosporin ○ Extended-spectrum penicillin ※ Even if there are two or more types of recommended prophylactic antibiotics, combined administration is prohibited. ※ Including patients who are not treated with prophylactic antibiotics for whom surgery without antibiotics is recommended ■ Prophylactic antibiotics recommended for hernia surgery ○ Not administered ○ 1st generation cephalosporin ※ Including patients who are not treated with prophylactic antibiotics for whom surgery without antibiotics is recommended ■ Prophylactic antibiotics recommended for appendix resection ○ 1st generation cephalosporin ○ 1st generation cephalosporin+Metronidazole ○ 2nd generation cephalosporin ※ The 1st generation cephalosporin and Metronidazole can be used in combination in the recommended prophylactic antibiotics
	Exclusion Criteria	
	Denominator	Total number of patients undergoing the surgery subject to assessment
	Inclusion Criteria	■ Type of surgery subject to assessment (Total 18) ○ Colon surgery, Gallbladder surgery, Total hip replacement, Knee replacement, Hysterectomy, Hysterotokotomy, Craniotomy, Prostatic resection, Brest surgery, Spine surgery, Shoulder surgery, Larynx surgery, Hernia surgery, Pneumonectomy, Fracture surgery, Pacemaker implantation, Appendectomy, Vascular surgery ※ Refer to the common criteria for detailed operations for each operation subject to assessment, refer to the common criteria

	Exclusion Criteria	■ Applying exclusion criteria for assessment of prophylactic antibiotics in surgery
Things to be considered for calculation		■ ASA (American Society of Anesthesiologist's) Score Class ○ Patient condition as determined by anesthesiologist before surgery - Class 1 A person who has a disease that requires surgery, but does not affect the patient's general condition and is no different from a normal person - Class 2 Patients with mild or moderate systemic disease and no restrictions on activities - Class 3 Cases with restriction on activity as patients with moderate systemic disease - Class 4 A patient with a life-threatening, moderate systemic disease that cannot necessarily be cured by surgery - Class 5 A patient who came to the operating room in a hopeless state as a terminally ill patient whose life was difficult to prolong, patients who are on the brink of death with a mortality rate of 50% within 24 hours irrespective of surgery - Class 6 A patient who has been declared dead and has undergone surgery for the purpose of organ donation - Class E Patients requiring emergency surgery
Institution subject to assessment		General Hospital, Hospital
Assessment Period		3 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		
Background and reason for selection		■ Surgical site infection is caused by various risk factors and pathogens, but expected pathogens may differ depending on the surgical site. Therefore, it is desirable to select appropriate antibiotics in consideration of the type of surgery
Evidence and References		

Indicator numbers		01SIP0308~0325 ※ Assigning indicator numbers by surgery subject to assessement
Indicator Name		Rate of terminating prophylactic antibiotics administration within 24 hours after surgery
Indicator Definition		Proportion of patients whose administration of prophylactic antibiotics was terminated within 24 hours after surgery among the patients undergoing surgery that is subject to assessment
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients whose administration of propylactic anibiotics was terminated within 24 hours after surgery
	Inclusion Criteria	■ Including in-hospital prescriptions and discharge prescriptions
	Exclusion Criteria	
	Denominator	Total number of patients undergoing the surgery subject to assessment
	Inclusion Criteria	■ Type of surgery subject to assessment (Total 18) ○ Colon surgery, Gallbladder surgery, Total hip replacement, Knee replacement, Hysterectomy, Hysterotokotomy, Craniotomy, Prostatic resection, Brest surgery, Spine surgery, Shoulder surgery, Larynx surgery, Hernia surgery, Pneumonectomy, Fracture surgery, Pacemaker implantation, Appendectomy, Vascular surgery ※ Refer to the common criteria for detailed operations for each operation subject to assessment, refer to the common criteria
	Exclusion Criteria	■ Applying exclusion criteria for assessment of prophylactic antibiotics in surgery
Things to be considered for calculation		■ ASA (American Society of Anesthesiologist's) Score Class ○ Patient condition as determined by anesthesiologist before surgery - Class 1 A person who has a disease that requires surgery, but does not affect the patient's general condition and is no different from a normal person - Class 2 Patients with mild or moderate systemic disease and no restrictions on activities - Class 3 Cases with restriction on activity as patients with moderate systemic disease - Class 4 A patient with a life-threatening, moderate systemic disease that cannot necessarily be cured by surgery - Class 5 A patient who came to the operating room in a hopeless state as a terminally ill patient whose life was difficult to prolong, patients

	who are on the brink of death with a mortality rate of 50% within 24 hours irrespective of surgery - Class 6 A patient who has been declared dead and has undergone surgery for the purpose of organ donation - Class E Patients requiring emergency surgery
Institution subject to assessment	General Hospital, Hospital
Assessment Period	3 months
Assessment Cycle	Biennial
Assessment data source	Medical records (Survey form)
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Adult, Elderly
Clinical subject	
Background and reason for selection	■ According to internationally accepted guidelines, it is recommended that prophylactic antibiotics be discontinued within 24 hours after surgery
Evidence and References	

Indicator numbers		01SIP0326
Indicator Name		Rate of corresponding to medical record
Indicator Definition		Ratio of matches with medical record data among the number of medical record inspection items randomly selected in the submitted survey table
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of items matching the medical record
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of medical record inspection items for the randomly sampled subject of reliability inspection
	Inclusion Criteria	
	Exclusion Criteria	■ Applying exclusion criteria for assessment of prophylactic antibiotics in surgery
Things to be considered for calculation		■ ASA (American Society of Anesthesiologist's) Score Class ○ Patient condition as determined by anesthesiologist before surgery - Class 1 A person who has a disease that requires surgery, but does not affect the patient's general condition and is no different from a normal person - Class 2 Patients with mild or moderate systemic disease and no restrictions on activities - Class 3 Cases with restriction on activity as patients with moderate systemic disease - Class 4 A patient with a life-threatening, moderate systemic disease that cannot necessarily be cured by surgery - Class 5 A patient who came to the operating room in a hopeless state as a terminally ill patient whose life was difficult to prolong, patients who are on the brink of death with a mortality rate of 50% within 24 hours irrespective of surgery - Class 6 A patient who has been declared dead and has undergone surgery for the purpose of organ donation - Class E Patients requiring emergency surgery
Institution subject to assessment		General Hospital, Hospital
Assessment Period		3 months
Assessment Cycle		Biennial

Assessment data source	Medical records (Survey form)
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	
Clinical subject	
Background and reason for selection	■ It is necessary to improve the accuracy and fidelity of the submitted data by simplifying the check list items
Evidence and References	

Indicator numbers		01SIP0327~0344 ※ Assigning indicator numbers by surgery subject to assessement
Indicator Name		Rate of administering prophylactic antibiotics within the average number of administration days
Indicator Definition		Proportion of patients receiving prophylactic antibiotics within the average number of days of administration among all patients subject to assessment
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients receiving prophylactic antibiotics within the average number of days of administration
	Inclusion Criteria	■ Average number of days of administration ○ Including in-hospital prescriptions and discharge prescriptions
	Exclusion Criteria	
	Denominator	Total number of patients undergoing the surgery subject to assessment
	Inclusion Criteria	■ Type of surgery subject to assessment (Total 18) ○ Colon surgery, Gallbladder surgery, Total hip replacement, Knee replacement, Hysterectomy, Hysterotokotomy, Craniotomy, Prostatic resection, Brest surgery, Spine surgery, Shoulder surgery, Larynx surgery, Hernia surgery, Pneumonectomy, Fracture surgery, Pacemaker implantation, Appendectomy, Vascular surgery ※ Refer to the common criteria for detailed operations for each operation subject to assessment, refer to the common criteria
	Exclusion Criteria	■ Applying exclusion criteria for assessment of prophylactic antibiotics in surgery
Things to be considered for calculation		■ ASA (American Society of Anesthesiologist's) Score Class ○ Patient condition as determined by anesthesiologist before surgery - Class 1 A person who has a disease that requires surgery, but does not affect the patient's general condition and is no different from a normal person - Class 2 Patients with mild or moderate systemic disease and no restrictions on activities - Class 3 Cases with restriction on activity as patients with moderate systemic disease - Class 4 A patient with a life-threatening, moderate systemic disease that cannot necessarily be cured by surgery - Class 5 A patient who came to the operating room in a hopeless state as a terminally ill patient whose life was difficult to prolong, patients who are on the brink of death with a mortality rate of 50% within 24 hours irrespective of surgery

	- Class 6 A patient who has been declared dead and has undergone surgery for the purpose of organ donation - Class E Patients requiring emergency surgery
Institution subject to assessment	General Hospital, Hospital
Assessment Period	3 months
Assessment Cycle	Biennial
Assessment data source	Medical records (Survey form)
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Adult, Elderly
Clinical subject	
Background and reason for selection	■ It is not recommended to prolong the use of prophylactic antibiotics after surgery for the purpose of infection prevention at the surgical site. However, this is to induce shortening of the average administration days of prophylactic antibiotics for each surgery considering the current situation in Korea, as a previous step to end prophylactic antibiotics administration within 24 hours after surgery
Evidence and References	

2) Hemodialysis

☐ Common Criteria

※ Apply as inclusion criteria for the numerator or denominator of each indicator

○ Criteria for the subject of assessment

- **(Target patient)** Patients 18 years of age or older who had outpatient hemodialysis more than twice a week (8 times a month) at the same medical institution (National Health Insurance and Medical Aid)
- **(Target medical expense code)** Hemodialysis O7020 (National Health Insurance), O9991 (Medical Aid)

○ Exclusion criteria for the subject of assessment

- Patients who have been hospitalized (including one-day hospitalization)
- Patients with fewer than two dialyses per week (at least 8 times a month)
- Patients who have stopped visiting medical institution

Indicator numbers		01KHD0031
Indicator Name		Rate of doctors specializing in hemodialysis
Indicator Definition		Proportion of doctors specializing in hemodialysis among doctors working in hemodialysis rooms
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the doctors subject to the denominator, the sum of the number of days of employment for each doctor specializing in hemodialysis.
	Inclusion Criteria	■ Definition of a physician specializing in hemodialysis ① A subspecialist in the field of nephrology among internal medicine or pediatric specialists ② A doctor who has trained in the field of hemodialysis for more than 1 year after acquiring a specialist in internal medicine or pediatrics and performing subspecialty ③ As an internal medicine or pediatric specialist, a doctor with 3 consecutive years of experience after starting hemodialysis treatment before starting the subspecialty
	Exclusion Criteria	
	Denominator	The sum of the number of employment days of each doctor working at the hemodialysis room
	Inclusion Criteria	
	Exclusion Criteria	■ Full-time Specialists training less than 1 year, Residents and Interns ■ Those who work less than 30 days in the period subject to the assessment (6 months)
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		
Clinical subject		Diseases and Disorders of the Kidney and Urinary Tract

Background and reason for selection	■ Whether hemodialysis is performed by a specialist is related to the quality of hemodialysis treatment.
Evidence and References	

Indicator numbers		01KHD0032
Indicator Name		Number of hemodialysis performed per doctor per day
Indicator Definition		The average number of dialysis cases per day per doctor working in the hemodialysis room
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Total number of dialysis during the working days subject to the denominator
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	The sum of the number of working days of each doctor working at the hemodialysis room
	Inclusion Criteria	■ Definition of working days ○ Sum of working days excluding Sundays
	Exclusion Criteria	■ Those who work less than 30 days in the period subject to the assessment (6 months) ■ Full-time Specialists training less than 1 year, Residents and Interns
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		
Clinical subject		Diseases and Disorders of the Kidney and Urinary Tract
Background and reason for selection		■ In order to check the current status before preparing the standard value due to weak evidence for the appropriate level.
Evidence and References		

Indicator numbers		01KHD0033
Indicator Name		Rate of nurses with more than 2 years of hemodialysis experience
Indicator Definition		Proportion of nurses with more than 2 years of hemodialysis experience among nurses working in the hemodialysis room
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the nurses subject to the denominator, sum of working days by nurse with more than 2 years of hemodialysis experience
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	The sum of the number of employment days of each nurse working at the hemodialysis room
	Inclusion Criteria	
	Exclusion Criteria	■ Those who work concurrently with other departments ■ Those who work less than 60 days in the period subject to the assessment (6 months)
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		
Clinical subject		Diseases and Disorders of the Kidney and Urinary Tract
Background and reason for selection		■ Whether a nurse with experience is employed and working is related to the quality of hemodialysis treatment
Evidence and References		

Indicator numbers		01KHD0034
Indicator Name		Number of hemodialysis performed per nurse per day
Indicator Definition		Total number of dialysis during the number of working days subject to the denominator
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Total number of dialysis during the number of working days subject to the denominator
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	The sum of the number of employment days of each nurse working at the hemodialysis room
	Inclusion Criteria	■ Definition of working days ○ Sum of working days excluding Saturdays and Sundays
	Exclusion Criteria	■ Those who work concurrently with other departments ■ Those who work less than 60 days in the period subject to the assessment (6 months)
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		
Clinical subject		Diseases and Disorders of the Kidney and Urinary Tract
Background and reason for selection		■ In order to check the current status before preparing the standard value due to weak evidence for the appropriate level.
Evidence and References		

Indicator numbers		01KHD0035
Indicator Name		Whether the minimum required number of isolated hemodialysis equipment for hepatitis B patient is satisfied
Indicator Definition		Whether the criteria for the minimum number of isolated hemodialysis equipment for patients with hepatitis B are met
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Structure
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	If the number of isolated hemodialysis equipment for hepatitis B patients is greater than or equal to the minimum number, it is recognized.
	Inclusion Criteria	■ Calculation of minimum number of isolated hemodialysis equipment in possession ○ number of hepatitis B patients/ [{(3× number of night dialysis days) + (2× number of day dialysis days)}/3]
	Exclusion Criteria	
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Good if criteria are met
Population subject to assessment		
Clinical subject		Diseases and Disorders of the Kidney and Urinary Tract
Background and reason for selection		■ To prevent the spread of infectious diseases, an appropriate number of isolated hemodialysis equipment should be equipped. ■ Only HBsAg-positive patients should use designated and segregated machines, instruments, equipment and medications, and while HBsAg-positive patients are on dialysis, staff treating them should not treat susceptible patients

Evidence and References	■ Centers for Disease Control and Prevention. Recommendations for Preventing Transmission of Infections Among Chronic Hemodialysis Patients. Morbidity and Mortality Weekly Report. 2001 April 27; 50(NO. RR-5):18-28

Indicator numbers		01KHD0036
Indicator Name		Whether the hemodialysis room is equipped with emergency equipment
Indicator Definition		Whether the hemodialysis room has emergency medical equipment (oxygen supply equipment, suction apparatus, endotracheal intubation equipment, electrocardiograph, cardiac defibrillator)
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Structure
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	If the hemodialysis room has emergency medical equipment (oxygen supply equipment, suction apparatus, endotracheal intubation equipment, electrocardiograph, cardiac defibrillator), it is recognized.
	Inclusion Criteria	■ Definition of emergency medical equipment exclusively for hemodialysis room ○ As equipment equipped in the hemodialysis room, is used only within the hemodialysis room, and is not used in common with other departments such as ICU and emergency room ■ Definition of endotracheal intubation equipment ○ A series of equipment for endotracheal intubation, including artificial airway, tracheal tube, ambu bags, sylets, and laryngoscopes.
	Exclusion Criteria	
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Good if criteria are met
Population subject to assessment		
Clinical subject		Diseases and Disorders of the Kidney and Urinary Tract

Background and reason for selection	■ Emergency situations such as blood pressure changes frequently occur during dialysis, and cardiovascular disease accounts for 50% of the cause of death. Therefore, it is necessary to have essential equipment in case of emergency. ■ Emergency equipment (oxygen supply equipment, suction apparatus, endotracheal intubation equipment, electrocardiograph, cardiac defibrillator, etc.) should always be in the hemodialysis room and be available immediately.
Evidence and References	■ Centers for Medicare & Medicaid Services. Medicare and Medicaid Programs; Conditions for Coverage for End-Stage Renal Disease Facilities; Final Rule. Federal Register. 2008 April 15;73(73)

Indicator numbers		01KHD0037
Indicator Name		Whether the standards for the water quality test cycle are satisfied
Indicator Definition		Proportion of items that meet the criteria for the water quality performance cycle (microbial test 1 time/month or more, endotoxin test 1 time/3 months or more, fine substance test [20 items] 1 time/year or more) among the items for hemodialysis water quality test (3 items)
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Structure
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Number of items that met the inspection performance cycle for the water quality inspection items subject to the denominator
	Inclusion Criteria	■ Items for water quality inspection and criteria for minimum performance cycle ○ Microbial test: Once a month (1/12 of total hemodialysis every month) ○ Endotoxin test: Once every 3 months ○ Fine substance test*: Once a year (20 items) * Fine substance test items: Aluminum, Arsenic, Barium, Cadmium, Calcium, Chloramine, Chlorine, Chromium, Copper, Fluoride, Lead, Magnesium, Mercury, Nitrate, Potassium, Selenium, Silver, Sodium, Sulfate, Zinc
	Exclusion Criteria	
	Denominator	Number of water quality test items for hemodialysis solution
	Inclusion Criteria	■ Items of the water quality inspection ○ microbial test, endotoxin test, microbial test
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Good if many criteria are met
Population subject to assessment		
Clinical subject		Diseases and Disorders of the Kidney and Urinary Tract

Background and reason for selection	■ It is necessary to manage safe and sanitary water purification facilities ■ Since a large amount of dialysate is introduced during dialysis, chemical and microbial contamination can have serious (fatal) consequences. ■ While microorganisms cannot pass through the dialysis membrane, endotoxin can pass through all types of membranes, so endotoxin test is more important than microbial test from a clinical point of view
Evidence and References	■ The Association for the Advancement of Medical Instrumentation (AAMI, RD52, RD61) (2006) Nephrology Dialysis Transplantation educational, European best practice guideline for Hemodialysis part I, partII CARI (Caring for Australians with Renal Impairment) (2005) UK guideline (2007) ■ European Dialysis & Transplant Nurses Association/ European Renal Care Assocition. Contral & Monitoring of Chlorine Levels using Carbon Filtration in Water for Haemodialysis: Technical Section. 2002.

Indicator numbers		01KHD0038
Indicator Name		Hemodialysis adequacy test cycle fulfillment rate
Indicator Definition		Proportion of patients who met the hemodialysis adequacy (spKt/V) test performance cycle (1 time/3 months or more) among patients undergoing hemodialysis as an outpatient in the same institution
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who met performance cycle (1 time/3 months or more) for hemodialysis adequacy (spKt/V) test and URR after hemodialysis
	Inclusion Criteria	■ Minimum performance cycle: once every 3 months ■ Dialysis Adequacy Test ○ This is a test performed to measure the amount of blood urea removed during dialysis and to observe changes in the amount of dialysis, and spkt/v and URR are used. ○ The spkt/V (Daugidas II) and URR should be calculated from blood samples taken from the patient's blood vessels and should not be the value provided by the hemodialyzer ■ How to collect blood after dialysis ○ SBF Method (slow blood-flow method): A method of collecting blood after dialysis. At the end of dialysis, the inflow of dialysis fluid is stopped, the blood flow rate is reduced to 100ml/min for 15 seconds, and then blood is collected from arterial blood.
	Exclusion Criteria	
	Denominator	Number of patients undergoing outpatient hemodialysis in the same health care institution
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on hemodialysis
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on hemodialysis
Things to be considered for calculation		■ Definition and calculation formula for spKt/V (Daugirdas II), URR ○ spKt/V = Single pool Kt/V (K: Dialyzer urea clearance, t: Time, V: Urea distribution volume) - Kt/V is calculated using the element dynamics model. Here, K is the urea clearance of the dialysis membrane, t is the dialysis time, and V is the urea distribution volume. If the urea cleaning rate (K) of the dialysis membrane is multiplied by the dialysis time (t), the cleaned volume (Kt) is obtained. If it is divided by the urea distribution volume (V), Kt/V is calculated without a unit. This is a figure indicating the amount of dialysis during one dialysis session.

	- spKt/V (Daugirdas II formula) = -LN*(R - 0.008 × dialysis time) + (4 - 3.5 × R**) × (intrafiltration volume***/weight after dialysis) * LN: Natural logarithm ** R: Post-BUN/pre-BUN *** Intrafiltration volume: The intradialytic weight loss ○ URR = (1 - R*)×100 * R: BUN (blood urea nitrogen) after hemodialysis/ BUN before hemodialysis
Institution subject to assessment	General Hospital, Hospital, Clinic, Long-term care hospital
Assessment Period	6 months
Assessment Cycle	Biennial
Assessment data source	Medical records (Survey form)
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Kidney and Urinary Tract
Background and reason for selection	■ By conducting the hemodialysis adequacy test, it is easy to adjust the dialysis amount according to the patient's condition, and by taking appropriate measures according to the adequacy test result, it can increase patient adherence and ultimately reduce comorbidity and mortality ■ Hemodialysis adequacy test is recommended to be measured at least once a month
Evidence and References	■ National Kidney Foundation, NKF-DOQI Clinical Practice Guidelines for Hemodialysis Adequacy, update 2006. Am J Kidney Dis. 2006; 1-115. Nephrology Dialysis Transplantation educational, European best practice guideline for Hemodialysis part I, part II

Indicator numbers		01KHD0040
Indicator Name		Satisfaction rate of the required frequency of regular tests
Indicator Definition		Proportion of patients who met the performance cycle for each periodic examination item among patients undergoing hemodialysis as an outpatient in the same health care institution
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who met the performance cycle for each periodic examination item
	Inclusion Criteria	■ Minimum performance cycle for each periodic examination item ○ 1 month (12): Hb (Hemoglobin), Platelet Count, Total protein, Albumin, Glucose, BUN (Blood Urea Nitrogen), Cr (Creatinine), Uric Acid, Natrium (Na), Potassium (K), Phosphorus (P), Total Ca ○ 3 months (6): TIBC (Total Iron Binding Capacity), Fe, Ferritin, PTH (Parathyroid hormone), HbA1c (Hemoglobin A1c (only diabetic)), Chest PA ○ 6 months (4): HBs-Ag (Hepatitis B surface antigen), HCV-Ab (Hepatitis C Virus antibody), ECG test (Electrocardiography, EKG) ■ Calculation formula for the number of patients who met the performance cycle for each periodic examination item ○ Total number of items that met the periodic examination performance cycle for each patient/Total number of items for periodic examination (22 items)
	Exclusion Criteria	
	Denominator	Number of patients undergoing outpatient hemodialysis in the same health care institution
	Inclusion Criteria	
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on hemodialysis
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		

Interpretation of output	The higher, the better.
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Kidney and Urinary Tract
Background and reason for selection	■ While erythropoietin dose is being adjusted, hemoglobin is measured every 2-4 weeks, and when erythropoietin dose is stabilized, hemoglobin measurement is required every 1 to 3 months. ■ While iron dose is being adjusted, iron status is measured once a month, and when iron dose is stabilized, iron status is measured once every 3 months. ■ Calcium-serum, phosphorus and parathyroid hormone are tests needed to confirm evidence of vascular and soft tissue calcification. These values should be measured every 12 months in the third stage of chronic renal failure and every 3 months in the fourth stage. In the fifth stage, it is recommended to measure calcium-serum and phosphorus every 1 month and parathyroid hormone every 3 months. ■ For patients with chronic renal failure stage 4 and 5, it is recommended to measure serum albumin and weight every 1 to 3 months to measure nutritional status. ■ Hyperkalemia is a very dangerous complication that accounts for some of the causes of death in chronic renal failure patients. Because hyperkalemia has few prodromal or suspicious symptoms, regular monitoring should be performed. If the level is more than 5.5 mEq/L, the patient should be educated on a low-potassium diet and the medication should be adjusted.
Evidence and References	■ Nissenson AR et al. Randomized controlled trial of darbepoetin alfa for the treatment of anemia in hemodialysis patients, Am J Kidney dis. 2002; 40: 110-8 ■ National Kidney Foundation. KDOQI clinical practice guidelines and clinical practice recommendations for anemia in chronic kidney disease. Am J Kidney Dis. 2006; 46: S1-146

Indicator numbers		01KHD0041
Indicator Name		Satisfaction rate of the hemodialysis adequacy
Indicator Definition		Proportion of patients satisfying adequacy (spKt/V 1.2 or higher or URR (Urea Reduction Rate) 65% or higher) among hemodialysis patients undergoing the hemodialysis adequacy test.
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Outcome
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients whose mean value of the hemodialysis adequacy test satisfies spKt/V≥1.2 or URR ≥ 65%.
	Inclusion Criteria	■ Definition and Calculation Formula of spkt/V (Daugidas II), URR ○ spKt/V= Single Pool Kt/V (K: Dialyzer Urea Clearance, t: time, V: Urea Distribution Volume) - Kt/V is calculated using the element dynamics model. Here, K is the urea clearance of the dialysis membrane, t is the dialysis time, and V is the urea distribution volume. If the urea cleaning rate (K) of the dialysis membrane is multiplied by the dialysis time (t), the cleaned volume (Kt) is obtained, If it is divided by the urea distribution volume (V), Kt/V is calculated without a unit. This is a figure indicating the amount of dialysis during one dialysis session. - spKt/V (Daugirdas II formula) = -LN*(R - 0.008 × dialysis time) + (4 - 3.5 × R**) × (intrafiltration volume***/weight after dialysis) * LN: Natural logarithm ** R: Post-BUN/pre-BUN *** Intrafiltration volume: The intradialytic weight loss ○ URR = (1 - R*)x100 * R: BUN (blood urea nitrogen) after hemodialysis/ BUN before hemodialysis
	Exclusion Criteria	
	Denominator	Number of patients undergoing adequacy tests among patients undergoing hemodialysis out of the same health care institution
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on hemodialysis
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on hemodialysis
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital
Assessment Period		6 months

Assessment Cycle	Biennial
Assessment data source	Medical records (Survey form)
Risk Adjustment	Y
Risk Adjustment Variable	■ Gender, age, cause of diseases, comorbidity, type of vascular access, dialysis period, creatinine, albumin, BSA, Weight loss during the period of dialysis
Interpretation of output	■ Before risk correction (actual value) ○ The higher, the better. ■ After risk correction ○ Provides a way to interpret the results by comparing the actual value and the predicted value (95% upper and lower limits) - (Low treatment outcome) actual value 〈 lower limit of 95% confidence interval of predicted value - (Good treatment outcome) lower limit of 95% confidence interval of predicted value 〈 actual value 〈 upper limit of 95% confidence interval of predicted value - (High treatment outcome) Actual value 〉 upper limit of 95% confidence interval of predicted value
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Kidney and Urinary Tract
Background and reason for selection	■ As a result of hemodialysis adequacy test, which measures the amount of blood urea removed during dialysis, the average value for 3 months should be spKt/V ≥ 1.2 or URR ≥ 65% ■ Kt/V is calculated using the element dynamics model. Here, K is the urea clearance of the dialysis membrane, t is the dialysis time, and V is the urea distribution volume. If the urea cleaning rate (K) of the dialysis membrane is multiplied by the dialysis time (t), the cleaned volume (Kt) is obtained. If it is divided by the urea distribution volume (V), Kt/V is calculated without a unit. This is a figure indicating the amount of dialysis during one dialysis session. ■ In the case of hemodialysis, the morbidity and hospitalization rate can be reduced by adjusting the urea clearance rate and dialysis time of the dialysis membrane and prescribing the dialysis amount appropriately.
Evidence and References	■ National Kidney Foundation. NKF-DOQI Clinical Practice Guidelines for Hemodailysis Adequacy, update 2006. Am J Kidney Dis. 2006;1-115 ■ Gotch FA, Sargent JA. A mechanistic analysis of the National Cooperative Dialysis Study (NCDS). Kidney Int. 1985 Sep;28(3):526-34

Indicator numbers		01KHD0042
Indicator Name		Satisfaction rate of calcium and phosphorus
Indicator Definition		Proportion of patients whose serum calcium multiplied by phosphorus is less than 55 mg2/dl2 among hemodialysis patients who have had more than one calcium and phosphorus test.
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Outcome
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients whose serum calcium multiplied by phosphorus tested on the same day was less than 55 mg2/dl2
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of patients who had at least one calcium and phosphorus test among patients undergoing outpatient hemodialysis at the same health care institution
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on hemodialysis ■ Calcium-serum and phosphorus should be tested on the same day
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on hemodialysis
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		Y
Risk Adjustment Variable		■ Gender, age, cause of diseases, comorbidity, type of vascular access, dialysis period, creatinine, albumin, BSA, Weight loss during the period of dialysis
Interpretation of output		■ Before risk correction (actual value) ○ The higher, the better. ■ After risk correction ○ Provides a way to interpret the results by comparing the actual value and the predicted value (95% upper and lower limits) - (Low treatment outcome) actual value 〈 lower limit of 95% confidence interval of predicted value

	- (Good treatment outcome) lower limit of 95% confidence interval of predicted value < actual value < upper limit of 95% confidence interval of predicted value - (High treatment outcome) Actual value > upper limit of 95% confidence interval of predicted value
Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Kidney and Urinary Tract
Background and reason for selection	■ Calcium-serum and phosphorus should be measured regularly to confirm evidence of vascular and soft tissue calcification. When calcium-serum and phosphorus concentrations are well maintained, mortality and morbidity rates of patients are reduced. ■ The relative risk of overall mortality, cardiovascular death, and parathyroid resection increases for every 5 mg^2/dl^2 increase in product of calcium-serum and phosphorus. ■ The product of calcium-serum and phosphorus in hemodialysis patients should be kept below 55 mg^2/dl^2.
Evidence and References	■ Block GA, Klassen PS, Lazarus JM, Ofsthun N, Lowrie EG, Chertow GM. Mineral metabolism, mortality, and morbidity in maintenance hemodialysis. J Am Soc Nephrol. 2004 Aug;15(8):2208-2018. Melamed ML, Eustace JA, Planitnga L, Jaar BG, Fink NE, Coresh J, Klag MJ, Powe NR. Changes in serum calcium, phosphate, and PTH and the risk of death in in incident dialysis patients: a longitudinal study. Kidney Int. 2006 Jul;70(2):351-357 Kestenbaum B, Sampson JN, Rudser KD, Patterson DJ, Seliger SL, Young B, Sherrard DJ. Andress DL. Serum phosphate levels and mortality risk among people with chronic kidney disease. J Am Soc Nephrol. 2005 Feb;16(2_):520-528 ■ Young EW et al. Predictors and consequences of altered mineral metabolism; the dialysis outcomes and practice patterns study. Kidney Int 2005;67:1179-1187. ■ European Best Practice Guideline for Haemodialysis Part 1. Hyperphosphataemia and calcium-phosphorus ion product. Nephrol Dial Transplant. 2002;17(Suppl7):95-96. ■ The korean society of nephrology. Clinical Guideline for chronic kidney disase

Indicator numbers		01KHD0043
Indicator Name		Proportion of patients with less than 10 g/dl hemoglobin
Indicator Definition		Proportion of patients with an average Hb (Hemoglobin) of less than 10 g/dl among hemodialysis patients receiving hematopoietics
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Outcome
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients with an average Hb of less than 10 g/dl
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of patients receiving hematopoietics among patients undergoing hemodialysis out of the same health care institution
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on hemodialysis
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on hemodialysis
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Adult, Elderly
Clinical subject		Diseases and Disorders of the Kidney and Urinary Tract
Background and reason for selection		■ Treatment of anemia improves quality of life and lowers mortality in chronic renal failure patients. ■ There is a report that cardiovascular complications and mortality increase when hemoglobin levels are in the normal range in patients with chronic renal failure. For patients undergoing hemodialysis, it is appropriate to control the hemoglobin level to between 10.5 and 12.5 g/dl, slightly lower than normal, to prevent iron deficiency and to maintain adequate iron storage ■ The optimal hemoglobin level for patients using hematopoietics ranges from 11 to 12 g/dl.

Evidence and References	■ Besarab A et al. The effects of normal as compared with low hemotocrit values in patients with cardiac disease who are receiving hemodialysis and epoetin. The New England Journal of Medicine. 1998 August 27; 339; 584-590. ■ Singth AK et al. CHOIR Investigators; Correction of anemia with epoetin alfa in chronic kidney disease. The New England Journal of Medicine. 2006; 355: 2085-2098. ■ Benett CL et al. Venous thromboembolism and mortality associated with recombinant erythropoietin and darbepoetin administration for the treatment of cancer-associated anemia. JAMA. 2008; 299: 914-924 ■ Centers for Medicare & Medicaid Services. 2007 Annual Repor ESRD Clinical Performance Measures Project. 2007. Dec.

Indicator numbers		01KHD0049
Indicator Name		Satisfaction rate of arteriovenous fistula (AVF) stenosis monitoring (2)
Indicator Definition		Proportion of patients who were regularly monitored for vascular access among patients undergoing hemodialysis as an outpatient in the same institution
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who were regularly monitored for vascular access
	Inclusion Criteria	■ Monitoring method for each vascular access and performance cycle ○ Central venous catheter: fill out the vascular access checklist at least once a week ○ Arteriovenous fistula (AVF): Select one of the following and implement it regularly for each performance cycle - (Once a month): SIAPR (Static Intra Access Pressure), Duplex ultrasound, sonodilution method, angiography - (Once a week): Preparation of checklist for vascular access ○ Arteriovenous graft (AVG): Select one of the following and implement it regularly for each performance cycle - (Once a month): SIAPR , Duplex ultrasound, sonodilution method, angiography
	Exclusion Criteria	
	Denominator	Number of patients undergoing outpatient hemodialysis in the same institution
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on hemodialysis
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on hemodialysis
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital, Clinic, Long-term care hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.

Population subject to assessment	Adult, Elderly
Clinical subject	Diseases and Disorders of the Kidney and Urinary Tract
Background and reason for selection	■ It can reduce the morbidity rate and mortality of diseases by regularly monitoring hemadostenosis of venous fistulas, which are vascular access for hemodialysis. ■ In case of severe AV fistula vascular stenosis, it interferes with the inflow and discharge of dialysate during hemodialysis, prolonging the treatment time and lowering the dialysis volume. - In the case of Arteriovenous graft, the longer the postoperative period, the higher the incidence of vascular stenosis due to thrombus, so periodic monitoring is required.
Evidence and References	■ Bass EB et al. How strong are patients' preferences in choices between dialysis modalities and does. American Journal of Kidney Diseases. 2004(October);Vol.44,No.4;695-705. ■ Ayanian JZ et al. The effect of patients' preferences on racial differences in access to renal transplantation, The New England Journal of Medicine, 1999;341:1661-1669.

3) Hospital standardized mortality ratio

☐ Common Criteria

※ Apply as inclusion criteria for the numerator or denominator of each indicator

○ Criteria for the subject of assessment

- **(Target patient)** Patients who fall into the main diagnosis group* of the top 80% of in-hospital deaths among patients admitted to tertiary general hospitals and general hospitals (National Health Insurance and Medical Aid)

* The main diagnosis group of the top 80% of in-hospital deaths

- After listing the main diagnosis groups with the highest number of deaths are listed in order, and than the main diagnosis groups up to the top 80% of the number of deaths are applied.

※ Classification of main diagnosis groups

· Reclassification as the main diagnosis group with the same clinical characteristics according to the AHRQ CCS (Agency for Healthcare Research and Quality, Clinical Classifications Software) classification

○ Exclusion criteria for the subject of assessment

- Transfer hospital
  - Cases admitted to another institution (hospital level or higher) within one day after discharge
  - Excluding both moving-in and moving-out institutions. However, in case of death at the moving-in institution on the day of moving out, the death is attributed to the moving-out institution and the moving-out institution is included in the assessment target.
- Based on one-day hospitalization
  - Cases with the same hospitalization date and discharge date (LOS = 1)
- Subjects for palliative care recipients
  - Subject: Cancer patients (specific code: V193)
  - Patients admitted to the palliative care ward of an institution specializing in palliative care
  - Among patients who died in-hospital due to cancer, cases in which chemotherapy, radiation therapy, or surgery were not performed one month prior to the time of death

Indicator numbers		01HSM0001
Indicator Name		Hospital standardized mortality ratio (HSMR)
Indicator Definition		Among hospitalized patients with MRDx (Most responsible diagnosis) in the top 80% of in-hospital deaths, Comparing the number of predicted deaths considering factors that may affect the number of deaths to the actual number of deaths
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Number of actual deaths among inpatients with MRDx of the top 80% of in-hospital deaths
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	The predicted number of deaths considering factors that may affect death, etc. among inpatients who fall under the MRDx in the top 80% of in-hospital deaths
	Inclusion Criteria	■ Subject of assessment on Hospital SMR ○ Patients with MRDx* in the top 80% of in-hospital deaths among NHI (National health insurance), medical aid, and veterans Insurance patients admitted to a tertiary general hospital and general hospital * MRDx (Most responsible diagnosis) in the top 80% of patients with in-hospital deaths - After listing the MRDx with the highest number of deaths, the MRDx for the top 80% of the number of deaths is applied. ※ MRDx classification: Reclassify morbidity as MRDx with the same clinical characteristics according to AHRQ CCS (Agency for Healthcare Research and Quality, Clinical Classifications Software) classification
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on Hospital standardized mortality ratio
Things to be considered for calculation		■ Calculation formula ○ (Actual number of deaths / Expected number of deaths)×100 ■ Group calculation formula (Byar's approximation) ○ Lower confidence limit: O/Ex(1-1/(9xO)-1.96/(3xsqrt(O)))3x100 ○ Upper confidence limit: (O+1)/Ex(1-(1/(9x(O+1)))+1.96/(3xsqrt(O+1)))3x100 (* O: actual death, E: expected death)
Institution subject to assessment		General Hospital
Assessment Period		1 year
Assessment Cycle		Every year
Assessment data source		Administrative data

Risk Adjustment	Y
Risk Adjustment Variable	■ Severity adjustment ○ Create a logistic regression model for each MRDx that includes the top 80% of in-hospital deaths, input all necessary variables, and remove insignificant adjustment variables (use backward elimination method) - Gender, age, insurance type, whether undergoing surgery, emergency inpatient, main diagnosis code, comorbidity index (Charlson Comorbidity Index, CCI)
Interpretation of output	■ Based on the average of 100.0, if it exceeds 100.0, it means that the mortality ratio is higher than the average, and if it is less than 100.0, it means that the mortality rate is low. ■ Using Byar's estimation method, apply a 95% confidence interval to classify the calculation results into A, B, and C groups. ○ Group A: Institutions with a low mortality ratio (institutions with an upper confidence interval lower than 100.0) ○ Group B: Institutions with an average mortality ratio (institutions with a confidence interval of 100.0) ○ Group C: Institutions with a high mortality ratio (institutions with lower confidence interval higher than 100.0)
Population subject to assessment	Children and Adolescents, Adult, Elderly
Clinical subject	(not applicable)
Background and reason for selection	■ The need to develop comprehensive indicators that can gauge the overall quality level and to expand to comprehensive assessment has been raised
Evidence and References	

4) Risk-standardized readmission ratio

☐ Common Criteria

※ Apply as inclusion criteria for the numerator or denominator of each indicator

○ Criteria for the subject of assessment

- **(Target patient)** Patients age 18 to 120 years among patients admitted to tertiary general hospitals and general hospitals between January and December (National Health Insurance and Medical Aid)

○ Exclusion criteria for the subject of assessment

- (Cancer disease) Cancer patients registered with specific code V193 and register for special calculation
- (Mental disease) Admitted to psychiatry with mental and behavioral disorders as the main diagnosis (F00~F99)
- (Rehabilitation) Enter the department of rehabilitation medicine for specialized rehabilitation treatment
- (OBGY(Obstetrics and Gynecology)) Hospitalized in OBGY with pregnancy, childbirth, and postpartum as the main diagnosis (O00~O99)
- (Transfer hospital) Admitted to another medical institutions (tertiary general hospital, general hospital, hospital) within one day after discharge
- (Death) In-hospital death

Indicator numbers		01RSR0002
Indicator Name		Risk-standardized readmission ratio (RSRR)
Indicator Definition		Comparing the actual number of unplanned readmission within 30 days of discharge to the same or other institutions due to any cause to the number of expected readmission considering factors that may affect the patient's readmission
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Actual number of unplanned readmission within 30 days of discharge to the same or other institutions due to any cause
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Predicted number of readmissions considering factors that may affect patient's readmission among patients with unplanned readmission due to any cause in the same or other institution within 30 days of discharge
	Inclusion Criteria	■ Subject of standard inpatient assessment of RSRR ○ NHI (National Health insurance), medical aid, and veterans insurance patients admitted to a tertiary general hospital and general hospital between January and December ■ Assessment target for unplanned readmission of RSRR ○ A patient who made an unplanned readmission due to all causes to the same or other institution of tertiary general hospitals and general hospitals and hospitals within 30 days of discharge among patients hospitalized to tertiary general hospital and general hospital - Excluding planned hospitalization among hospitalization and discharge (readmission within 30 days after discharge) from January of the year to January of the following year
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on RSRR ■ Criteria for exclusion from "readmission assessment target" of RSRR ○ Cases in which patients admitted to a tertiary general hospital and general hospital were readmitted to a long-term care hospital or clinic ○ In case of planned readmission - Psychiatric disorder: Hospitalized in psychiatry with mental and behavioural disorders (KCD code: F00~F99) as the main diagnosis - Rehabilitation: admitted to rehabilitation medicine for specialized rehabilitation

	- Obstetrics: Hospitalized in obstetrics and gynecology as the main diagnosis for pregnancy, childbirth and postpartum (KCD code: O00~O99) - Anticancer: As a V193 registered cancer patient, anticancer treatment - Planned treatment
Things to be considered for calculation	■ Calculation formula of RSRR ○ (Actual number of readmissions/ Expected number of readmissions)× 100 ■ Calculation formula of Group (Byar's approximation) ○ Lower confidence limit: O*/Ex(1-1/(9xO)-1.96/(3xsqrt(O)))3x100 ○ Upper confidence limit: (O+1)/Ex(1-(1/(9x(O+1)))+1.96/(3xsqrt(O+1)))3x100 (* O: Actual readmission, E: Expected readmission)
Institution subject to assessment	General Hospital
Assessment Period	1 year
Assessment Cycle	Every year
Assessment data source	Administrative data
Risk Adjustment	Y
Risk Adjustment Variable	■ Severity adjustment ○ Create a logistic regression model for each of the 5 treatment groups (surgery, internal medicine, cardiovascular, cardiorespiration, nervous system) - Gender, age, insurance type, MRDx, comorbidity index (Charlson Comorbidity Index, CCI)
Interpretation of output	■ Based on the average of 100.0, if it exceeds 100.0, it means that the readmission ratio is higher than the average, and if it is less than 100.0, it means that the readmission ratio is low. ■ Using Byar's estimation method, apply a 95% confidence interval to classify the calculation results into A, B, and C groups. ○ Group A: Institutions with a low readmission ratio (Institutions with an upper limit of confidence interval lower than 100.0) ○ Group B: Institutions with an average readmission ratio (Institutions with a confidence interval of 100.0) ○ Group C: Institutions with high readmission ratio (Institutions with lower confidence interval higher than 100.0)
Population subject to assessment	Adult, Elderly
Clinical subject	(not applicable)
Background and reason for selection	■ The need to develop comprehensive indicators that can gauge the overall quality level and to expand to comprehensive assessment has been raised
Evidence and References	■ Mille H.D., Reducing Hospital Readmissions by Transforming Chronic Care. Pittsburgh Regional Health Initiative 2010

5) Long-term care hospital

☐ Common Criteria

※ Apply as inclusion criteria for the numerator or denominator of each indicator

○ Criteria for the subject of assessment

- **(Target patient)** All long-term care hospitals that implement a one-day flat rate plan

○ Exclusion criteria for the subject of assessment

- Statement of claims for the Hospice Pilot Project
- Among the long-term-care hospitals in accordance with Article 3 of the Medical Service Act, the mental medical institution in accordance with Paragraph 5 of Article 3 of the Act on the Improvement of Mental Health and the Support for Welfare Services for Mental Patients and the medical rehabilitation facilities for persons with disabilities in accordance with Paragraph 1(4) of Article 58 of the Act on Welfare of Persons with Disabilities

Indicator numbers		01LTC0046
Indicator Name		Proportion of high-risk patients with new decubitus ulcers
Indicator Definition		Proportion of new decubitus ulcers patients compared to the previous month among high-risk patients admitted to long-term care hospitals
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Outcome
Types of health care services		Long-term care
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who had no decubitus ulcer at the previous month's assessment, but have new decubitus ulcers at level 1 or higher at the current month's assessment
	Inclusion Criteria	■ Definition of a newly developed decubitus ulcer ○ It means the existence of a new decubitus ulcer after the previous assessment. ■ Definition and steps of decubitus ulcer ○ A decubitus ulcer is a state in which necrosis occurs in tissues due to circulatory disorders in capillaries when continuous pressure is applied to a certain part of the body. - Stage 1: The epidermis is normal, but the erythema on the epidermis does not disappear within 30 minutes - Stage 2: There is partial skin damage including the epidermis or dermis - Stage 3: There is damage to the entire skin including the dermis and subcutaneous tissue - Stage 4: There is damage to the subcutaneous tissue, fascia, muscle, deep tissue including bones and joints
	Exclusion Criteria	
	Denominator	Number of patients in the high-risk group in both the previous month and the current month among the long-term care hospital inpatients who completed patient assessment data for the current month and the previous month
	Inclusion Criteria	■ Criteria for high-risk groups ○ If one or more of the following apply 1. In the case of position change, the state falls under more than 'significant help is needed' or 'no action has occurred' 2. In the case of sitting up, the state falls under more than 'significant help is needed' or 'no action has occurred' 3. In the case of moving seats, the state falls under more than 'significant help is needed' or 'no action has occurred'. 4. In the case of going out of the room, the state falls under more than 'significant help is needed' or 'no action has occurred'

Exclusion Criteria	
Things to be considered for calculation	■ Ends after the assessment was conducted from October 2009 to March 2018 (2nd – 7th round), resumed from assessment in January 2020 (2nd round of the 2nd cycle)
Institution subject to assessment	Long-term care hospital
Assessment Period	3 months
Assessment Cycle	Every year
Assessment data source	Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	Lower is better
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	(not applicable)
Background and reason for selection	■ The decubitus ulcer is a tissue necrosis caused by impaired capillary circulation when constant pressure is applied to a certain part of the body. When a decubitus ulcer develops, it is painful, recovery is slow, and complications such as skin and bone infections can occur. For the prevention of decubitus ulcer, it is necessary to change the patient's position frequently so that pressure is not concentrated on the body, and sufficient services for the prevention and treatment of decubitus ulcer must be provided.
Evidence and References	■ Lee Ji-yoon et al., Development of quality management plan and assessment indicator of long-term care hospital, HIRA, 2008

Indicator numbers		01LTC0057
Indicator Name		Number of patients per doctor
Indicator Definition		Average number of patients per doctor in long-term-care hospital
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Long-term care
Types of service provision		In-patient
Calculation formula	Numerator	The average number of hospitalized patients during the assessment period of the long-term care hospital
	Inclusion Criteria	■ All patients admitted to the long-term care hospital, including those admitted to the daytime ward
	Exclusion Criteria	■ ICU inpatients, a patient admitted to a seclusion room operated as a separate ward
	Denominator	Average number of doctors working in long-term care hospital during the assessment period
	Inclusion Criteria	■ Number of full-time doctors in long-term care institutions (including Korean medicine doctors) ■ Criteria for the required number of doctors compared to the number of hospitalized patients in long-term care hospitals (「Enforcement Decree of the Medical Service Act [Appendix 5]) ○ (Doctor) 2 doctors for up to 80 one-day hospitalized patients per year, and 1 doctor for every 40 hospitalized patients exceeding 80 (including Korean medicine doctors)
	Exclusion Criteria	
Things to be considered for calculation		■ Apply the number of doctors and patients in the notification of the calculation status of the hospitalization fee differential system
Institution subject to assessment		Long-term care hospital
Assessment Period		3 months
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		(not applicable)

Background and reason for selection	■ This is to provide at least information about doctors whose minimum number is stipulated in the Medical Service Act, and to assess the level of basic manpower that provides appropriate medical services to patients, such as patient-centered treatment, systematic nursing, and drug safety management.
Evidence and References	■ Criteria for the number of doctors compared to the number of inpatients in long-term care hospitals (「Enforcement Decree of the Medical Service Act [Annex 5])

Indicator numbers		01LTC0058
Indicator Name		Number of patients per nurse
Indicator Definition		Average number of patients per nurse in long-term-care hospital
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Long-term care
Types of service provision		In-patient
Calculation formula	Numerator	The average number of hospitalized patients during the assessment period of the long-term care hospital
	Inclusion Criteria	■ All patients admitted to the long-term care hospital, including those admitted to the daytime ward
	Exclusion Criteria	■ ICU inpatients, a patient admitted to a seclusion room operated as a separate ward
	Denominator	Average number of nurses working in long-term care hospital during the assessment period
	Inclusion Criteria	■ Nurses in charge of nursing for hospitalized patients. ■ Criteria for the required number of nurses compared to the number of hospitalized patients in long-term care hospitals (「Enforcement Decree of the Medical Service Act [Appendix 5]) ○ (Nurse) 1 nurse for up to 6 one- day hospitalized patients per year (However, a nurse's aide may be used within 2/3 of the nurse's capacity.)
	Exclusion Criteria	■ Nursing staff not dedicated to nursing hospitalized patients (nursing supervisor, full-time union, home nurse, hospice nurse, etc.) ■ Nursing staff who rotate or dispatch (including PRN) regular beds and special beds ■ Nursing staff working in ICU, seclusion room, artificial kidney room, and physical therapy room among special hospital beds ■ Nursing staff working for outpatient treatment ■ Cases where the consecutive absence period is 16 days or more
Things to be considered for calculation		■ Apply the number of nurses and patients in the notification of the calculation status of the hospitalization fee differential system
Institution subject to assessment		Long-term care hospital
Assessment Period		3 months
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly

Clinical subject	(not applicable)
Background and reason for selection	■ This is to provide at least information about nurses whose minimum number is stipulated in the Medical Service Act, and to assess the level of basic manpower that provides appropriate medical services to patients, such as patient-centered treatment, systematic nursing, and drug safety management.
Evidence and References	■ Criteria for the number of nurses compared to the number of inpatients in long-term care hospitals (「Enforcement Decree of the Medical Service Act [Annex 5])

Indicator numbers		01LTC0059
Indicator Name		Number of patients per nursing staff
Indicator Definition		Average number of patients per nursing staff in long-term-care hospital (nurse, nurse's aide)
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Long-term care
Types of service provision		In-patient
Calculation formula	Numerator	The average number of hospitalized patients during the assessment period of the long-term care hospital
	Inclusion Criteria	■ All patients admitted to the long-term care hospital, including those admitted to the daytime ward
	Exclusion Criteria	■ ICU inpatients, a patient admitted to a seclusion room operated as a separate ward
	Denominator	Average number of nursing staff working during the assessment period in a long-term care hospital
	Inclusion Criteria	■ Scope of the nursing workforce ○ A nurse in charge of nursing work for hospitalized patients and a nurse's aide to assist with the nursing work ■ Criteria for the required number of nurses compared to the number of hospitalized patients in long-term care hospitals (「Enforcement Decree of the Medical Service Act [Appendix 5]) ○ (Nurse) 1 nurse for up to 6 one- day hospitalized patients per year (However, a nurse's aide may be used within 2/3 of the nurse's capacity.)
	Exclusion Criteria	■ Nursing staff not dedicated to nursing hospitalized patients (nursing supervisor, full-time union, home nurse, hospice nurse, etc.) ■ Nursing staff who rotate or dispatch (including PRN) regular beds and special beds ■ Nursing staff working in ICU, seclusion room, artificial kidney room, and physical therapy room among special hospital beds ■ Nursing staff working for outpatient treatment ■ Cases where the consecutive absence period is 16 days or more
Things to be considered for calculation		■ Apply of the number of nurses, nurse's aides and patients in the notification of the calculation status of the hospitalization fee differential system
Institution subject to assessment		Long-term care hospital
Assessment Period		3 months
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N

Risk Adjustment Variable	
Interpretation of output	Lower is better
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	(not applicable)
Background and reason for selection	■ This is to provide at least information about nurses whose minimum number is stipulated in the Medical Service Act, and to assess the level of basic manpower that provides appropriate medical services to patients, such as patient-centered treatment, systematic nursing, and drug safety management.
Evidence and References	■ Criteria for the number of nurses compared to the number of inpatients in long-term care hospitals (「Enforcement Decree of the Medical Service Act [Annex 5])

Indicator numbers		01LTC0074
Indicator Name		Rate of pharmacist working days
Indicator Definition		Proportion of days a pharmacist worked in the long-term-care hospital among the total number of days subject to the assessment period (3 months)
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Long-term care
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of days subject to the denominator, the number of working days of the pharmacist working in the long-term care hospital
	Inclusion Criteria	■ Number of working days of the pharmacist working in the long-term care hospital ○ However, if the number of patients is less than 200, part-time pharmacists who work more than 16 hours a week can also be calculated.
	Exclusion Criteria	■ Korean oriental pharmacists
	Denominator	Total number of days for assessment period of long-term care hospitals
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		■ Number of days of employment of a pharmacist on the notification of the calculation status of the hospitalization fee differential system
Institution subject to assessment		Long-term care hospital
Assessment Period		3 months
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		
Clinical subject		(not applicable)
Background and reason for selection		■ This is to provide at least information about pharmacists whose minimum number is stipulated in the Medical Service Act, and to assess the level of basic manpower that provides appropriate medical services to patients, such as patient-centered treatment, systematic nursing, and drug safety management.

Evidence and References	■ Criteria for Minimum number of pharmacists and Korean oriental pharmacists in long-term care hospitals (Enforcement Decree of the Medical Service Act [Attached Table 5-2]) ○ One or more pharmacists or Korean oriental pharmacists ○ However, in case of 200 beds or less, pharmacists or Korean oriental pharmacists who work part-time for more than 16 hours per week may be employed.

Indicator numbers		01LTC0082
Indicator Name		Rate of patients with weight loss of 5% or more compared to the previous month
Indicator Definition		Proportion of patients with weight loss of 5% or more compared to the previous month among patients hospitalized in a long-term care hospital
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Outcome
Types of health care services		Long-term care
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients with weight loss of 5% or more compared to the previous month
	Inclusion Criteria	■ Definition of 5% or more weight loss ○ If the value obtained by subtracting the weight assessed in the current month from the weight assessed in the previous month is greater than or equal to 5% of the weight assessed in the previous month ■ Recognition criteria for weight results ○ Weight results measured during the patient assessment data preparation (observation) period
	Exclusion Criteria	
	Denominator	Number of patients with weight results among long-term care hospital inpatients who completed patient assessment data in the current month and the previous month
	Inclusion Criteria	
	Exclusion Criteria	■ Terminal disease ■ For obese patients ○ BMI (Body mass indicator)* ≥ 25kg/㎡ * BMI calculation formula: Weight (kg) / Height squared (㎡)
Things to be considered for calculation		
Institution subject to assessment		Long-term care hospital
Assessment Period		3 months
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		(not applicable)

Background and reason for selection	■ Weight loss is important for quality assessment because excessive weight loss increases the risk of developing decubitus ulcers and increases the risk of death
Evidence and References	■ Shahin, E.S.M., Meijers, J.M.M., Schols, J.M.G., Tannen, A., Halfens, R,J.G., Dassen, T. (2010). The relationship between malnutrition parameters and pressure ulcers in hospitals and nursing homes. Nutrition, 26

Indicator numbers		01LTC0088
Indicator Name		Rate of patients with indwelling catheters
Indicator Definition		Proportion of patients with indwelling catheters among patients hospitalized in a long-term care hospital
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Long-term care
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients with indwelling catheters
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of hospitalized patients in long-term care hospitals who completed patient assessment data in the month
	Inclusion Criteria	■ Operate as a standardized indicator by reflecting each composition ratio through classification of the patient group. ○ High-risk group - Fecal incontinence: If the stool control status item is 'unable to control' according to patient assessment data) - In case of stage 3 or higher decubitus ulcer - In the case of 'coma' on patient assessment data and all items of Activities of daily living are 'completely needing help' or higher - In the case of a quadriplegic, paraplegic, or spinal cord injury ○ Low-risk group: Patients who do not fall under the high-risk group
	Exclusion Criteria	■ Cases where the assessment classification* of patient evaluation data is inpatient assessment * Assessment classification: 1. In-patient assessment, 2. Continuing inpatient assessment, 3. When applying the previous patient evaluation data
Things to be considered for calculation		
Institution subject to assessment		Long-term care hospital
Assessment Period		3 months
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly

Clinical subject	(not applicable)
Background and reason for selection	■ Long-term use of an indwelling catheter can cause problems in various aspects, including urinary tract infection, urosepsis, physical damage to the urinary system, and social psychological problems. Therefore, the purpose of this is to assess whether the indwelling catheter is being used for institutional convenience and to assess the quality deterioration of medical services.
Evidence and References	■ NICE, Guidelines for preventing healthcare-associated infections during long-term urinary catheterization in primary and community care, 2003

Indicator numbers		01LTC0090
Indicator Name		Rate of patients whose decubitus ulcer is improved
Indicator Definition		Proportion of patients whose decubitus ulcer is improved among patients hospitalized in a long-term care hospital
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Outcome
Types of health care services		Long-term care
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients whose decubitus ulcer was improved at the monthly assessment compared with the previous month's assessment
	Inclusion Criteria	■ Definition of improvement of decubitus ulcer ○ If one or more of the following apply - A case where the total number of decubitus ulcers decreased comparing with the decubitus of previous month - A case in which the highest stage was lowered comparing with the decubitus of previous month ■ Definition and steps of decubitus ulcer ○ A decubitus ulcer is a state in which necrosis occurs in tissues due to circulatory disorders in capillaries when continuous pressure is applied to a certain part of the body. - Stage 1: The epidermis is normal, but the erythema on the epidermis does not disappear within 30 minutes - Stage 2: There is partial skin damage including the epidermis or dermis - Stage 3: There is damage to the entire skin including the dermis and subcutaneous tissue - Stage 4: There is damage to the subcutaneous tissue, fascia, muscle, deep tissue including bones and joints
	Exclusion Criteria	
	Denominator	Number of patients with decubitus ulcer Among the patients admitted to the long-term care hospital who completed patient assessment data in the current month and the previous month
	Inclusion Criteria	
	Exclusion Criteria	■ When both improvement and exacerbation of decubitus ulcer occur

Things to be considered for calculation	■ Definition of exacerbation of decubitus ulcer ○ Cases that fall under one or more of the following - Cases where the total number of decubitus ulcers increased from the previous month - Cases where decubitus ulcer at the highest level of decubitus ulcer became more severe from the previous month
Institution subject to assessment	Long-term care hospital
Assessment Period	3 months
Assessment Cycle	Every year
Assessment data source	Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	(not applicable)
Background and reason for selection	■ The decubitus ulcer is a tissue necrosis caused by impaired capillary circulation when constant pressure is applied to a certain part of the body. When a decubitus ulcer develops, it is painful, recovery is slow, and complications such as skin and bone infections can occur. For the prevention of decubitus ulcer, it is necessary to change the patient's position frequently so that pressure is not concentrated on the body, and sufficient services for the prevention and treatment of decubitus ulcer must be provided.
Evidence and References	■ Lee Ji-yoon et al., Development of quality management plan and assessment indicator of long-term care hospital, HIRA, 2008

Indicator numbers		01LTC0091
Indicator Name		Rate of patients whose Activities of daily living (ADL) is improved
Indicator Definition		Proportion of patients whose ADL is improved compared to the previous month among patients hospitalized in a long-term care hospital
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Outcome
Types of health care services		Long-term care
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients whose ADL is improved compared to the previous month
	Inclusion Criteria	■ Definition of improvement of ADL ○ A case in which the total score of 10 ADL items decreased by 1 point or more according to the criteria of patient evaluation data
	Exclusion Criteria	
	Denominator	Number of hospitalized patients in long-term care hospitals who completed patient evaluation data in the current month and the previous month
	Inclusion Criteria	
	Exclusion Criteria	■ Cases where all 10 ADL values were 'completely independent' in the previous month's assessment ■ Patients who fall under the 'Maximum of medical care' in both the previous month and the current month's assessment
Things to be considered for calculation		
Institution subject to assessment		Long-term care hospital
Assessment Period		3 months
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		(not applicable)
Background and reason for selection		■ By improving ADL, the results of medical service provision can be assessed, and patients' independence and autonomy can be improved to enhance overall health and quality of life and induce return to the community
Evidence and References		

Indicator numbers		01LTC0093
Indicator Name		Rate of patients with longer than 181 days of hospitalization
Indicator Definition		Proportion of patients with longer than 181 days of hospitalization among patients hospitalized in a long-term care hospital inpatient
Status of indicator use		Regular Indicator
Quality components		Efficiency
Indicator type		Process
Types of health care services		Long-term care
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients with longer than 181 days of hospitalization
	Inclusion Criteria	■ Criteria for judging patients hospitalized for more than 181 days ○ According to the daily case payment system and hospitalization fee calculation standards
	Exclusion Criteria	
	Denominator	Number of hospitalized patients of the long-term care hospital
	Inclusion Criteria	
	Exclusion Criteria	■ In case of maximum of medical care, high of medical care, medium of medical care patient group* * Patient group: The patient group is determined according to the patient evaluation data and is classified as follows; 1. maximum of medical care group, 2. high of medical care group, 3. medium of medical care group, 4. problem behavior group, 5. cognitive impairment group, 6. light of medical care group, 7. body function impairment group
Things to be considered for calculation		
Institution subject to assessment		Long-term care hospital
Assessment Period		3 months
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		(not applicable)
Background and reason for selection		■ Long-term hospitalization in the hospital lowers the quality of life of the elderly and increases the risk of death due to functional deterioration. Therefore, it is difficult to see that excessive long-term hospitalization can properly perform the functions of a long-term care hospital, so this is to assess the adequacy of hospitalization.

Evidence and References	■ Challis D, Darton R, Johnson L, Stone M, Traske K, An evaluation of an alternative to long-stay hospital care for frail elderly patients: Costs ans effectiveness. Age &Ageing. 20(4), 245-254 ■ Philbin, E.F., Roerden, J.B (1997). Patient outcomes. Longer hospital length of stay is not related to better clinical outcomes in congestive heart failure. American journal of Managed care, 3(9), 1285-1991

Indicator numbers		01LTC0094
Indicator Name		Rate of patients whose moderate to severe pain is improved
Indicator Definition		Proportion of patients whose pain improved compared to the previous month among the long-term care hospitalized patients who had moderate to severe pain in the previous month
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Outcome
Types of health care services		Long-term care
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients whose pain improved compared to the previous month as a result of the monthly assessment
	Inclusion Criteria	■ Definition of pain improvement (reduction) ○ Cases in which the intensity or frequency of pain is reduced according to the classification of pain intensity and frequency of occurrence ■ Classification of pain frequency ○ No pain, there is pain but not every day, there is pain every day ■ Classification of pain intensity ○ Mild or no pain - NRS, VAS scale: 0~3 points - FPS: 0~2 points ○ Moderate pain - NRS, VAS scale: 4~6 points - FPS: 3 points ○ Intense or intolerable pain - NRS, VAS scale: 7-10 points - FPS: 4-5 points
	Exclusion Criteria	■ A case in which both improvement in intensity (frequency) and deterioration in frequency (intensity) occur at the same time
	Denominator	Number of patients with moderate to severe pain in the previous assessment among patients admitted to a long-term care hospital who completed both patient evaluation data in the current month and the previous month
	Inclusion Criteria	■ Definition of moderate or higher pain ○ In the case of moderate pain or intense or unbearable pain, ○ 4 to 10 points by NRS, VAS scale or 3 to 5 points by FPS scale
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		Long-term care hospital

Assessment Period	3 months
Assessment Cycle	Every year
Assessment data source	Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	(not applicable)
Background and reason for selection	■ Since pain relief is important for the quality of life of patients, it is intended to comprehensively assess the treatment efforts of long-term care hospitals for symptoms that require medical control and improvement of the patient's health status
Evidence and References	

Indicator numbers		01LTC0096
Indicator Name		Urinary tract infection rate realted to an indwelling catheter
Indicator Definition		Proportion of patients with urinary tract infection among hospitalized patients with indwelling catheters in long-term care hospitals
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Outcome
Types of health care services		Long-term care
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients with a urinary tract infection
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of hospitalized patients in a long-term care hospital with an indwelling catheter in the month
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		Long-term care hospital
Assessment Period		3 months
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		(not applicable)
Background and reason for selection		■ The incidence of infection in medical institutions is an important indicator to measure the quality of medical services, and urinary tract infection is a key subject to be controlled when treating and nursing patients in long-term care hospitals, which are vulnerable to infection
Evidence and References		

Indicator numbers		01LTC0097
Indicator Name		Inspection rate of Drug Utilization Review (DUR)
Indicator Definition		Average number of DUR (Drug Utilization Review) inspection cases per hospitalization day of the patient in long-term care hospital
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Long-term care
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of days subject to the denominator, the number of DUR inspection implemented
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	The total number of hospitalization days of patients admitted to long-term care hospital
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		■ Utilize data from DUR-related departments
Institution subject to assessment		Long-term care hospital
Assessment Period		3 months
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		(not applicable)
Background and reason for selection		■ Through DUR, a service that checks in advance for inappropriate drug use by providing information related to drug safety in real time when prescribing and dispensing drugs, the risk of exposure to drug side effects should be prevented, and the safety of patients admitted to long-term care hospitals should be managed
Evidence and References		

Indicator numbers		01LTC0098
Indicator Name		Return rate to the community
Indicator Definition		Proportion of patients discharged from the hospital to home or facility among patients discharged from long-term care hospital
Status of indicator use		Regular Indicator
Quality components		Coordination
Indicator type		Outcome
Types of health care services		Long-term care
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients discharged from the hospital to home or facility
	Inclusion Criteria	■ Definition of patients discharged to home or facility ○ Patients who have not been admitted to long-term care institutions within 30 days of discharge ■ Calculation criteria for discharge date period ○ Day 30 days from the day after discharge
	Exclusion Criteria	
	Denominator	Number of patients discharged from long-term care hospitals
	Inclusion Criteria	■ Definition of discharged patient ○ Discharge refers to the case of '9. Discharge or termination of outpatient treatment' according to the types of medical results* of the claim specification (form) * Types of medical results: Classification of patient status on the last day of treatment on benefit cost claim specification (form) (1.Continue, 2.Transfer, 3.Return, 4.Death, 9.Discharge, or termination of outpatient treatment)
	Exclusion Criteria	■ Maximum of medical care, high of medical care, medium of medical care patient group* * Patient group: The patient group is determined according to the patient evaluation data and is classified as follows; 1. maximum of medical care group, 2. high of medical care group, 3. medium of medical care group, 4. problem behavior group, 5. cognitive impairment group, 6. light of medical care group, 7. body function impairment group ■ Patient who died within 30 days after discharge (including discharge date)
Things to be considered for calculation		
Institution subject to assessment		Long-term care hospital
Assessment Period		3 months
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		

Interpretation of output	The higher, the better.
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	(not applicable)
Background and reason for selection	■ Returning to the community other than a hospital after discharge from a long-term care hospital means that the quality of long-term care hospital care is excellent, and at the same time meets the purpose of a medical institution that treats hospitalized patients
Evidence and References	

Indicator numbers		01LTC0099
Indicator Name		Rate of patients receiving MMSE and dementia rating scale tests among dementia patients
Indicator Definition		Proportion of patients receiving MMSE (Mini Mental State Examination) and dementia rating scale tests among the long-term care hospitalized patients diagnosed with dementia
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Long-term care
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients receiving MMSE and dementia rating scale test (CDR, GDS)
	Inclusion Criteria	■ If both the MMSE test and the dementia rating scale test have been performed within the past year, it is recognized. ■ Types of dementia rating scale test ○ CDR (Clinical Dementia Rating) ○ GDS (Global Deterioration Scare) ※ Recognized even if only one of the two tests is satisfied
	Exclusion Criteria	■ Cases where there is no test result or the test date is after patient evaluation data preparation
	Denominator	Number of dementia inpatients in long-term care hospitals for whom patient evaluation data was prepared in the month
	Inclusion Criteria	■ Recognition criteria for dementia patients ○ If there is dementia morbidity (KCD code: F00~F003, G30) or if dementia is checked on patient evaluation data
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		Long-term care hospital
Assessment Period		3 months
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		(not applicable)

Background and reason for selection	■ For the purpose of treating dementia, it is important to delay the cognitive decline of the patient, and it is essential to perform a basic assessment of the dementia patient in the therapeutic process
Evidence and References	

Indicator numbers		01LTC0100
Indicator Name		Rate of patients within the appropriate range among diabetes patients according to HbA1c test results
Indicator Definition		Among diabetes patients hospitalized at long-term care hospital, the proportion of patients whose HbA1c (Glycosylated Hemoglobin, Type A1C) test results are within the appropriate range
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Outcome
Types of health care services		Long-term care
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients whose HbA1C test results are within the appropriate range within the last 3 months
	Inclusion Criteria	■ Appropriate range of HbA1c test result ○ 4% ≤ HbA1c test result 〈8%
	Exclusion Criteria	■ Cases where there is no test result or the test date is after patient assessment data preparation
	Denominator	Number of diabetes inpatients of the long-term care hospital who completed patient evaluation data in the month
	Inclusion Criteria	■ Recognition criteria for people with diabetes ○ If there is diabetes morbidity (KCD code: E10~E14) on the claim specification (form) or diabetes is checked on patient evaluation data
	Exclusion Criteria	■ Cases where the assessment classification* of patient evaluation data is inpatient assessment * Assessment classification: 1. In-patient assessment, 2. Continuing inpatient assessment, 3. When applying the previous patient evaluation data
Things to be considered for calculation		
Institution subject to assessment		Long-term care hospital
Assessment Period		3 months
Assessment Cycle		Every year
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		(not applicable)

Background and reason for selection	■ Diabetes is a disease that occurs frequently among the elderly, but it is effective in preventing complications and has a great impact on quality of life, so proper blood sugar management can be said to reflect the quality of service in the hospital ■ Since most clinical guidelines recommend active blood sugar control for diabetes patients, this is intended to determine the appropriateness of disease management in long-term care hospitals
Evidence and References	

6) Intensive care unit (ICU)

☐ Common Criteria

※ Apply as inclusion criteria for the numerator or denominator of each indicator

○ Criteria for the subject of assessment

- **(Target patient)** Patients 18 years of age or older admitted to the Intensive Care Unit (ICU) (National Health Insurance and Medical Aid, Patriots and Veterans Insurance)

○ Exclusion criteria for the subject of assessment

- Patients admitted to the Intensive Care Unit for less than 48 hours
- Patients admitted to the Neonatal Intensive Care Unit or pediatric intensive care unit
- Burn patients (Specific code: V247, V248, V249, V250)

Indicator numbers		01ICU0002
Indicator Name		Mortality rate
Indicator Definition		Proportion of deaths among patients discharged from the final ICU
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who died
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of patients finally discharged from the ICU
	Inclusion Criteria	■ In case of repeated check-in and check-out, the final check-out becomes the criteria
	Exclusion Criteria	■ Cases that received a brain death decision by the Brain Death Decision Committee on the premise of transplantation ■ Patients who are still in the hospital when the assessment is finished ■ Apply common exclusion criteria to the subject of assessment of ICU
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		3 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form), Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Adult, Elderly
Clinical subject		(not applicable)
Background and reason for selection		■ In order to assess the level of ICU care, it is necessary to assess the proportion of patients who improved after entering the ICU and died due to deterioration without being transferred to a general ward
Evidence and References		■ Quality measurement at intensive care units; which indicators should we use (J Crit Care 2007;22:267) ■ USA Institute for Healthcare Improvement (IHI) ■ Research Service Final Report on ICU assessment Indicators and assessment Criteria (Sin Jeung-su, et al of the Korean Society of Critical Care Medicine)

Indicator numbers		01ICU0006
Indicator Name		Rate of ICU readmission within 48 hours
Indicator Definition		Proportion of cases re-admitted to the ICU within 48 hours among the cases transferred from the ICU to the general ward
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the cases subject to the denominator, the number of cases re-admitted to the ICU within 48 hours
	Inclusion Criteria	
	Exclusion Criteria	■ When re-entry is scheduled according to the planned treatment process
	Denominator	Number of transfers from ICU to general ward
	Inclusion Criteria	■ When a patient is admitted to the ICU multiple times, the number of cases transferred to the general ward
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on ICU
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		3 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Adult, Elderly
Clinical subject		(not applicable)
Background and reason for selection		■ If a patient re-enters the ICU within 48 hours after being transferred from the ICU to the general ward, there is a high possibility that the patient left early in an inappropriate state at the time of transfer, so it is necessary to assess this

Evidence and References	■ Prospectively defined indicators to improve the safety and quality of care for critically ill patients; a report from the Task Force on safety and Quality of the ESICM (Intensive Care Med 2012;38:598) ■ Intensive care unit quality improvement; A how-to guide for the interdisciplinary team (Crit Care Med 2006;34:211) ■ Research Service Final Report on ICU assessment Indicators and assessment Criteria (Sin Jeung-su, et al of the Korean Society of Critical Care Medicine)

Indicator numbers		01ICU0010
Indicator Name		Availability of specialized equipment and facilities
Indicator Definition		Availability of specialized equipment and facilities for critical care
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	One point is allocated for each, such as specialized diagnostic equipment, treatment equipment, and facilities required for ICU patient care (total of 6 points)
	Inclusion Criteria	■ Recognition criteria for professional diagnostic and therapeutic equipment and facilities for ICU treatment ① Arterial blood gas analysis device: One or more units in the entire ICU ② Mobile ventilator for patient transport: at least one in hospital ③ CRRT device: at least one in hospital ④ Bronchoscopy: at least one in hospital ⑤ Independent space for ICU specialists: At least one room in the entire ICU (located on the same floor as the ICU, including the on-call room) ⑥ Seclusion room: 1 or more rooms in the entire ICU ※ In the case of tertiary general hospital, if there are more than 6 types, it is recognized as a perfect score. In the case of general hospitals, if there are more than 5 types, it is recognized as a perfect score
	Exclusion Criteria	
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		3 months
Assessment Cycle		Undecided
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		
Clinical subject		(not applicable)

Background and reason for selection	■ When a patient falls into respiratory failure, shock, or multiorgan failure in the ICU, if there is no specialized equipment to keep the patient in the ICU, an opportunity to recover the patient may be missed. Therefore, it is necessary to assess this
Evidence and References	■ Prospectively defined indicators to improve the safety and quality of care for critically ill patients; a report from the Task Force on safety and Quality of the ESICM (Intensive Care Med 2012;38:598) ■ Intensive care unit quality improvement; A how-to guide for the interdisciplinary team (Crit Care Med 2006;34:211) ■ Research Service Final Report on ICU assessment Indicators and assessment Criteria (Sin Jeung-su, et al of the Korean Society of Critical Care Medicine)

Indicator numbers		01ICU0013
Indicator Name		Number of ICU beds per designated specialist
Indicator Definition		Average number of ICU beds per ICU specialist
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Number of beds in the ICU
	Inclusion Criteria	■ Number of beds applied to the general ICU during the period subject to assessment among 「The current status of calculating the differential nursing management fee system for ICU inpatients.」 according to the level of securing nursing staffs reported to the HIRA
	Exclusion Criteria	
	Denominator	Number of designated specialists residing in the ICU and available at all times
	Inclusion Criteria	■ Definition of ICU designated specialists 〈Common Factors〉 ① The ICU specialist is a specialist in the medical department who diagnoses the patient's symptoms and decides on treatment methods ② As a full-time specialist who has been appointed or assigned as an ICU specialist before the assessment period, it must be possible to check the working hours with the ICU work schedule ③ Specialists must work for at least 3 consecutive months at the ICU (Unit) to which they have been appointed or assigned. However, in the case of resignation, leave of absence, childbirth, etc. of a specialized specialist, it is possible to replace him or her with a new specialist appointed or assigned as a specialist. In this case, the newly designated specialist needs to submit a work schedule for the period of 3 months from the date of replacement. ④ As a specialist in charge of actual patient care, he/she must satisfy the criteria for a full-time specialist (⑧~⑪) or a half-time specialist (⑫) and work at the ICU for more than the applicable working hours. ⑤ Manage the patients of the ICU and manage the ICU entry/exit ⑥ During ICU working hours, it is not possible to work concurrently with other duties or as a substitute specialist. However, emergency surgery can be performed in an emergency that requires surgical treatment for patients who re-visit the ICU. ⑦ If the designated specialist is on vacation or business trip, an aternate specialist must be appointed.

		〈Full-time specialist - considered as 1 person〉 ⑧ (A) If there is only one person: Must work at the ICU for 8 hours or more per day (day time) and 5 days or more per week (Weekends and holidays available) ⑨ (B) If there are two or more persons: One person must meet the conditions in (A), and the other people must work at the ICU for more than 40 hours a week. ⑩ In case of unavoidable circumstances, outpatient treatment can be performed within 2 days a week, 1 day 4 hours, but an alternative specialist or a designated resident must be assigned ⑪ In the case of hours when the specialist is not stationed, a resident doctor or higher working in the ICU under the guidance of the specialist must be assigned (recommended) 〈Half-day specialist - considered as 0.5 person〉 ⑫ Working more than 5 sessions per day (Mon-Fri, day time) - Session means morning or afternoon - Excluding weekends and holidays Ex) If Monday/Tuesday is a public holiday, work 3 sessions from Wednesday to Friday
	Exclusion Criteria	■ Designated specialists for the following 7 medical support subjects - radiology, laboratory medicine, pathology, nuclear medicine, preventive medicine, radiation oncology, occupational environmental medicine
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		3 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		
Clinical subject		(not applicable)
Background and reason for selection		■ It is known that the presence of an ICU specialist increases the level of ICU care and improves the patient's prognosis
Evidence and References		■ Prospectively defined indicators to improve the safety and quality of care for critically ill patients; a report from the Task Force on safety and Quality of the ESICM (Intensive Care Med 2012;38:598) ■ Intensive care unit quality improvement; A how-to guide for the interdisciplinary team (Crit Care Med 2006;34:211) ■ Research Service Final Report on ICU assessment Indicators and assessment Criteria (Sin Jeung-su, et al of the Korean Society of Critical Care Medicine)

Indicator numbers		01ICU0014
Indicator Name		Number of ICU beds per nurse
Indicator Definition		Average number of ICU beds per ICU nurse
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Number of beds in the ICU
	Inclusion Criteria	■ Number of beds applied to the general ICU during the period subject to assessment among 「The current status of calculating the differential nursing management fee system for ICU inpatients.」 according to the level of securing nursing staffs reported to the HIRA
	Exclusion Criteria	
	Denominator	Number of nurses working in the ICU
	Inclusion Criteria	■ Average number of nurses in general ICU during the period subject to assessment among 「The current status of calculating the differential nursing management fee system for ICU inpatients」 reported to the HIRA
	Exclusion Criteria	
Things to be considered for calculation		■ The lowest score of the standardized interval is applied to institutions that do not report the differential system
Institution subject to assessment		General Hospital
Assessment Period		3 months
Assessment Cycle		Undecided
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		
Clinical subject		(not applicable)
Background and reason for selection		■ Overseas study reveals that the fewer patients in the ICU nurses care for, the higher the level of ICU care

Evidence and References	■ Prospectively defined indicators to improve the safety and quality of care for critically ill patients; a report from the Task Force on safety and Quality of the ESICM (Intensive Care Med 2012;38:598) ■ Intensive care unit quality improvement; A how-to guide for the interdisciplinary team (Crit Care Med 2006;34:211) ■ Research Service Final Report on ICU assessment Indicators and assessment Criteria (Sin Jeung-su, et al of the Korean Society of Critical Care Medicine)

Indicator numbers		01ICU0015
Indicator Name		Rate of possessing intensive care protocol
Indicator Definition		Proportion of protocols in use out of 9 protocols required for intensive care
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the retaining numbers subject to the denominator, the number of protocols retained by the hospital
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Total number of possessing intensive care protocol (9)
	Inclusion Criteria	■ Recognition criteria for types and details of critical care protocols ① Admission protocol: admission criteria (including target patients), presenting the subject of deciding admission ② Check-out protocol: Check-out criteria (including target patients), presenting the subject of deciding check-out ③ Ventilator weaning protocol: Selecting target patients, weaning indication, screening test, weaning method ④ Sedation, analgesia, delirium protocol: Selecting target patients, patient assessment method, drug type, dose control protocol ⑤ Deep veinthrombus prevention protocol: Selecting target patients, indications, drug types and doses ⑥ Stress ulcer prevention protocol: Selecting target patients, indications, drug type and dosage ⑦ Protocol for overall mechanical ventilation: Selecting target patients, mechanical ventilation adjustment protocol according to the degree of oxygenation ⑧ Ventilator-related pneumonia prevention protocol: Selecting target patients, including upper body elevation and oral hygiene washing ⑨ Full barrier precautions in case of central catheter insertion: Selecting target patients, sequence and method
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		3 months
Assessment Cycle		Undecided

Assessment data source	Medical records (Survey form)
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	
Clinical subject	(not applicable)
Background and reason for selection	■ Standardized treatment guidelines and protocols are very important for intensive care, and treatment based on them improves the patient's prognosis.
Evidence and References	■ Prospectively defined indicators to improve the safety and quality of care for critically ill patients; a report from the Task Force on safety and Quality of the ESICM (Intensive Care Med 2012;38:598) ■ Intensive care unit quality improvement; A how-to guide for the interdisciplinary team (Crit Care Med 2006;34:211)

Indicator numbers		01ICU0016
Indicator Name		Rate of prophylactic therapy performance for deep vein thrombosis
Indicator Definition		Proportion of cases in which at least one deep vein thrombosis prophylaxis was performed among ICU inpatient cases to which ventilator was used
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of cases where deep vein thrombosis prophylaxis was performed at least once
	Inclusion Criteria	■ Deep vein thrombosis prophylaxis recognition criteria ① Anticoagulant administration ② Apply compression stockings ③ Conduct pneumatic compression ※ Recognized if one or more of the three prophylaxis are performed ■ Patients receiving treatment for deep vein thrombosis ■ Patients undergoing continuous renal replacement therapy (CRRT) and extra-corporeal membrane oxygenation (ECMO) ■ Patients already undergoing anticoagulation
	Exclusion Criteria	
	Denominator	Number of cases where ventilator was applied among ICU hospitalizations
	Inclusion Criteria	■ Recognition criteria for ventilator application ○ Cases where the ventilator was applied for more than 8 hours a day based on MN
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on ICU ■ Platelet (PLT) 20,000 or less, cases that received a brain death decision by the declaration of brain death Committee on the premise of transplantation ■ If all three of the above deep vein thrombosis prevention theraphy cannot be performed due to both blood and blood flow problems and lower extremity problems ○ Blood and blood flow problems - INR (International Normalized ratio, the ratio of international standardization to prothrombin time, which is an indicator of blood coagulation time.): 1.6 or higher - PT (Protrombin Time)/aPTT (Activated Partial Thromboplastn Time): 1.5 times or more of the normal range (24~33sec) - PLT (Platelet): 50,000 or less ○ Lower extremity problems - Cases with problems in both legs

		- Pitting edema (edema in which the tissue collapses for a long time when pressure is applied): More than ++ (4mm, rather deep depression, disappears within 10-15 seconds) or severe (severe edema)
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		3 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		(not applicable)
Background and reason for selection		■ In the case of ICU patients, the possibility of deep vein thrombosis is high as there are many risk factors such as the application of a ventilator
Evidence and References		■ Research Service Final Report on ICU assessment Indicators and assessment Criteria (Sin Jeung-su, et al of the Korean Society of Critical Care Medicine)

Indicator numbers		01ICU0017
Indicator Name		Whether the standardized mortality rate is assessed
Indicator Definition		Whether to assess standardized mortality rates for inpatient in ICU
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	When a standardized mortality rate was performed for patients admitted to the ICU, 'implemented', if not performed, 'not implemented'
	Inclusion Criteria	■ Patient of who is subject of assessment ○ All patients aged 18 or older who is hospitalized in ICU during the assessment period ■ Criteria for the severity assessment tool used to predict the number of deaths ○ It is recommended to predict using a practically useful severity assessment tool, such as SAPS3 (Simplified Acute Physiology Score 3), APACHEIII (Acute Physiology And Chronic Health assessment3) or higher, but other moderate severity tools such as SAPS2 and APACHEII are also acceptable ■ Assess whether it is conducted per institution ■ Definition on the standardized mortality rate ○ Calculation formula: Actual mortality × Crude mortality* / Predicted mortality calculated by severity * Crude mortality: Mortality of all ICU patients in Korea
	Exclusion Criteria	
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		■ There are no statistics on mortality among all ICU patients in Korea. Therefore, as a result of the secondary assessment, the average value of 'ICU mortality' of 14.2% was applied.
Institution subject to assessment		General Hospital
Assessment Period		3 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form), Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.

Population subject to assessment	Adult, Elderly
Clinical subject	(not applicable)
Background and reason for selection	■ Since mortality may vary according to the severity of ICU patients, there is a need to manage standardized mortality that has been adjusted for severity. It is required to create a basis for calculating standardized mortality rates
Evidence and References	■ Prospectively defined indicators to improve the safety and quality of care for critically ill patients; a report from the Task Force on safety and Quality of the ESICM (Intensive Care Med 2012;38;598) ■ Quality measurement at intensive care units; which indicators should we use (J Crit Care 2007;22;267) ■ SAPS3 admission score: an external validation in a general intensive care population (Intensive Care Med 2008;34;1873) ■ Research Service Final Report on ICU assessment Indicators and assessment Criteria (Sin Jeung-su, et al of the Korean Society of Critical Care Medicine)

Indicator numbers		01ICU0018
Indicator Name		Proportion of days of multi-disciplinary clinical ward rounds
Indicator Definition		Among the number of days subject to ICU assessment, the number of days of multidisciplinary clinical ward rounds consisting of more than 3 occupations (at least one among ① designate specialists, ② nurses, ③ pharmacists, nutritionists, and physical therapists)
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of days subject to the denominator, number of days of clinical ward rounds with 3 or more occupations including ICU specialists and nurses
	Inclusion Criteria	■ Criteria for multi-disciplinary clinical ward rounds ○ The round team must consist of 3 or more occupations. - At least one person (pharmacist, nutritionist, physical therapist) other than a specialist and ICU nurse ○ Conduct rounds at least twice a week (excluding weekends and holidays) ○ The round team must make ward rounds together under the leadership of a designated specialist, and all units, except for the coronary ICU with a designated specialist, must conduct the ward rounds ■ The 「Records for ICU multi-disciplinary clinical ward rounds」 finally confirmed by the ICU specialist must be kept in the ICU ■ Criteria for the number of clinical ward rounds ○ If there are multiple units (independently operated wards with separate spaces including each nurse room), the average number of rounds for each unit
	Exclusion Criteria	
	Denominator	Number of days of ICU assessment period
	Inclusion Criteria	
	Exclusion Criteria	■ Weekends and public holidays
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		3 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form)

Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	
Clinical subject	(not applicable)
Background and reason for selection	■ Since a multidisciplinary approach is required for intensive care, it is important that specialists in various occupations form a team and participate in patient care led by a specialist in intensive care
Evidence and References	■ Prospectively defined indicators to improve the safety and quality of care for critically ill patients; a report from the Task Force on safety and Quality of the ESICM (Intensive Care Med 2012;38;598) ■ Intensive care unit quality improvement; A how-to guide for the interdisciplinary team (Crit Care Med 2006;34;211) ■ Research Service Final Report on ICU assessment Indicators and assessment Criteria (Sin Jeung-su, et al of the Korean Society of Critical Care Medicine)

Indicator numbers		01ICU0019
Indicator Name		Rate of patients using the ventilator
Indicator Definition		Proportion of cases in which a ventilator was used among ICU inpatient cases
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of cases in which a ventilator was used
	Inclusion Criteria	■ Recognition criteria for ventilator application ○ Among the cases of entering the ICU, cases in which the ventilator was applied in the ICU for more than 8 hours a day as of midnight
	Exclusion Criteria	
	Denominator	Number of hospitalizations in ICU
	Inclusion Criteria	
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on ICU
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		3 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		■ To figure out the status of using the ventilator in the ICU
Population subject to assessment		Adult, Elderly
Clinical subject		(not applicable)
Background and reason for selection		■ When targeting the entire ICU, the level may vary by hospital, and the higher the proportion of critically ill patients, the lower the score is likely. Therefore, it is necessary to reflect such features so that institutions with a high proportion of critically ill patients can obtain favorable scores

Evidence and References	■ The present use of quality indicators in the intensive care unit (Acta Anaesthesiol Scand 2012;56;1078) ■ Quality measurement at intensive care units; which indicators should we use (J Crit Care 2007;22;267) ■ Prospectively defined indicators to improve the safety and quality of care for criticaly ill patients; a report from the Task Force on safety and Quality of the ESICM (Intensive Care Med 2012;38;598) ■ Research Service Final Report on ICU assessment Indicators and assessment Criteria (Sin Jeung-su, et al of the Korean Society of Critical Care Medicine)

Indicator numbers		01ICU0020
Indicator Name		Rate of central venous catheter-related hematogenous infection per 1,000 days
Indicator Definition		Rate of hematogenous infections per 1,000 days of central venous catheterization in CVC patients in ICU
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of days subject to the denominator, the number of cases where the central venous catheter-related haematogenous infection occurred
	Inclusion Criteria	■ Recognition criteria for the central venous catheter-related haematogenous infection ○ Cases of central venous catheter-related haematogenous infection from 48 hours after insertion or replacement of the central venous to 48 hours after removal of the central catheter ○ Including cases where infection occurred in blood samples collected within 48 hours when transferred to a general ward after central catheterization ■ Criteria for diagnosis of hematogenous infection ○ Criteria for diagnosis of hematogenous infection of the KONIS (2018) (Korean National healthcare-associated Infections Surveillance System) - If at least one of 1. or 2. is satisfied, 1. If a strain recognized as pathogenic is separated from one or more blood cultures, and the bacteria separated from the blood culture are not related to infection in other areas. (If microorganisms are reported to grow in at least one vial during one blood collection) 2. At least one symptom among fever (〉38°C), chills or hypotension, ① Corynebacterium spp., Bacillus spp. [not B. anthracis], Propionibacterium spp., Coagulase-negative staphylococci [including S. epidermidis], Viridans group steptococci [Streptococcus mitior, S. mitis, S.mutans, S. salivarius], Aerococcus spp., Micrococcus spp. is isolated from two or more blood samples collected independently, ② When the bacteria isolated from the blood sample are not related to infection in other parts
	Exclusion Criteria	■ Cases with hematogenous infection at the time of central catheter insertion
	Denominator	Number of days of central venous catheterization for CVC patients after ICU admission

	Inclusion Criteria	■ Sum of days of total catheter installation in the central vein for each insertion site in patients with central venous insertion or replacement after entering the ICU ■ Calculation method per 1,000 days ○ Sum of the total number of days with catheter ÷ 1,000
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on ICU
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		3 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Adult, Elderly
Clinical subject		(not applicable)
Background and reason for selection		■ Central venous catheter-related hematogenous infection is a major part of nosocomial infections, and incidence rate can be reduced by active prevention guidelines. Therefore, it is intended to use this as an indicator for estimating the level of ICU care
Evidence and References		■ The present use of quality indicators in the intensive care unit (Acta Anaesthesiol Scand 2012;56;1078) ■ Quality measurement at intensive care unit; which indicators should we use (J Crit Care 2008;22;267) ■ USA AHRQ QI, Patient Safety Indicators #7 (www.qualityindicators.ahrq.gov) ■ USA 2013 CDC/NHSN Protocol Clarifications ■ Research Service Final Report on ICU assessment Indicators and assessment Criteria (Sin Jeung-su, et al of the Korean Society of Critical Care Medicine)

Indicator numbers		01ICU0021
Indicator Name		Incidence rate of pneumonia per 1,000 days in patients using the ventilator
Indicator Definition		Rate of incidence of pneumonia per 1,000 days of ventilator use in patients who used a ventilator in the ICU
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Number of cases of pneumonia occurred during the number of days subject to the denominator
	Inclusion Criteria	■ Cases of pneumonia among patients using a ventilator ○ Cases where pneumonia occurred within 48 hours after removal of the ventilator from 48 hours after application of the ventilator in the ICU ○ Including cases where pneumonia occurred within 48 hours after being transferred from the ICU to the general ward with the ventilator applied
	Exclusion Criteria	■ Cases with pneumonia already at the time of application of ventilator
	Denominator	Number of days of application of ventilaor in ICU
	Inclusion Criteria	■ Number of days that the ventilaor application ○ Number of days that the ICU applied the ventilaor for more than 8 hours a day based on midnight ■ Calculation method per 1,000 days ○ Sum of days of ventilaor application ÷ 1,000
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on ICU
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		3 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Adult, Elderly
Clinical subject		(not applicable)

Background and reason for selection	■ Ventilator-associated pneumonia is a major part of nosocomial infections, and it is known that incidence rate can be reduced by active prevention guidelines. Therefore, this is an indicator for estimating the level of ICU care
Evidence and References	■ The present use of quality indicators in the intensive care unit (Acta Anaesthesiol Scand 2012;56;1078) ■ Quality measurement at intensive care unit; which indicators should we use (J Crit Care 2008;22;267) ■ Prospectively defined indicators to improve the safety and quality of care for criticaly ill patients; a report from the Task Force on safety and Quality of the ESICM (Intensive Care Med 2012;38;598) ■ Research Service Final Report on ICU assessment Indicators and assessment Criteria (Sin Jeung-su, et al of the Korean Society of Critical Care Medicine)

Indicator numbers		01ICU0022
Indicator Name		Incidence rate of urinary tract infection per 1,000 days related to urinary tract catheter
Indicator Definition		Incidence rate of urinary tract infection per 1,000 days of urinary tract catheterization in patients with urinary tract catheter in the ICU
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of days subject to the denominator, the number of cases where a urinary tract infection occurred
	Inclusion Criteria	■ Recognition criteria for the occurrence of urinary tract infection ○ Cases with urinary tract infection within 48 hours after urinary tract catheter insertion or replacement and within 48 hours after urinary tract catheter removal ○ Including cases where infection occurred in urine samples collected within 48 hours when transferring from the ICU to a general ward while a urinary tract catheter was installed ■ Diagnostic criteria for urinary tract infection ○ Diagnostic criteria for urinary tract infection of the KONIS (2018) (Korean National Healthcare-associated infections surveillance system) - A case in which at least one type of bacteria is separated by 10^5 colony/mL or more as fewer than 2 types of bacteria grow in urine culture with having at least one among fever (〉38℃), suprapubic tenderness, costovertebral angle ache or tenderness, urinary frequency, urinary urgency, dysuria [Caution] * Candida spp, yeast, mold, dimorphic fungi, and parasites cannot be used as diagnostic criteria for urinary tract infection.
	Exclusion Criteria	■ Cases with urinary tract infection at the time of urinary tract catheter insertion
	Denominator	Number of days of urinary tract catheterization for patients with urinary tract catheter inserted after entering the ICU
	Inclusion Criteria	■ For patients who have had a urinary tract catheter inserted or replaced after entering the ICU ■ Number of days with urinary tract catheterization ○ Number of days the foley catheter that is placed through the urethra ■ Calculation method per 1,000 days ○ Sum of days with urinary tract catheterization ÷ 1,000
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on ICU

Things to be considered for calculation	
Institution subject to assessment	General Hospital
Assessment Period	3 months
Assessment Cycle	Undecided
Assessment data source	Medical records (Survey form)
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	Lower is better
Population subject to assessment	Adult, Elderly
Clinical subject	(not applicable)
Background and reason for selection	■ Urinary tract catheter-related urinary tract infection is a major part of nosocomial infections, and it is known that Incidence rate can be reduced by active prevention guidelines. Therefore, it is intended to use it as an indicator for estimating the level of ICU care
Evidence and References	■ The present use of quality indicators in the intensive care unit (Acta Anaesthesiol Scand 2012;56;1078) ■ Quality measurement at intensive care unit; which indicators should we use (J Crit Care 2008;22;267) ■ Prospectively defined indicators to improve the safety and quality of care for criticaly ill patients; a report from the Task Force on safety and Quality of the ESICM (Intensive Care Med 2012;38;598) ■ Research Service Final Report on ICU assessment Indicators and assessment Criteria (Sin Jeung-su, et al of the Korean Society of Critical Care Medicine)

Indicator numbers		01ICU0023
Indicator Name		Whether the infection-related management guidelines is performed
Indicator Definition		Whether to implement evidence-based management guidelines (Bundle for insertion or replacement of central catheter, bundle for prevention of respirator-related pneumonia, bundle for insertion or replacement of urinary tract catheter) for infection prevention within the ICU
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	1 point is allocated for each detail (3 points in total) when the evidence-based management guidelines (Bundle) are implemented for infection prevention within the ICU
	Inclusion Criteria	■ Criteria for infection-related bundles ○ Whether each Bundle is executed ① Bundle when inserting or replacing central catheter ② Ventilator-related pneumonia prevention bundle ③ Bundle when inserting or replacing urinary tract catheter ※ (Reference) Details of Bundle ① Bundle when inserting or replacing central catheter - Hand hygiene, compliance with aseptic technique, application of maximal sterile barrier precautions, selection of sites that can minimize infection and complications, skin disinfection of the insertion site using alcohol-containing 0.5% CHG (Chlorhexidine), dressing at the insertion site etc ② Bundle for prevention of ventilator-related pneumonia - Elevate the head of the bed (if not contraindicated), maintain the artificial airway cuff pressure at 20-25 cmH2O, perform oral care every 6-8 hours (use 0.12% or 2% chlorhexidine solution), and change the location of the oralendotraceal tube every 24 hours, assessment to reduce or stop sedative, assess daily need for a ventilator, prevent stress ulcers, etc. ③ Bundle for insertion or replacement of urinary tract catheter - Hand hygiene, compliance with aseptic technique, use of sterile tools, use of skin disinfectants and lubricants, use of thin catheters where possible, use of indwelling catheter safety fixtures
	Exclusion Criteria	
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		

Institution subject to assessment	General Hospital
Assessment Period	3 months
Assessment Cycle	Undecided
Assessment data source	Medical records (Survey form)
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	
Clinical subject	(not applicable)
Background and reason for selection	■ Nosocomial infections can reduce Incidence rate by active prevention guidelines. Therefore, it is intended to use it as an indicator for estimating the ICU treatment process
Evidence and References	

7) Neonatal intensive care unit (NICU)

☐ Common Criteria

※ Apply as inclusion criteria for the numerator or denominator of each indicator

○ Criteria for the subject of assessment

- **(Target patient)** Patients admitted to and discharged from the Neonatal Intensive Care Unit (NICU) within the assessment period

Indicator numbers		01NIC0001
Indicator Name		Number of neonatal ICU beds per designated specialist
Indicator Definition		Number of neonatal ICU beds per neonatal ICU specialist
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Number of neonatal ICU beds
	Inclusion Criteria	■ Criteria for the number of beds ○ Number of beds covered by neonatal ICU during the assessment period among the 「Calculation status of the nursing management fee differential system for neonatal ICU hospitalized patients」 according to the level of securing nursing manpower reported to the HIRA
	Exclusion Criteria	
	Denominator	Number of specialists who satisfy the criteria for ICU specialists in the neonatal unit and manage all patients in the neonatal ICU and admission/discharge
	Inclusion Criteria	■ Number of Specialists: The sum of the number of weeks worked in the neonatal ICU per specialist during the assessment period ■ Criteria for specialists ○ Common criteria ① A designated specialist refers to a doctor working for a neonatal ICU as a pediatrician belonging to the relevant institutions, and manages the overall patient management and admission and discharge ② As a full-time specialist appointed or assigned as a specialist dedicated to the neonatal ICU, the working period of the same specialist must be at least three consecutive months. However, in the case of resignation, leave of absence, childbirth, etc. of a designated specialist, it is possible to replace him or her with a new specialist appointed or assigned as a specialist in neonatal ICU ③ Concurrent work with other tasks or shift work during the period of work assigned to the neonatal ICU is not recognized. but, limited treatment available when it is unavoidable for newborns requiring hospitalization in the neonatal ICU, such as the neonatal room, delivery room, emergency room, and operating room ④ In the case of hours when the designated specialist is not stationed, (including nights, weekends, holidays, etc.), a designated resident working in the neonatal ICU must be assigned under the guidance of a designated specialist, alternative specialist, or specialist

		⑤ If the designated specialist is unable to work on weekdays due to vacation or business trip, an alternative pediatric specialist must be appointed ○ Full-time specialist ⑥ (A) If there is only one person: Must work at the neonatal ICU for 8 hours or more per day (day time) and 5 days or more per week (Weekends and holidays available) ⑦ (B) If there are two or more persons: One person must meet the conditions in (A), and the other people must work at the neonatal ICU for more than 40 hours a week ⑧ In case of unavoidable circumstances, outpatient treatment can be performed within 2 days a week, 1 day 4 hours, but an alternative specialist or a dedicated resident must be assigned ○ Half-day dedicated specialist ⑨ Working at neonatal ICU for 5 or more sessions per week (session means morning or afternoon) based on 1 day time (weekends and holidays excluded) ■ Application of specialists and addition of neonatal subspecialist ○ One full-time specialist is counted as 1 person, and one full-time specialist is counted as 0.5 person. ○ If the designated specialist is a neonatal subspecialist, additional scores are given according to the number of beds per neonatal subspecialist when calculating the overall assessment score ○ Additional scores are given to the neonatal subspecialist for subjects requiring medical cooperation (pediatric surgery, pediatric cardiology)
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form), Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		
Clinical subject		Newborns
Background and reason for selection		■ In order to provide high-quality medical care to neonatal ICU patients, there must be a designated specialist, and if the designated specialist is a neonatal specialist, the quality of medical care can be further improved

Evidence and References	■ Parents with at-risk newborn have more NICU services. Http://www.news-journalonline.com/news/20160814/parents-with-at-risk-newborns-have-more-nicu-services/2573525507 ■ Goodman DC et al. The relation between the availability of neonatal intensive care and neonatal mortality. N Engl J Med 2002;346:1538-44

Indicator numbers		01NIC0002
Indicator Name		Number of neonatal ICU beds per nurse
Indicator Definition		Number of neonatal ICU beds per neonatal ICU nurse
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Number of neonatal ICU beds
	Inclusion Criteria	■ Criteria for the number of beds ○ Number of beds covered by neonatal ICU during the assessment period among the 「Calculation status of the nursing management fee differential system for neonatal ICU hospitalized patients」 according to the level of securing nursing manpower reported to the HIRA
	Exclusion Criteria	
	Denominator	Number of nurses working in neonatal ICU
	Inclusion Criteria	■ Criteria for nurses ○ Number of nurses of the neonatal ICU during the assessment period among the 「Calculation status of the nursing management fee differential system for neonatal ICU hospitalized patients」 according to the level of securing nursing manpower reported to the HIRA
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		
Clinical subject		Newborns
Background and reason for selection		■ Fewer patients in neonatal ICU nurses care for, higher quality of ICU care

Evidence and References	■ Parents with at-risk newborn have more NICU services. Http://www.news-journalonline.com/news/20160814/parents-with-at-risk-newborns-have-more-nicu-services/2573525507 ■ Goodman DC et al. The relation between the availability of neonatal intensive care and neonatal mortality. N Engl J Med 2002;346:1538-44 ■ American Academy of Pediatrics Committee on Fetus and Newborn. Levels of neonatal care. Pediatrics. 2012 Sep;130(3):587-97. ■ Grandi C et al. Patient volume, medical and nursing staffing and its relationship with risk-adjusted outcome of VLBW infants in 15 Neocosur neonatal network NICUs. 2010;108:499-510

Indicator numbers		01NIC0007
Indicator Name		Rate of performing severity assessment
Indicator Definition		Proportion of patients receiving a severity assessment among patients admitted to neonatal ICU with birth weight less than 1,500g
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients receiving a severity assessment
	Inclusion Criteria	■ Types of severity assessment tools ○ The severity at the time of admission to neonatal ICU should be measured with the following assessment tools, but within the time that meets the guidelines for each assessment tool - SNAP (Score for Neonatal Acute Physiology) - SNAP-Perinatal Extension (SNAP-PE) - SNAP-Ⅱ: 6 items that simplify the SNAP scoring method - SNAPPE-Ⅱ: Birth weight, 5-minute apgar score, and SGA 3 items are added to SNAP-Ⅱ - NTISS (Neonatal Therapeutic Intervention Scoring System) - CRIB-Ⅱ (Clinical Risk Indicator for Babies Ⅱ) - Other equivalent severity assessment tools for newborns (medical assessment tools)
	Exclusion Criteria	
	Denominator	Number of newborns with birth weight less than 1,500g admitted to neonatal ICU
	Inclusion Criteria	■ A newborn baby with weight less than 1,500g who was discharged from the hospital after entering the neonatal ICU during the period subject to the assessment
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.

Population subject to assessment	Newborn baby
Clinical subject	Newborns
Background and reason for selection	■ Severity assessment can help establish a treatment plan by systematically identifying the patient's condition and prognosis
Evidence and References	■ Parry G et al. CRIB Ⅱ: an update of the clinical risk index for babies score. Lancet 2003,361:1789-1791 ■ Shah et al. The international network for evaluating outcomes of very low birth weight, very preterm neonates (iNeo): BMC pediatrics 2014, 14:110

Indicator numbers		01NIC0009
Indicator Name		Readmission rate of neonatal ICU within 48 hours
Indicator Definition		Proportion of cases re-admitted to the neonatal ICU within 48 hours after being discharged from the neonatal ICU or transferred from the neonatal ICU to the general ward
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of cases re-admittted into the nonatal ICU within 48 hours
	Inclusion Criteria	
	Exclusion Criteria	■ When re-entry is scheduled according to the planned procedure
	Denominator	Number of hospital discharge or transfer to general ward after entering the neonatal ICU
	Inclusion Criteria	■ Patients admitted to the neonatal ICU and discharged from the hospital or transferred to general ward during the period subject to the assessment
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form), Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Newborn baby
Clinical subject		Newborns
Background and reason for selection		■ It is highly likely that the patient was discharged early or transferred in an inappropriate condition at the time of discharge or transfer, so it is necessary to assess it
Evidence and References		■ Andrew R et al. Prospectively defined indicators to improve the safety and quality of care for critically ill patients. 2012;38;598-605. ■ Metnitz PGH et al. Critically ill patients readmitted to intensive care units-lessons to learn? Intensive Care Med 2003;29:241-248

Indicator numbers		01NIC0010
Indicator Name		Rate of central venous catheter-related hematogenous infection per 1,000 days
Indicator Definition		Incidence rate of hematogenous infection per 1,000 days among patients who experienced central venous catheterization or catheter replacement in neonatal ICU
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of days subject to the denominator, the number of cases where central venous catheter-related hematogenous infection occurred
	Inclusion Criteria	■ Diagnostic criteria for hematogenous infection ○ When normal skin contaminants are isolated from blood culture collected more than once and are not related to infection at other sites, and appropriate antibiotics for treatment of central venous catheter-related hematogenous infection have been administered for more than 5 days or until death ※ Skin contaminants - Corynebacterium spp. [not C. diphtheriae] - Bacillus spp.[not B. anthracis] - Propionibacterium spp. - Coagulase-negative staphylococci [including S. epidermidis] - Viridansgroup streptococci [Streptococcus mitior, S. mitis, S. mutans, S. salivarius] - Aerococcus spp. - Micrococcus spp. ○ Cases of central venous catheter-related hematogenous infection from 48 hours after insertion or replacement of the central venous to 48 hours after removal of the central catheter ○ Including cases where infection occurred in blood samples collected within 48 hours when transferred to a general ward after central catheterization
	Exclusion Criteria	■ Infection within 7 days after birth ■ When the same bacteria from the newborn are the same as those from the mother ■ Cases with hematogenous infection at the time of central catheter insertion
	Denominator	Number of days of central venous catheterization in CVC patients after admission to neonatal ICU

	Inclusion Criteria	■ Sum of the total number of days of catheter installation in the central vein for each insertion site for patients who have inserted or replaced a central venous catheter after entering the neonatal intensive care unit ■ Calculation method for per 1,000 days ○ Total number of days installing the catheter ÷ 1,000
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form), Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Newborn baby
Clinical subject		Newborns
Background and reason for selection		■ Central venous catheter-related hematogenous infection is a major part of nosocomial infections, and incidence rate can be reduced by active prevention guidelines. Therefore, it is intended to use this as an indicator for estimating the level of ICU care
Evidence and References		■ Neil S et al. Sustained Reduction in Bloodstream Infections in Infants at a Large Tertiary Care Neonatal Intensive Care Unit. Advances in Neonatal Care 2016;16(1):52-59 ■ Stevens TP. Evidence-based approach to preventing central line-associated bloodstream-infection in the NICU. Acta Paediatr Suppl 2012;101;11-16

Indicator numbers		01NIC0011
Indicator Name		Recovery rate after central venous catheter-related hematogenous infection
Indicator Definition		Proportion of recovered cases among central venous catheter-related hematogenous infection cases of inpatients in neonatal ICU
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of cases recovered from central venous catheter-related hematogenous infection
	Inclusion Criteria	■ Definition of recovery after infection ○ Bacterial culture result changed from positive to negative
	Exclusion Criteria	
	Denominator	Number of central venous catheter-related hematogenous infections in patients admitted to neonatal ICU
	Inclusion Criteria	■ Case of central venous catheter-related hematogenous infection with central catheter maintained
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form), Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Newborn baby
Clinical subject		Newborns
Background and reason for selection		■ Central venous catheter-related hematogenous infection is a major part of nosocomial infections, and Incidence rate can be reduced by active prevention guidelines. Therefore, it is intended to use this as an indicator for estimating the level of ICU care

Evidence and References	■ Neil S et al. Sustained Reduction in Bloodstream Infections in Infants at a Large Tertiary Care Neonatal Intensive Care Unit. Advances in Neonatal Care 2016;16(1):52-59 ■ Stevens TP. Evidence-based approach to preventing central line-associated bloodstream-infection in the NICU. Acta Paediatr Suppl 2012;101;11-16

Indicator numbers		01NIC0013
Indicator Name		Breastfeeding rate
Indicator Definition		Proportion of patients receiving breastfeeding among inpatients in neonatal ICU
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of newborns who underwent breastfeeding
	Inclusion Criteria	■ Breastfeeding implementation criteria ○ Cases in which breast milk is supplied by mouth or tube at least once ○ Recognized when training with standardized training materials and protocols
	Exclusion Criteria	
	Denominator	Number of newborns admitted to neonatal ICU
	Inclusion Criteria	■ Patients admitted to and discharged from the neonatal ICU within the period subject to the assessment
	Exclusion Criteria	■ Cases designated by the attending physician because breastfeeding is medically contraindicated
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Newborn baby
Clinical subject		Newborns
Background and reason for selection		■ Breastfeeding reduces morbidity and mortality in premature infants
Evidence and References		■ Quigly M, McGuire W. 2014 Cochrane library ■ Breastfeeding evaluation indicators system is a promising evaluation tool for preterm infants in neonatal intensive care units. Med Sci Moint. 2016;22:4009-16

Indicator numbers		01NIC0015
Indicator Name		Rate of providing discharge education for critically ill newborns
Indicator Definition		Proportion of education provided upon discharge of critically ill newborns (such as tubal feeding education)
Status of indicator use		Regular Indicator
Quality components		Patient-centeredness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the education programs subject to the denominator, the number of education programs provided
	Inclusion Criteria	■ Upon discharge of critically ill newborns, education must be conducted with standardized educational materials and protocols to be recognized
	Exclusion Criteria	
	Denominator	Number of education that provided to parents at discharge for each patient among the types of education on critically ill newborns
	Inclusion Criteria	■ Types of discharge education for critically ill newborns ① Tubal feeding education: When discharged with a tube for lactation ② Management and oxygen therapy education related to tracheostomy: When vital signs monitoring is required due to respiratory problems and discharge with a ventilator ③ Intestinal fistula education: When discharged with a intestinal fistula due to gastrointestinal problems ④ Cardiopulmonary resuscitation (CPR) education: Education for newborns born under 1,500g
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form), Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Newborn baby
Clinical subject		Newborns

Background and reason for selection	■ High-risk newborns are treated for various complications that occurred during the course of treatment in the neonatal ICU, and are often exposed to long-term sequelae or complications after discharge. Therefore, in the case of high-risk newborns, discharge education about possible situations depending on the condition of the newborn during the process of moving home from the hospital is essential
Evidence and References	■ Discharge Planning Pediatr Clin N Am 62.2015;545-556 ■ The High-Risk Infant. Nelson Textbook of Pediatrics. Chapter 97. 818-831.el ■ Adherence to discharge guidelines for late-preterm newborns. Pediatrics. 2011;128(1);62-71

Indicator numbers		01NIC0016
Indicator Name		Rate of having specialized equipment and facilities (2)
Indicator Definition		Proportion of equipment and facilities provided among 8 specialized diagnostic and treatment equipment and facilities for neonatal intensive care (On-site inspection equipment capable of analyzing blood gas by collecting capillary blood, etc.)
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of specialized diagnostic and treatment equipment and facilities provided by the hospital
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Total number of specialized diagnostic and therapeutic equipment types and facilities for critically ill neonates (8 types)
	Inclusion Criteria	■ Criteria for equipment and facilities in neonatal ICU (1 score for each detail of equipment and facilities) ① On-site inspection equipment capable of analyzing blood gas through capillary blood collection ② Incubator for patient transport (transport incubator, mobile incubator) ③ High frequency ventilator ④ HFNC (High Flow Nasal Cannula) equipment ⑤ Portable ultrasound equipment (head, abdomen, heart) ⑥ Seclusion room ⑦ aEEG (Amplitude-integrated EEG) ⑧ Hypothermia therapy equipment (Hypothermia system, applicable to newborns for head or body) ■ Detailed requirements for facilities and equipment ○ 1 or more in neonatal ICU ※ However, HFNC equipment is more than 15% of the number of neonatal ICU beds. ■ A tertiary general hospital (① ~ ⑧) gets the full score when equipped with 8 types of equipment, and a general hospital (① ~⑥) gets the full score when equipped with 6 types of equipment.
	Exclusion Criteria	
Things to be considered for calculation		

Institution subject to assessment	General Hospital
Assessment Period	6 months
Assessment Cycle	Biennial
Assessment data source	Medical records (Survey form), Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	
Clinical subject	Newborns
Background and reason for selection	■ Assessment of neonatal ICU patients is necessary because the absence of essential diagnostic equipment, treatment equipment, and facilities may result in patients missing out on recovery opportunities
Evidence and References	■ Jeffrey D et al. The Vermont Oxford Network: Evidence-Based Quality Improvement for Neonatalogy. Pediatrics 1999;103:350-360

Indicator numbers		01NIC0017
Indicator Name		Rate of possessing the infection control protocol (2)
Indicator Definition		Proportion of protocols in place among 5 protocols for infection control of critically ill neonates (nursery environmental control, etc.)
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of protocols available subject to the denominator, the number of protocols the hospital has
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Total number of protocol for infection control in critically ill neonates (5 types)
	Inclusion Criteria	■ Types of infection control protocols ① Environmental management of the newborn room - Nursing facility management - Cleaning, temperature and humidity, ventilation - Quarantine, staff and visitor access control ② Newborn care - Standard precautions including hand hygiene - Umbilical cord care, skin care, formulating and lactation, etc. ③ Infection control related to neonatal insertion device - Infection control when inserting and managing an endotracheal cannula - Infection control when inserting and managing central venous catheter ④ Disinfection of instruments - Bathtub, vegetable net/incubator, nursing items, linen, laundry, diaper care, etc. ⑤ Infectious disease management, prevention, and education of medical staff - Infection control for neonatal ICU medical staff (varicella, measles, whooping cough, latent tuberculosis)
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)

Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	
Clinical subject	Newborns
Background and reason for selection	■ Appropriate infection control protocol application improves patient's infection rate and survival rate
Evidence and References	■ Kim CR et al. Risk factors of Nosocomial Sepsis in Very Low Birth Weight Infants. J Korean Soc Neonatal 2010 May;17(1):84-93 ■ Kim BL et al. The Change of Incidence of Nosocomial Sepsis, and Risk Factors in Extremely Low Birth Weight Infants. J Korean Soc Neonatal 2002 May;9(1):12-20 ■ Kilbride HW et al. Implementation of evidence-based potentially better practices to decrease nosocomial infections. Pediatrics 2013;111(4): e519-33

Indicator numbers		01NIC0018
Indicator Name		Rate of completing the Neonatal Resuscitation Program (NRP)
Indicator Definition		Proportion of doctors and nurses working in neonatal ICU who have completed the NRP
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of doctors and nurses who have completed education program organized by the Korean Society of Neonatology or in-hospital NRP
	Inclusion Criteria	■ In-hospital education must be conducted by a neonatal subspecialist or a pediatrician who has completed the NRP instructor workshop hosted by the Neonatal Society. ■ In-hospital training cycle: 1 time/2 years
	Exclusion Criteria	
	Denominator	Number of doctors and nurses working in neonatal ICU
	Inclusion Criteria	■ Physicians and nurses working in neonatal ICU ○ Doctor: A neonatal ICU specialist and residents ○ Nurse: A nurse assigned to the neonatal ICU, subject to a nursing management fee differential system for hospitalized patients according to the level of securing nursing personnel in the neonatal ICU.
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form), Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		
Clinical subject		Newborns

Background and reason for selection	■ Unlike pediatric and adult cardiopulmonary resuscitation, NRP focuses on securing airway and breathing adjuvant, requires maintaining body temperature, and is related to resuscitation of vulnerable patients such as premature infants. Therefore, there is a need for professional medical personnel who have acquired specialized skills and knowledge who have completed the neonatal resuscitation training course
Evidence and References	

Indicator numbers		01NIC0019
Indicator Name		Rate of performing a surveillance culture test on outborn neonates
Indicator Definition		Among out-born neonates hospitalized in the neonatal ICU, the proportion patients undergoing surveillance culture test upon admission to the ICU
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients who have been subjected to surveillance culture
	Inclusion Criteria	■ Surveillance culture method ○ Specimens are collected from the nasal cavity, armpit, or anus
	Exclusion Criteria	
	Denominator	Number of out-born patients admitted to the neonatal ICU
	Inclusion Criteria	■ Out-born patients admitted to and discharged from the neonatal ICU during the period subject to the assessment
	Exclusion Criteria	■ Patients with congenital infections and congenital malformations.
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form), Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Newborn baby
Clinical subject		Newborns
Background and reason for selection		■ Surveillance culture for newborns transferred and hospitalized to the neonatal ICU after birth outside the hospital can prevent in-hospital infection and minimize exposure to transmission of infection from the community and local medical institutions
Evidence and References		

Indicator numbers		01NIC0020
Indicator Name		Rate of composition of newborns with birth weight of less than 1,500g
Indicator Definition		The proportion newborns with birth weight less than 1,500g among neonatal ICU inpatients
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the proportion newborns with birth weight less than 1,500g
	Inclusion Criteria	■ Among newborns admitted to or discharged from the neonatal ICU, newborns weighing less than 1,500g
	Exclusion Criteria	
	Denominator	Number of newborns admitted to neonatal ICU
	Inclusion Criteria	■ Patients admitted to and discharged from the neonatal ICU within the period subject to the assessment
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form), Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		■ To understand the composition status of extremely underweight babies
Population subject to assessment		Newborn baby
Clinical subject		Newborns
Background and reason for selection		■ The higher the proportion of newborns under 1,500g, the higher the level of difficulty in the treatment
Evidence and References		

Indicator numbers		01NIC0021
Indicator Name		Rate of operating the nutrition support team (2)
Indicator Definition		Implementation rate of each operation item (Total parenteral Nutrition (TPN) combined treatment, neonatal ICU round) of the nutrition support team
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	The sum of TPN combined treatment rate and neonatal ICU clinical ward round rate
	Inclusion Criteria	■ Composition of the operating ratio of the nutrition support team (1) TPN combined treatment implementation rate(%): Number of patients receiving combined treatment in the nutrition support team for TPN / number of TPN patients (2) Neonatal ICU round rate(%): Number of weeks the nutrition support team makes rounds at least once a week / the week with combined treatment patients during the assessment period ■ Criteria for organizing the nutrition support team ○ It consists of 4 or more people, including 1 or more of the following staff. (However, more than one person per nutrition support team is in charge of intensive nutrition treatment only.) - A pediatrician or pediatric surgery specialist who has completed the prescribed training on nutritional therapy - A nurse who has completed the prescribed training on nutritional therapy - A pharmacist who has completed prescribed training in nutritional therapy - Clinical nutritionist ※ The prescribed training on nutritional therapy refers to the completion of nutrition-related education programs based on the HIRA intensive nutritional therapy benefit standards ■ Operation item of the nutrition support team ○ TPN combined treatment: Implementation of TPN by requesting combined treatment to the intensive nutrition support team ○ Neonatal ICU rounds: At least 4 people making rounds together including at least 1 person for each job type - Number of days of ward rounds: At least once a week (excluding weekends and holidays), the average number of rounds for each unit -「The ward round record sheet of the nutrition support team」must be kept in neonatal ICU

	Exclusion Criteria	
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form), Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Newborn baby
Clinical subject		Newborns
Background and reason for selection		■ Adequate TPN supply leads to adequate weight gain and reduced hospital stays in newborns
Evidence and References		■ Kantak AD et al. Management of high order multiple births: application of lessons learned because of participation in vermont Oxford Network collaboratives. Pediatirics. 2006;118(Suppl2): S159-S168 ■ Sneve J et al. Implementation of a multidisciplinary team that includes a registered dietitian in a neonatal intensive care unit improved nutrition outcomes. Nutr Clin Pract 2008;23:630-4.

8) Small & medium hospitals

Indicator numbers		01MSH0001
Indicator Name		Number of patients per doctor
Indicator Definition		Average number of patients per doctor per day
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient, Out-patient
Calculation formula	Numerator	The average number of patients per day of the hospital
	Inclusion Criteria	■ The criteria for calculating the daily average number of patients ○ Average number of days for inpatient and outpatient NHI (National health insurance), medical aid patients who were hospitalized and received outpatient treatment during the period subject to the assessment ○ Convert 3 outpatients to 1 inpatient
	Exclusion Criteria	
	Denominator	Average number of doctors working during the assessment period of the hospital
	Inclusion Criteria	■ Calculation criteria for the number of doctors ○ Number of full-time specialists, general practitioners, and specialists (including Korean medicine and dentistry) at medical institutions ○ Based on the average at the end of each quarter during the assessment period
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		Hospital
Assessment Period		1 year
Assessment Cycle		Undecided
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly

Clinical subject	(not applicable)
Background and reason for selection	■ To assess the quality of medical service and patient safety
Evidence and References	■ Enforcement Decree of the Medical Service Act, Ordinance No. 606 of the Ministry of Health and Welfare (2018). Article 38 (Capacity of Medical Personnel, etc.), [Attached Table 5] Number of Medical Staffs in Medical Institutions ■ Criteria for Calculating Medical Quality Assessment Subsidy, Notice No. 2017-142 of the Ministry of Health and Welfare (2017).

Indicator numbers		01MSH0002
Indicator Name		Number of patients per nurse
Indicator Definition		Average number of patients per nurse per day
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient, Out-patient
Calculation formula	Numerator	The average number of patients per day of the hospital
	Inclusion Criteria	■ The criteria for calculating the daily average number of patients ○ Average number of days for inpatient and outpatient NHI (National health insurance), medical aid patients who were hospitalized and received outpatient treatment during the period subject to the assessment ○ Convert 12 outpatients to 1 inpatient
	Exclusion Criteria	
	Denominator	Average number of nurses working during the assessment period of the hospital
	Inclusion Criteria	■ Calculation criteria for the number of nurses ○ Number of full-time nurses at medical institutions ○ Based on the average at the end of each quarter during the assessment period
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		Hospital
Assessment Period		1 year
Assessment Cycle		Undecided
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		(not applicable)
Background and reason for selection		■ To assess the quality of nursing and patient safety

Evidence and References	■ Enforcement Decree of the Medical Service Act, Ordinance No. 606 of the Ministry of Health and Welfare (2018). Article 38 (Capacity of Medical Personnel, etc.), [Attached Table 5] Number of Medical Staffs in Medical Institutions ■ Criteria for Calculating Medical Quality Assessment Subsidy, Notice No. 2017-142 of the Ministry of Health and Welfare (2017).

Indicator numbers		01MSH0006
Indicator Name		Inpatient visitor management system
Indicator Definition		Whether the hospitalized patient visitor management system is established
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	If the hospital meets all operating standards related to the visitor management system, it is considered as approved.
	Inclusion Criteria	■ Operating standards of hospitalized patients' visitor management system ① Setting and guidance of the time allowed for visiting the hospital ② Setting and guidance on restrictions on visits to hospitals ③ Information on prohibited items (food, potted plants, flowers, pets, etc.) ④ Information on infection prevention rules (cough etiquette, hand washing, etc.) ⑤ Preparation and management of the visitor register ※ If all ①~⑤ are satisfied, it is recognized.
	Exclusion Criteria	
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		Hospital
Assessment Period		1 year
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Good if criteria are met
Population subject to assessment		
Clinical subject		(not applicable)
Background and reason for selection		■ To prepare a management system to improve the culture of visiting hospitalized patients

Evidence and References	■ Rules on the designation and assessment of tertiary general hospitals, Ordinance No. 536 of the Ministry of Health and Welfare (2017) ■ Criteria for Calculating Medical Quality Assessment Subsidy, Notice No. 2017-142 of the Ministry of Health and Welfare (2017). ■ Details on criteria and methods for the application of medical care benefit, Notice No. 2018-114 of the Ministry of Health and Welfare (2018). Ga 29 Safety management fee for hospitalized patients

Indicator numbers		01MSH0011
Indicator Name		Average number of beds in a multi-patient room of 6 or more
Indicator Definition		Average number of beds per room for 6 people or more patients
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Number of beds in the patient's room subject to the denominator
	Inclusion Criteria	■ Calculation criteria for the bed numbers ○ Number of beds of an general inpatient room and in an general inpatient room for more than 6 people in the psychiatric closed ward reported to HIRA
	Exclusion Criteria	■ ICU, segregated ward, aseptic treatment room and special treatment room, etc.
	Denominator	Sum of the number of rooms with 6 or more beds
	Inclusion Criteria	■ Calculation criteria for the number of hospital rooms ○ Number of general inpatient rooms and psychiatric closed hospital rooms with more than 6 people reported to HIRA
	Exclusion Criteria	■ ICU, segregated ward, aseptic treatment room and special treatment room, etc.
Things to be considered for calculation		
Institution subject to assessment		Hospital
Assessment Period		1 year
Assessment Cycle		Undecided
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		
Clinical subject		(not applicable)
Background and reason for selection		■ To prepare a patient safety management system such as infection prevention through prevention of overcrowding of hospital rooms

Evidence and References	■ Criteria for Calculating Medical Quality Assessment Subsidy, Notice No. 2017-142 of the Ministry of Health and Welfare (2017). ■ Enforcement Decree of the Medical Service Act, Ordinance No. 606 of the Ministry of Health and Welfare (2018). Article 34 (Facility Standards and Specifications of Medical Institutions) [Attached Table 4] Facility Standards of Medical Institutions ■ Rules on the standards of medical care benefit of the National Health Insurance, Ordinance No. 608 of the Ministry of Health and Welfare (2016). Para. 1 of Article 9 (subject of the non-benefit) ■ Birgitta Lysty, Walter Pop. (2016). Health Care Facility Design, Construction, and Renovation. Candace Friedman, Ann Arbor (Eds). Basic Concepts of Infection Control. IFIC

Indicator numbers		01MSH0012~0014 ※ Assigning indicator numbers by the assessment criteria
Indicator Name		Infection prevention control system (Possession of infection control regulations, installing a infection control center and employing personnel in charge of infection control, organizing an infection control committee)
Indicator Definition		① Possession of infection control regulations ② Installing a infection control center and employing personnel in charge of infection control in the hospital ③ Organizing an infection control committee in the hospital
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient, Out-patient
Calculation formula	Numerator	① If there is an infection control regulation operated by the hospital, it is recognized. ② If an infection control center is installed and personnel in charge are assigned in the hospital, it is recognized. ③ If there is an infection control committee organized in the hospital,it is recognized.
	Inclusion Criteria	■ To assess whether a medical institution operates a system for infection prevention and management in the hospital ■ Recognition criteria for personnel in charge of infection control ○ One or more doctor, nurse, or person recognized by the head of a medical institution as a designated staff or a staff holding positions concurrently
	Exclusion Criteria	
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		Hospital
Assessment Period		1 year
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Good if criteria are met

Population subject to assessment	
Clinical subject	(not applicable)
Background and reason for selection	■ To assess the management system for hospital infection prevention
Evidence and References	■ Details of the cost of health insurance medical care benefit, Notice No. 2016-179 of the Ministry of Health and Welfare (2016). ■ Health insurance service benefit·non-benefit list and benefit relative value score, Notice No. 2018-012 of the Ministry of Health and Welfare (2018). ■ Korean Society for Healthcare-associated Infection Control and Prevention. (2017). Standard Prevention Guidelines for Medical-Related Infections. Korea Diseases Control and Prevention Agency ■ Ministry of Health and Welfare, Medical Institution assessment and Certification Institute. (2018). Guide book on acute phase hospital accreditation investigation (Vol. 3.0). ■ Details on application standards and methods of medical care benefit, Notice No. 2018-114 of the Ministry of Health and Welfare (2018). Ga 25 Infection prevention and management fee ■ Medical Service Act, Act 15716 (2018). Article 47 (Preventive Measures against Hospital Infection) ■ Criteria for Calculating Medical Quality Assessment Subsidy, Notice No. 2017-142 of the Ministry of Health and Welfare (2017). ■ Rules on the designation and assessment of specialized hospitals, Ordinance No. 536 of the Ministry of Health and Welfare (2017). ■ WHO. (2016). Guidelines on Core Components of Infection Prevention and Control Programmes at the National and Acute health Care Facility level. World Health Organization

Indicator numbers		01MSH0015~0017 ※ Assigning indicator numbers by the assessment criteria
Indicator Name		Patient safety management system (retention of patient safety management regulations, arrangement of personnel in charge of patient safety management, composition of the Patient Safety Committee)
Indicator Definition		① Retention of patient safety management regulations ② Arrangement of personnel in charge of patient safety management ③ Composition of the Patient Safety Committee
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient, Out-patient
Calculation formula	Numerator	① If the hospital has established patient safety management regulations, it is considered as qualifying the criteria ② If the hospital has staffs in charge of patient safety management, it is recognized ③ If the hospital has a patient safety committee, it is recognized
	Inclusion Criteria	■ To assess whether a medical institution operates a management system for in-hospital patient safety ■ Criteria for personnel in charge of patient safety management ○ At least one full-time or adjunct person who has obtained a doctor's or nurse's license
	Exclusion Criteria	
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		Hospital
Assessment Period		1 year
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form), Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Good if criteria are met
Population subject to assessment		
Clinical subject		(not applicable)

Background and reason for selection	■ To assess the management system for the prevention of patient safety accidents
Evidence and References	■ Details of medical care benefit costs of health insurance, Notice No. 2017-189 of the Ministry of Health and Welfare (2017). ■ Health insurance service benefit·non-benefit list and benefit relative value score, Notice No. 2018-012 of the Ministry of Health and Welfare (2018). ■ Ministry of Health and Welfare, Medical Institution assessment and Certification Institute. (2018). Guide book on acute phase hospital accreditation investigation (Vol. 3.0). ■ Details on criteria and methods for the application of medical care benefit, Notice No. 2018-135 of the Ministry of Health and Welfare (2018). Ga 29 Safety management fee for hospitalized patients ■ Criteria for calculating medical quality assessment subsidies, Notice No. 2018-69 of the Ministry of Health and Welfare (2018). ■ Rules on the designation and assessment of specialized hospitals, Ordinance No. 536 of the Ministry of Health and Welfare (2017). ■ Patient Safety Act, Law No. 13113 (2015). ■ Enforcement Decree of the Patient Safety Act, Presidential Decree No. 27214 (2016). ■ Enforcement Decree of the Patient Safety Act, Ordinance No. 427 of the Ministry of Health and Welfare (2016).

Indicator numbers		01MSH0018~0022 ※ Assigning indicator numbers by the assessment criteria
Indicator Name		Infection prevention control activity (Completion of training by the person in charge of infection control, Implementation of training for employees related to infection, Operation of the Infection Control Committee and monitoring the performance rate of hand hygiene, Separated control of multiple drug resistant bacteria)
Indicator Definition		① Whether the infection control officer in the hospital has completed training ② Whether to train employees related to infection in the hospital ③ Whether the infection control committee is operated in the hospital ④ Whether to monitor the performance rate of hand hygiene in the hospital ⑤ Whether multiple drug resistant bacteria are separately managed in the hospital
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient, Out-patient
Calculation formula	Numerator	① If the person in charge of infection control in the relevant hospital receives more than 16 hours of training every year, it is recognized. ② If the relevant hospital regularly conducts infection-related education for all employees, it is recognized. ③ If there is an infection control committee operating in the hospital, it is recognized. ④ If the hospital is monitoring the performance rate of hand hygiene, it is recognized. ⑤ In the case where the hospital is separately managing six types of multiple drug resistant bacteria, it is recognized.
	Inclusion Criteria	■ To assess whether medical institutions are carrying out activities for infection prevention and management in the hospital ■ Criteria for training employees related to infection ○ Regularly conduct infection-related education for all employees at least twice a year ■ Operating standards of the Infection Control Committee ○ Regular meetings held at least twice a year ■ Recognition criteria for monitoring hand hygiene performance ○ Regularly monitor the status of hand hygiene at least 4 times a year and share the results ■ Recognition criteria for separation and management of multiple drug resistant bacteria ○ Isolation of 6 types of multiple drug resistant bacteria ○ Prepare monthly statistics and report to management

		■ 6 types of multiple drug resistant bacteria ○ VRSA ○ VRE ○ MRSA ○ MRPA ○ MRAB ○ CRE
	Exclusion Criteria	
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		Hospital
Assessment Period		1 year
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Good if criteria are met
Population subject to assessment		
Clinical subject		(not applicable)
Background and reason for selection		■ To assess infection control activities for hospital infection prevention
Evidence and References		■ Details of health insurance medical care benefit costs, Notice No. 2016-179 of the Ministry of Health and Welfare (2016) ■ Health insurance service benefit·non-benefit list and benefit relative value score, Notice No. 2018-012 of the Ministry of Health and Welfare (2018) ■ Korean Society for Healthcare-associated Infection Control and Prevention. (2017). Standard Prevention Guidelines for Medical-Related Infections. Korea Diseases Control and Prevention Agency ■ Ministry of Health and Welfare, Medical Institution assessment and Certification Institute. (2018). Guide book on acute phase hospital accreditation investigation (Vol. 3.0) ■ Details on criteria and methods for the application of medical care benefit, Notice No. 2018-114 of the Ministry of Health and Welfare (2018). Ga 25 Infection prevention·management fee ■ Medical Service Act, Act 15716 (2018). Article 47 (Preventive Measures against Hospital Infection)

	■ Criteria for Calculating Medical Quality Assessment Subsidy, Notice No. 2017-142 of the Ministry of Health and Welfare (2017) ■ Rules on the designation and assessment of specialized hospitals, Ordinance No. 536 of the Ministry of Health and Welfare (2017) ■ WHO. (2016). Guidelines on Core Components of Infection Prevention and Control Programmes at the National and Acute health Care Facility level. World Health Organization

Indicator numbers		01MSH0023~0026 ※ Assigning indicator numbers by the assessment criteria
Indicator Name		Patient safety management activities (Completion of training by the person in charge of patient safety management, Implementation of patient safety management related training, Operation of the Patient Safety Committee, Control of patient safety accidents)
Indicator Definition		① Whether the patient safety management officer in the hospital has completed the training ② Whether patient safety-related education has been conducted in the hospital ③ Whether a patient safety committee is in operation within the hospital ④ Whether patient safety accidents in the hospital are being controlled
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient, Out-patient
Calculation formula	Numerator	① If the patient safety management officer in the hospital receives more than 12 hours of training every year, it is considered as qualifying the criteria ② If the hospital conducts employee training related to patient safety control at least twice a year, it is considered as qualifying the criteria ③ If the hospital has a patient safety committee in operation, it is considered as qualifying the criteria ④ If the hospital is controlling patient safety accidents, it is considered as qualifying the criteria
	Inclusion Criteria	■ To assess in-hospital patient safety management activities by medical institutions ■ Operating standards of the Patient Safety Committee ○ Hold regular meetings at least twice a year ■ Recognition criteria for patient safety accident management ○ Collect, report and share information on patient safety accidents (red signal incidents, hazardous events, proximity errors, etc.) ○ Example: Patient identification, fall, decubitus ulcer, medication error, blood transfusion accident, treatment and surgery on the wrong site, suicide, etc.
	Exclusion Criteria	
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	

Things to be considered for calculation	
Institution subject to assessment	Hospital
Assessment Period	1 year
Assessment Cycle	Undecided
Assessment data source	Medical records (Survey form)
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	Good if criteria are met
Population subject to assessment	
Clinical subject	(not applicable)
Background and reason for selection	■ To assess activities to prevent patient safety accidents
Evidence and References	■ Details of medical care benefit costs of health insurance, Notice No. 2017-189 of the Ministry of Health and Welfare (2017). ■ Health insurance service benefit·non-benefit list and benefit relative value score, Notice No. 2018-012 of the Ministry of Health and Welfare (2018). ■ Ministry of Health and Welfare, Medical Institution assessment and Certification Institute. (2018). Guide book on acute phase hospital accreditation investigation (Vol. 3.0). ■ Details on criteria and methods for the application of medical care benefit, Notice No. 2018-135 of the Ministry of Health and Welfare (2018). Ga 29 Safety management fee for hospitalized patients ■ Criteria for calculating medical quality assessment subsidies, Notice No. 2018-69 of the Ministry of Health and Welfare (2018). ■ Rules on the designation and assessment of specialized hospitals, Ordinance No. 536 of the Ministry of Health and Welfare (2017). ■ Patient Safety Act, Law No. 13113 (2015). ■ Enforcement Decree of the Patient Safety Act, Presidential Decree No. 27214 (2016). ■ Enforcement Decree of the Patient Safety Act, Ordinance No. 427 of the Ministry of Health and Welfare (2016).

9) Anesthesia

☐ Common Criteria

※ Apply as inclusion criteria for the numerator or denominator of each indicator

○ Criteria for the subject of assessment

- **(Target patient)** Inpatient charged for anesthesia expenses (National Health Insurance and Medical Aid)
- **(Target Medical fee schedule code)** Anesthesia expenses

Target Medical fee schedule code		
Intravenous Anesthesia	L0101	General anesthesia
	L0103	General anesthesia under supervision
Anesthesia	A. Basic anesthesia management (based on 1 hour)	
	L1211	(1) Closed circulatory systemic anesthesia by endotracheal intubation
	L1212	(2) Closed circulation general anesthesia by mask
	L1213	(3) Spinal anesthesia
	L1214	(4) Epidural anesthesia
	L1215	(5) Brachial plexus anesthesia
	L1216	(6) Spinal epidural anesthesia

○ Exclusion criteria for the subject of assessment

- Medical fee schedule code for anesthesia expenses – Regional (Local) anesthesia (L0102)

Indicator numbers		01ANE0004
Indicator Name		Whether an anesthesiology and pain medicine specialist is on watch
Indicator Definition		Whether an anesthesiology and pain medicine specialist is on watch at night
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	if an anesthesiology and pain medicine specialist is on watch at night, it is considered as qualifying the criteria
	Inclusion Criteria	■ Including anesthesiology and pain medicine specialist on on-call at night
	Exclusion Criteria	
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		3 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Good if criteria are met
Population subject to assessment		
Clinical subject		(not applicable)
Background and reason for selection		■ To assess the quality of anesthesia and patient safety during night surgery
Evidence and References		■ Hum Factors. 2008 Apr;50(2):276-90. Differences in day and night shift clinical performance in anesthesiology

Indicator numbers		01ANE0005
Indicator Name		Monthly anesthesia time per anesthesiology and pain medicine specialist
Indicator Definition		Monthly anesthesia time per anesthesiology and pain medicine specialist
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Average monthly anesthesia time during the assessment period of the relevant institution
	Inclusion Criteria	■ Application of common criteria to the subject of the anesthesia assessment
	Exclusion Criteria	■ Regional anesthesia case
	Denominator	Average number of anesthesiology and pain medicine specialists during assessment period (3 months)
	Inclusion Criteria	■ Recognition criteria for specialists in anesthesiology and pain medicine ○ Number of anesthesiology and pain medicine specialists reported to HIRA (full-time: 1 person, part-time: 0.5 person, others: 0 person) ○ In the case of concurrently working for pain outpatient or ICU, etc., calculate manpower differentially by reflecting detailed working hours. ■ Calculation criteria for 3-month average number of specialists ○ Sum of the number of specialists on the 15th of each month ÷ 3
	Exclusion Criteria	■ Institutions without specialists in anesthesiology and pain medicine ■ Anesthesiology and pain medicine specialist who is in charge of other tasks such as pain outpatient or ICU ■ Anesthesia cases performed by inviting an anesthesiology and pain medicine specialist
Things to be considered for calculation		■ Final report on research service for developing standards and methods for quality assessment of anesthesia area (Korean Society of Anesthesiologists 2015)
Institution subject to assessment		General Hospital
Assessment Period		3 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form), Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		■ Good if certain criteria are satisfied ※ Based on the appropriate time for the first assessment (less than 175 hours)
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		(not applicable)

Background and reason for selection	■ To assess the quality of anesthesia and patient safety
Evidence and References	

Indicator numbers		01ANE0006
Indicator Name		Whether the recovery room is being operated
Indicator Definition		Whether an anesthesia recovery room is operated, and the personnel and equipment suitable for the operation of the recovery room are provided
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	If an anesthesia recovery room is operated, and personnel and equipment suitable for the operation of the recovery room are provided, it is considered as qualifying the criteria
	Inclusion Criteria	■ Criteria for judging whether recovery room is operated ○ Report to the HIRA ■ The standard for calculating the recovery management fee is applied mutatis mutandis to determine whether the appropriate standards are met. ○ However, in the case of staff calculation criteria (1) Among the manpower, 'at least one nurse in charge of patient recovery management in the recovery room is required'. * Calculation standard for the fee of postanesthesia care - Fee of postanesthesia care is recognized when postanesthesia care is performed in a recovery room that meets all of the following requirements A. Calculation Criteria (1) Staff (A) At least one full-time anesthesiology and pain medicine specialist who oversees recovery observation work in the recovery room is required. (B) Two or more dedicated nurses in the recovery room are required for patient postanesthesia care. (A full-time full-day nurse refers to a nurse who works an average of 40 hours per week.) (2) Equipment (A) Equipment that must be equipped in the recovery room · Basic facilities per bed (oxygen supply equipment, suction apparatus) · Monitoring equipment (peripheral oxygen saturation monitor, electrocardiogram monitor, non-invasive blood pressure monitor, end expiratory CO_2 partial pressure monitoring) · Thermostat · Breathing assister, etc. (Nasal prong, Facial Mask, Ambu bag set) · Emergency equipment (all airway intubation equipment) (B) Equipment to be equipped in the operating room or recovery room so that it can be used immediately when necessary. · Emergency Cart, respirator, defibrillator B. Calculation subject ◦ A case in which intensive postanesthesia care was performed for more than 15 minutes in a separately installed recovery room for the purpose of postanesthesia care after (L1211) closed circulation general anesthesia by endotracheal intubation or (L1212) closed circulation general anesthesia by mask

	Exclusion Criteria	
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		3 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Good if criteria are met
Population subject to assessment		
Clinical subject		(not applicable)
Background and reason for selection		■ To assess the quality of anesthesia and patient safety
Evidence and References		■ J Healthc Inf Manag. 2007 Spring;21(2): 53-8. Eliminating common PACU delays. ■ JPerianesthNurs. 2009Feb;24(1):4-13. ASPAN's Delphistudyonnational research:priorities for perianesthesia nurses in the United States.

Indicator numbers		01ANE0007
Indicator Name		Number of special equipment types owned by anesthesiology and pain medicine
Indicator Definition		Number of equipment types owned among the seven special types of medical equipment suggested by anesthesiology and pain medicine
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	If there is one or more equipment that 7 types of special equipment suggested by anesthesiology and pain medicine, it is considered as qualifying the criteria
	Inclusion Criteria	■ 7 types of special equipment ① Special airway management equipment (ex. flexible bronchoscope) ② Fluid administration responsiveness monitoring device (using goal-directed fluid therapy) ③ Rapid warming infusion system (ex. Rapid Infusion System, etc.) ④ EEG-derived depth of anesthesia monitoring device (ex. BIS, Entropy, Sedline, etc.) ⑤ Ultrasound equipment (ex. echocardiography) ⑥ Muscle relaxation monitoring device [ex. Accelomyography (AMG), Neurotransmission monitor (NMT), etc.] ⑦ Forced air warmer in the operating room
	Exclusion Criteria	■ Supraglottic airway (artificial airway located in the supraglottic area) and lever tip laryngoscope among the special airway management equipment ■ Use of central venous catheters and pulmonary artery catheters among the fluid administration reactivity monitoring devices ■ Use of central venous catheters and pulmonary artery catheters among the fluid administration reactivity monitoring devices
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		3 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)

Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	
Clinical subject	(not applicable)
Background and reason for selection	
Evidence and References	

Indicator numbers		01ANE0011
Indicator Name		Patient assessment rate before anesthesia
Indicator Definition		Proportion of cases in which anesthesiology and pain medicine doctors assessed the patient's condition before anesthesia among the total anesthesia cases
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of patient assessments conducted by doctor of anesthesiology and pain medicine before anesthesia
	Inclusion Criteria	■ An anesthesiology and pain medicine physicians should face-to-face with the patient prior to anesthesia to assess the patient's condition, and prepare and keep a standardized form of the pre-anesthesia patient assessment record ■ Criteria for physicians in anesthesiology and pain medicine ○ Anesthesiology and pain medicine specialist, anesthesiology and pain medicine resident ■ Items to be included in the Patient Assessment Record before Anesthesia ① Major information about the patient obtained through medical record research and patient interview ② Physical examination ③ Classification of the patient's physical condition ④ Presence or absence of abnormalities according to the preoperative examination results ⑤ Anesthesia plan
	Exclusion Criteria	
	Denominator	Number of anesthesia events that occurred during the assessment period
	Inclusion Criteria	■ Apply common criteria to the subject of the anesthesia assessment
	Exclusion Criteria	■ Intravenous-general anesthesia ■ Painless delivery ■ Emergency surgery ■ Regional anesthesia case
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		3 months

Assessment Cycle	Biennial
Assessment data source	Medical records (Survey form)
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	(not applicable)
Background and reason for selection	■ Assessing the patient's condition by a physician before anesthesia is an essential medical assessment process to ensure that the patient is in optimal condition for anesthesia and surgery
Evidence and References	■ Joint Commission International (JCI)

Indicator numbers		01ANE0012
Indicator Name		Rate of assessing nausea/vomiting and pain score measured in the recovery room
Indicator Definition		Proportion of patients for them the symptoms of nausea or vomiting is checked or whose pain score was measured among patients admitted to the recovery room after anesthesia
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the subject of the denominator, the number of patients for them the symptoms of nausea/vomiting is checked or whose pain score was measured
	Inclusion Criteria	■ Measuring criteria for nausea/vomiting and pain score ○ A case in which the presence or absence of nausea and vomiting and the level of pain measured using the pain assessment tool are recorded at the time of entering and leaving the recovery room (at least 2 times) ■ Types of pain assessment tools ○ VAS (Visual analogue scale), NRS (Numerical rating scale), FRS (Face pain rating scale), etc.
	Exclusion Criteria	
	Denominator	Number of patients admitted to recovery room after anesthesia
	Inclusion Criteria	■ Apply common criteria to the subject of the anesthesia assessment
	Exclusion Criteria	■ If there is no recovery room or if there are no patients in the recovery room ■ Regional anesthesia case
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		3 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		(not applicable)

Background and reason for selection	
Evidence and References	■ Core measure recommendation of outcomes of anesthesia among ASA (American Society of Anesthesiologists) quality measurement tools

Indicator numbers		01ANE0013
Indicator Name		Rate of performing monitored general anesthesia among intravenous anesthesia cases
Indicator Definition		Proportion of cases where anesthesia was performed by an anesthesiology and pain medicine doctor among intravenous anesthesia cases
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the cases subject to the denominator, the proportion of cases where anesthesia was performed by an anesthesiology and pain medicine doctor
	Inclusion Criteria	■ Number of intravenous-monitored general anesthesia cases
	Exclusion Criteria	
	Denominator	Number of intravenous anesthesias cases during the assessment period
	Inclusion Criteria	■ Criteria for calculating the number of intravenous anesthesia cases ○ Sum of intravenous-general anesthesia and intravenous-monitored general anesthesia ■ Classification number of types and fee classification code of intravenous anesthesia ○ Number of intravenous-general anesthesia cases ○ Number of intravenous-monitored general anesthesia cases
	Exclusion Criteria	
Things to be considered for calculation		◈ Details of Benefit Provision Criteria and Methods ○ Standards for accreditation of general anesthesia under supervision - General anesthesia under supervision is recognized when a specialist in anesthesiology and pain medicine directly conducts the entire anesthesia process from the start to the end of anesthesia. In order to quickly transition to general anesthesia in case of emergency, general anesthesia under supervision should be done while the monitoring of peripheral oxygen saturation with an anesthesia machine ready - The duration of general anesthesia under supervision refers to the time from the time the intravenous anesthesia agent is injected to the time when the operation which is the purpose of anesthesia is finished - When calculating general anesthesia under supervision, the type of license and license number of an anesthesiology and pain medicine specialist who was in charge of the entire anesthesia process must be recorded in the medical care benefit cost claim speicification
Institution subject to assessment		General Hospital

Assessment Period	3 months
Assessment Cycle	Biennial
Assessment data source	Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	(not applicable)
Background and reason for selection	■ Not only when the patient's condition is weak or deep sedation is required depending on the procedure, but also in the case of general sedation anesthesia, when it is performed by an anesthesiology and pain medicine specialist, the safety is increased
Evidence and References	■ ASA. Position on monitored anesthesia care, 2008, http://www.asahq.org/publicationsAndServices/standards/23.pdf[Lst accessed on 2014 Jan 4]

Indicator numbers		01ANE0014
Indicator Name		Rate of ultrasound guidance during central line insertion
Indicator Definition		Among the anesthesia cases in which a central venous catheter was inserted into the patient, the proportion of cases in which ultrasound guidance was provided at the time of insertion
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of cases in which ultrasound guidance was provided at the time of central line insertion
	Inclusion Criteria	■ Types of ultrasound guided central venous catheter method ○ Apply real-time ultrasound - Ultrasound is applied in real time from the start and end of the catheter using an ultrasonic probe wrapped in a sterile membrane ○ Apply static ultrasound - Before the central venous catheter, confirm the anatomical structure by ultrasound and mark it with a surgical marker.
	Exclusion Criteria	
	Denominator	Number of cases of central venous catheter cases for anesthetized patients
	Inclusion Criteria	■ Apply of common criteria to the subject of the anesthesia assessment
	Exclusion Criteria	■ Cases in which the central venous catheter was already mounted before arriving at the operating room ■ Regional anesthesia case
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		3 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject		(not applicable)

Background and reason for selection	
Evidence and References	■ Core measure recommendation of outcomes of anesthesia among ASA (American Society of Anesthesiologists) quality measurement tools

Indicator numbers		01ANE0020
Indicator Name		Whether the control activities related to anesthetic drugs are being performed
Indicator Definition		Whether QA (Quality Assessment) activities are being performed to prevent anesthetic agent administration error, and whether education on drugs and antipsychotic drugs is being conducted for medical staff belonging to anesthesiology and pain medicine
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	If the QA activities are being performed to prevent anesthetic agent administration error, and if education on drugs and antipsychotic drugs is being conducted for medical staff belonging to anesthesiology and pain medicine, it is considered as qualifying the criteria
	Inclusion Criteria	■ Recognition criteria for QA activities ○ Anesthetic safety management QA activity including prevention of anesthetic agent misadministration: At least once a year ○ Preparation of QA activity report ■ Recognition criteria for education on drugs and antipsychotic drugs ○ Education on drugs and antipsychotic drugs: at least twice a year ○ Preparation of education report
	Exclusion Criteria	
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		3 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Good if criteria are met
Population subject to assessment		
Clinical subject		(not applicable)

Background and reason for selection	■ Medical staff belonging to anesthesiology and pain medicine are frequently exposed to narcotics and antipsychotic drugs, so it is necessary to educate them on the safe use of these drugs
Evidence and References	■ Core measure recommendation of outcomes of anesthesia among ASA (American Society of Anesthesiologists) quality measurement tools

Indicator numbers		01ANE0021
Indicator Name		Rate of patients maintaining normal body temperature during and after anesthesia
Indicator Definition		Proportion of cases in which normal body temperature was maintained during and after anesthesia
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Outcome
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of cases in which normal body temperature (above 35.5℃) was maintained
	Inclusion Criteria	■ The central body temperature of patients undergoing general anesthesia for more than 30 minutes should be measured directly or reliably predicted through proximal-central thermometry. ■ Unless hypothermia is required for treatment (e.g. hypothermia therapy to protect against ischemia), for adult and all pediatric surgeries lasting more than 30 minutes, central body temperature should be continuously monitored during surgery, and efforts must be made to keep the central body temperature above 35.5℃ by applying a forced-air warmer, etc. prophylactically or therapeutically ■ Among patients with closed circulation general anesthesia by endotracheal intubation (L1211) and patients with closed circulation general anesthesia by mask (L1212) ○ As a result of continuous temperature monitoring (measured at least 15 minutes apart), a patient whose body temperature was maintained at 35.5°C or higher within 30 minutes before the end of anesthesia and within 15 minutes after the end of anesthesia
	Exclusion Criteria	
	Denominator	Number of anesthesia events that occurred during the assessment period
	Inclusion Criteria	■ Apply common criteria to the subject of the anesthesia assessment
	Exclusion Criteria	■ Cases where the age is 6 years or older, patients with anesthesia time less than 60 minutes ■ Patients being intentionally treated with therapeutic hypothermia ■ Regional anesthesia case
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		3 months
Assessment Cycle		Biennial

Assessment data source	Medical records (Survey form)
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	Newborn baby, Children and Adolescents, Adult, Elderly
Clinical subject	(not applicable)
Background and reason for selection	■ The core temperature of patients undergoing general anesthesia for more than 30 minutes should be measured directly or reliably predicted through proximity-core temperature measurement. Unless hypothermia is necessary for therapeutic purposes (e.g. hypothermia to protect against ischemia), in adult and all pediatric surgeries lasting more than 30 minutes, the core temperature should be continuously monitored during surgery, and a forced-air warmer should be used. Efforts should be made to keep the core temperature higher than 35.5°C by applying prophylactic or therapeutic treatment.
Evidence and References	■ Core measure recommendation of outcomes of anesthesia among ASA (American Society of Anesthesiologists) quality measurement tools

Indicator numbers		01ANE0022
Indicator Name		Rate of the number of anesthesia nurses to the number of surgical beds
Indicator Definition		Proportion of the number of anesthesia nurses to the number of surgical beds
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Average number of anesthesia nurses for the assessment period (3 months)
	Inclusion Criteria	■ Calculation criteria for anesthesia nurses ○ A nurse in charge of preparations and auxiliary tasks related to actual anesthesia. ○ A full-time nurse is counted as one employee who works an average of 40 hours or more per week. ○ Part-time nurses are nurses who work an average of 32 hours (more than) to 40 hours (less than) per week. These nurses are counted as 0.8, and those who work less than 32 hours are excluded from the calculation. ○ Full-time and short-time work can be calculated when working conditions are specified in writing, they are covered by the four major social insurances, and an employment contract of one year or more is concluded. However, in the case of a nurse replacing a nurse on maternity leave, parental leave, or sick leave (leave), it can be calculated regardless of the contract period. ■ Calculation criteria for a 3-month average anesthesia nurse ○ Sum of the number of nurses on the 15th of every month ÷ 3
	Exclusion Criteria	■ Operating room nurses, outpatient nurses, and recovery room nurses, who take care of patients in the recovery room. ■ Childbirth leave, long-term paid leave of 1 month or more, or consecutive absences of 1 month or more.
	Denominator	Average number of operating room beds during the assessment period (3 months)
	Inclusion Criteria	■ Number of beds in the operating room reported to HIRA ■ Calculation criteria for 3-month average operating room bed ○ Sum of the number of beds on the 15th of every month ÷ 3
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital

Assessment Period	3 months
Assessment Cycle	Biennial
Assessment data source	Medical records (Survey form), Administrative data
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	
Clinical subject	(not applicable)
Background and reason for selection	■ To assess the quality of anesthesia and patient safety
Evidence and References	■ J Perianesth Nurs. 2007 Oct;22(5)/l357-9. Why calculating PACU staffing is so hard and why/how operations research specialists can help. AORN J. 1997May;65(5):947-50,952-3,955-7. Astatistical method for predicting postanesthesia care unit staffing needs

Indicator numbers		01ANE0023
Indicator Name		Whether the PCA management team is in operation
Indicator Definition		Whether a Patient Controlled Analgesia (PCA) management team has been established and the pain control activities are conducted
Status of indicator use		Pilot Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	If a PCA management team is formed and pain control activities are performed for patients in the ward after surgery, it is considered as qualifying the criteria.
	Inclusion Criteria	■ Pain management work manual must be available ■ A PCA management team should be formed, and the PCA management team should visit the patient after surgery to assess the patient's pain until the PCA is removed, manage the PCA, and record the details
	Exclusion Criteria	
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		3 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Good if criteria are met
Population subject to assessment		
Clinical subject		(not applicable)
Background and reason for selection		■ Patient visits and care after surgery are effective in controlling pain and improving patient satisfaction
Evidence and References		

Indicator numbers		01ANE0024
Indicator Name		Rate of applying perioperative neuromuscular monitoring
Indicator Definition		Proportion of cases in which neuromuscular monitoring among the cases of general anesthesia using the neuromuscular blocker (muscle relaxant)
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the number of cases subject to the denominator, the number of cases where neuromuscular monitoring is applied
	Inclusion Criteria	■ The assessment indicator of neuromuscular monitoring (Train-of-four ratio/count) is recorded on the anesthesia record ■ Before/after administration of neuromuscular blocker (muscle relaxant) and before/after administration of neuromuscular blocking antagonist (muscle relaxant antagonist, reverse drug), neuromuscular monitoring should be applied and the results should be recorded on the anesthesia record
	Exclusion Criteria	
	Denominator	Number of general anesthesia cases in which a neuromuscular blocker (muscle relaxant) was used during and after surgery
	Inclusion Criteria	■ Apply common criteria to the subject of the anesthesia assessment
	Exclusion Criteria	■ General anesthesia without neuromuscular blocker (muscle relaxant) ■ Patients under the age of 18
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		3 months
Assessment Cycle		Biennial
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		(not applicable)
Background and reason for selection		■ To assess the quality of anesthesia and patient safety
Evidence and References		

10) Root canal treatment

☐ Common Criteria

※ Apply as inclusion criteria for the numerator or denominator of each indicator

○ Criteria for the subject of assessment

- **(Target patient)** Patients 18 years of age or older who started root canal treatment at the same medical institution and completed root canal filling* within the assessment period

  * Categories corresponding to initiation of root canal treatment and completing root canal filling
    - One-visit pulpectomy
    - Dental pulp extraction-root canal filling
    - Removal of old root canal filling-root canal filling
    - Enlargement of root canal-root canal filling

- **(Target Medical fee schedule code)** Root canal treatment
  - One-visit pulpectomy (U0074)
  - Dental pulp extraction (U0101)
  - Enlargement of root canal (U0116)
  - Root canal filling (U0121, U0126)
  - Root canal irrigation (U0111)
  - Removal of old root canal filling (U2245)

○ Exclusion criteria for the subject of assessment

- Patients who died within the assessment period
- Patients under the age of 18
- Patients with deciduous teeth

Indicator numbers		01DEN0001
Indicator Name		Radiographic examination rate before root canal treatment (RCT)
Indicator Definition		Proportion of teeth subjected to radiological examination within 30 days before RCT among RCT teeth
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the teeth subject to the denominator, the number of teeth subjected to radiological examination within 30 days before RCT
	Inclusion Criteria	■ Type of radiologic examinations ○ Periapical ○ Panorama ■ Recognition criteria for radiologic examination ○ Recognized for testing within 30 days before RCT
	Exclusion Criteria	
	Denominator	Number of RCT teeth
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on dental RCT
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on dental RCT ■ Disabled patient
Things to be considered for calculation		
Institution subject to assessment		Dentistry
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Dental Diseases and Disorders
Background and reason for selection		■ Radiologic examination is the most important clinical examination for diagnosis before RCT
Evidence and References		■ 「Development of quality assessment methods and standards in the dental field」 (Korean Academy of Dental Science 2016) ■ Latest endodontics (2011, Korean Academy of Endodontics)

Indicator numbers		01DEN0002
Indicator Name		Rate of root cannals cleansed less than 5 times
Indicator Definition		Proportion of teeth for which root canal cleansing is performed less than 5 times among RCT teeth
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the teeth subject to the denominator, the number of teeth for which root canal cleaning was performed less than 5 times
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of RCT teeth
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on dental RCT
	Exclusion Criteria	■ Teeth undergoing on visit endodontics and re-RCT ■ Morbidities and codes excluded from assessment ○ curved canals (K0044), pulp calcification (K042), radicular cyst (K048), periapical abscess with sinus (K046), periapical abscess without sinus (K047) ■ Apply common exclusion criteria to the subject of assessment on dental RCT
Things to be considered for calculation		
Institution subject to assessment		Dentistry
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Dental Diseases and Disorders
Background and reason for selection		■ Usually, the number of times of root canal cleansing is less than 5 times, and about 5 times are recognized based on benefit standards
Evidence and References		■ 「Development of quality assessment methods and standards in the dental field」 (Korean Academy of Dental Science 2016) ■ Latest endodontics (2011, Korean Academy of Endodontics)

Indicator numbers		01DEN0004
Indicator Name		Rate of radiographic examination after root canal treatment (RCT)
Indicator Definition		Proportion of teeth undergoing radiologic examination after root canal filling among RCT teeth
Status of indicator use		Regular Indicator
Quality components		Effectiveness
Indicator type		Process
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the teeth subject to the denominator, the number of teeth subjected to radiological examination on the day of root canal filling
	Inclusion Criteria	■ Classification number and type of radiologic examinations ○ Periapical ○ Panorama ■ Recognition criteria for radiologic examination ○ Only the same day of root canal filling is recognized.
	Exclusion Criteria	
	Denominator	Number of RCT teeth
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on dental RCT
	Exclusion Criteria	■ Morbidities and codes excluded from assessment ○ pulp calcification (K042) ■ Apply common exclusion criteria to the subject of assessment on dental RCT ■ Disabled patient
Things to be considered for calculation		
Institution subject to assessment		Dentistry
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Dental Diseases and Disorders
Background and reason for selection		■ Radiography is a method that can immediately assess the state of root canal filling, and provides a minimum standard for judging the quality of root canal filling
Evidence and References		■ 「Development of quality assessment methods and standards in the dental field」 (Korean Academy of Dental Science 2016) ■ Latest endodontics (2011, Korean Academy of Endodontics)

Indicator numbers		01DEN0006
Indicator Name		Rate of re-RCT (root canal treatment)
Indicator Definition		Proportion of teeth that were re-treated at the same institution within 1 year among RCT teeth
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Outcome
Types of health care services		Primary care and Chronic disease management
Types of service provision		Out-patient
Calculation formula	Numerator	Among the teeth subject to the denominator, the number of teeth undergoing re-RCT
	Inclusion Criteria	■ Recognition criteria for re-RCT teeth ○ RCT started with the removal of the existing filling in the root canal ○ Teeth that underwent re-RCT within 1 year at the same institution after completion of RCT
	Exclusion Criteria	
	Denominator	Number of RCT teeth
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on dental RCT
	Exclusion Criteria	■ Patients undergoing a second re-RCT for the same tooth (patients who have already undergone re-RCT) ■ Apply common exclusion criteria to the subject of assessment on dental RCT
Things to be considered for calculation		
Institution subject to assessment		Dentistry
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Adult, Elderly
Clinical subject		Dental Diseases and Disorders
Background and reason for selection		■ To determine rate of re-RCT trials due to failure of the first RCT ■ Re-RCT at an institution other than the institution where the first RCT was performed can occur for various reasons other than treatment failure, so the re-RCT rate at the same institution is assessed
Evidence and References		■ 「Development of quality assessment methods and standards in the dental field」 (Korean Academy of Dental Science 2016) ■ Latest endodontics (2011, Korean Academy of Endodontics)

11) Blood transfusion

☐ Common Criteria

※ Apply as inclusion criteria for the numerator or denominator of each indicator

○ Criteria for the subject of assessment

- **(Target patient)** Patients 18 years of age or older who have received red blood cell transfusions among inpatients

○ Exclusion criteria for the subject of assessment

- Patients under the age of 18
- Claims for pre-MDC disease groups (patients in organ transplant, ECMO, tracheostomy, etc.)
- Claims for seven disease groups [crystalline lens surgery, tonsillectomy and adenoidectomy, appendectomy, inguinal and femoral hernia surgery, anus and periproctal surgery, uterine and uterine appendage surgery (excluding malignant tumors, cesarean section)]

Indicator numbers		01BTF0008
Indicator Name		Transfusion indicator (2)
Indicator Definition		Comparing the average transfusion volume by disease group of each institution's red blood cell transfusion patients with the average transfusion volume by disease group and type of all institutions
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	The average transfusion volume of the relevant institutions considering DRG (Diagnosis Related Group) of red blood cell transfusion patients
	Inclusion Criteria	■ Calculation criteria ○ The sum of each disease group by multiplying average volume of red blood cell transfusion by disease group of hospitalized patients in the subject institution by the number of transfusions per disease group in the subject institution
	Exclusion Criteria	
	Denominator	Average transfusion volume of the entire institutions considering the disease group of red blood cell transfusion patients
	Inclusion Criteria	■ Calculation criteria ○ The sum of each disease group by multiplying the average blood transfusion volume for each disease group in which red blood cell transfusion occurred by the number of transfusions per disease group in the subject institution
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on transfusion ■ Error disease group (operation that does not match the main diagnosis stipulated in KDRG) ■ KRPG (Korean Rehabilitation Patient Group) ■ Disease group in which transfusion did not occur
Things to be considered for calculation		■ Definition of disease group ○ A system that classifies hospitalized patients based on resource consumption and clinical similarity as a patient classification system
Institution subject to assessment		General Hospital, Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Administrative data
Risk Adjustment		Y

Risk Adjustment Variable	■ Classify by the RDRG (Refined Diagnosis Related Group) classification system with the main diagnosis, surgery, death status, age, and severity adjusted for each patient
Interpretation of output	■ As the result value is greater than '1', the transfusion volume is greater than the average of the same assessment group.
Population subject to assessment	Adult, Elderly
Clinical subject	(not applicable)
Background and reason for selection	■ By comparing the transfusion volume adjusted for each disease group relative to institutions, it is possible to increase the medical staff's awareness in appropriate transfusion.
Evidence and References	■ Korea Diseases Control and Prevention Agency, Korean Society of Blood Transfusion. The 4th edition of the blood transfusion guidelines (2016 full revision). 2016 ■ HIRA. Quality Assessment Report 2004.

Indicator numbers		01BTF0009
Indicator Name		Whether a blood transfusion checklist is used
Indicator Definition		Whether there is a transfusion checklist that contains the information to be checked when prescribing a transfusion suggested in the transfusion guidelines
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Structure
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Whether there is a transfusion checklist that contains the information to be checked when prescribing a transfusion suggested in the transfusion guidelines
	Inclusion Criteria	■ Contents included in the transfusion checklist ○ Department prescribing blood transfusions, types of prescribed blood preparation, pre- and post-transfusion test results (CBC, etc.), indications for transfusion, blood transfusion-related history (transfusion side effects, past history, etc.), recent transfusion status (within the last 2 weeks)
	Exclusion Criteria	
	Denominator	
	Inclusion Criteria	
	Exclusion Criteria	
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		
Clinical subject		(not applicable)
Background and reason for selection		■ Transfusion compatibility can be increased if a transfusion checklist (handwritten or computerized) is used to check compliance with the transfusion guidelines for each transfusion prescription.

Evidence and References	■ Korea Diseases Control and Prevention Agency, Korean Society of Blood Transfusion. The 4th edition of the blood transfusion guidelines (2016 full revision). 2016 ■ Haspel RL, Uhl L, How do I audit hospital blood product utilization Transfusion 2012;52:227-30

Indicator numbers		01BTF0010
Indicator Name		Rate of performing an irregular antibody test
Indicator Definition		Proportion of patients undergoing an irregular antibody screening test among patients undergoing red blood cell transfusion
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the patient subject to the denominator, the number of patients undergoing an irregular antibody screening test
	Inclusion Criteria	■ Irregular antibody screening test recognition criteria ○ A case in which an 'Irregular antibody test [general immune test]-screening (Medical fee code: D1561)' was performed at least once from the 30th day before hospitalization to the date of discharge (In the case of blood transfusion before hospitalization, previous tests are excluded)
	Exclusion Criteria	
	Denominator	Number of patients undergoing red blood cell transfusion
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on transfusion
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on transfusion
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		(not applicable)
Background and reason for selection		■ It is recommended to conduct an irregular antibody screening test for patients who are likely to receive blood transfusions. In particular, patients with a history of pregnancy, blood transfusion, transplantation, etc. have a high rate of irregular antibody production.

Evidence and References	■ Korea Diseases Control and Prevention Agency, Korean Society of Blood Transfusion. The 4th edition of the blood transfusion guidelines (2016 full revision). 2016 ■ Details on application standards and methods of medical care benefit (Ministry of Health and Welfare No. 2017-265. 2018.1.1.)

Indicator numbers		01BTF0011
Indicator Name		Rate of blood transfusion for knee replacement (unilateral) patients according to blood test before transfusion
Indicator Definition		Proportion of transfusion cases in which the pre-transfusion hemoglobin level meets the transfusion guidelines among the cases of red blood cell transfusion to hospitalized patients for the unilateral total knee replacement
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among blood transfusion cases subject to the denominator, the number of cases in which the pre-transfusion hemoglobin test level met the standard set forth in the guideline
	Inclusion Criteria	■ Timing of hemoglobin test before transfusion ○ Within 7 days before transfusion ■ Conformity criteria for pre-transfusion hemoglobin test values ① Hemoglobin〈7g/dl ② 7g/dl≤Hemoglobin≥10g/dl acceptability should be reviewed
	Exclusion Criteria	
	Denominator	Number of red blood cell transfusions performed for hospitalized patients to receive unilateral knee replacement
	Inclusion Criteria	■ Claims for 'Total knee replacement-TKR [knee] (N2072)' on the inpatient claim specification (form)
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on transfusion
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Musculoskeletal System and Connective Tissue
Background and reason for selection		■ Reduce preventable transfusion by assess quality of transfusion based on blood test levels in the transfusion guidelines

Evidence and References	■ Korea Diseases Control and Prevention Agency, Korean Society of Blood Transfusion. The 4th edition of the blood transfusion guidelines (2016 full revision). 2016 ■ HIRA. Quality Assessment Report 2004. ■ Yang.M, Kim HS, Lee J-M, Choi SJ, Lim JH, Evaluation of hemoglobin trigger and appropriateness of perioperatve red cell transfusion in surgical departments. THe Korean Journal Blood Transfusion 2018;29:151-8 ■ Spradbrow J, Cohen R, Lin Y, Armali C, Collins A, Cserti-Gazdewich C, et al. Evaluating appropriate red cell transfusions: a quality audit at 10 Ontario hospitals to determine the optimal measure for assessing appropriateness Transfusion 2016;56:2466-2467 ■ Edwards J, Morrison C, Mohiuddin M, Tchatalbachev V, Patel C, Schwickerath VL, et al. patient blood transfusion management: discharge hemoglobin level as a surrogate marker for red cell utilization appropriateness. 2012;52(11):2445-51

Indicator numbers		01BTF0012
Indicator Name		Rate of blood transfusion for knee replacement (unilateral) patients
Indicator Definition		Proportion of red blood cell transfusions among hospitalized patients for the unilateral total knee replacement
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the patient subject to the denominator, the number of patients receiving red blood cell transfusions
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Number of surgeries for hospitalized patients to receive unilateral knee replacement
	Inclusion Criteria	■ Claims for 'Total knee replacement-TKR [knee] (N2072)' on the inpatient claim specification (form)
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on transfusion
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		Lower is better
Population subject to assessment		Adult, Elderly
Clinical subject		Musculoskeletal System and Connective Tissue
Background and reason for selection		■ The transfusion rate for knee replacement in Korea is very high compared to other countries, so it is necessary to induce appropriate transfusion for patient safety and to improve the medical quality of domestic transfusion
Evidence and References		■ Park Yong-jeong et al. Establishment of preoperative red blood cell referral guidelines. Ilsan Hospital Research Institute of National Health Insurance. 2016. ■ Kamille A, West MD, Marguerite L, Barrett MS, et al. Trends in Hospitalizations with a Red Blood cell Transfusion, 2000-2013. AHRQ (Agency for Health care Research & Quality). 2016.

Indicator numbers		01BTF0013
Indicator Name		Rate of performing transfusion management
Indicator Definition		Proportion performed by the relevant institution among questions on the transfusion management
Status of indicator use		Regular Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the total questions subject to the denominator, the number of questions regarding the transfusion function performed by the institution
	Inclusion Criteria	
	Exclusion Criteria	
	Denominator	Total number of questions on transfusion management function (total 4)
	Inclusion Criteria	■ Questions about the function of transfusion management ① Activation of appropriate blood transfusion - Setting the priority of blood use in case of blood shortage, reviewing the appropriateness of a transfusion prescription, establishing a pre-transfusion test procedure, establishing a patient blood management program, etc. ② Proper inventory management - Medical institutions establish an appropriate inventory management plan suitable for each crisis stage and manage the activity situation for usual times and in the event of national blood shortage crises ③ Monitoring of adverse reactions after transfusion and review of results - Continuously monitor whether adverse reactions occur after transfusion and manage whether appropriate follow-up measures have been taken ④ Monitoring and reporting related to blood safety - Continuously monitor domestic and international issues related to blood safety and check whether appropriate measures are being taken for patient safety - Monitoring if the content is shared internally and related measures are being taken by checking the revision status of related regulations such as the Medical Service Act, Act of Blood Management, and public notices (e.g. mandatory reporting of transfusion blood information, mandatory installation of a transfusion management room, etc.)
	Exclusion Criteria	
Things to be considered for calculation		

Institution subject to assessment	General Hospital, Hospital
Assessment Period	6 months
Assessment Cycle	Undecided
Assessment data source	Medical records (Survey form)
Risk Adjustment	N
Risk Adjustment Variable	
Interpretation of output	The higher, the better.
Population subject to assessment	
Clinical subject	(not applicable)
Background and reason for selection	■ It is possible to improve transfusion quailty by assessing the transfusion management function of each institutions.
Evidence and References	■ Korea Diseases Control and Prevention Agency, Korean Society of Blood Transfusion. The 4th edition of the blood transfusion guidelines (2016 full revision). 2016 ■ ELIO & Company. Establishment of mid-to long-term development plan for korean blood business-Final Report): Korean Red Cross. 2015.

Indicator numbers		01BTF0014
Indicator Name		Rate of preoperative anemia correction for patients of knee replacement (unilateral)
Indicator Definition		Proportion of patients whose anemia was corrected prior to surgery among patients with iron deficiency anemia among hospitalized patients for unilateral knee replacement
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the patient subject to the denominator, the number of patients whose iron deficiency anemia was corrected prior to surgery
	Inclusion Criteria	■ How to correct anemia ○ Iron preparations (oral, injection) and hematopoietics medication
	Exclusion Criteria	
	Denominator	Number of patients with confirmed iron deficiency anemia before surgery among hospitalized patients to receive unilateral knee replacement
	Inclusion Criteria	■ Claims for 'Total knee replacement-TKR [knee] (N2072)' on the inpatient claim specification (form) ■ Criteria for the iron deficiency anemia ○ If there is 'anemia morbidity (D50)' within 30 days before surgery, or if the hemoglobin level is less than 10 g/dl
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on transfusion
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Medical records (Survey form)
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		Musculoskeletal System and Connective Tissue
Background and reason for selection		■ The need for postoperative blood transfusion can be reduced by correcting anemia by performing an anemia screening test (hemoglobin) in advance for patients undergoing surgery.
Evidence and References		■ Korea Diseases Control and Prevention Agency, Korean Society of Blood Transfusion. The 4th edition of the blood transfusion guidelines (2016 full revision). 2016

Indicator numbers		01BTF0016
Indicator Name		Rate of 1 unit transfusion (2)
Indicator Definition		Proportion of 1 unit transfusion patients among patients undergoing red blood cell transfusion
Status of indicator use		Pilot Indicator
Quality components		Patient safety
Indicator type		Process
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	Among the patient subject to the denominator, the number of patients undergoing 1 unit transfusion of red blood cells
	Inclusion Criteria	■ When the number of hemoglobin tests exceeds the amount of red blood cell transfusion
	Exclusion Criteria	
	Denominator	Number of patients undergoing red blood cell transfusion
	Inclusion Criteria	■ Apply common criteria to the subject of assessment of transfusion
	Exclusion Criteria	■ Patients undergoing mass blood transfusion (6 pint or more) ■ Apply common exclusion criteria to the subject of assessment on transfusion
Things to be considered for calculation		
Institution subject to assessment		General Hospital, Hospital
Assessment Period		6 months
Assessment Cycle		Undecided
Assessment data source		Administrative data
Risk Adjustment		N
Risk Adjustment Variable		
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		(not applicable)
Background and reason for selection		■ In patients without hemorrhage, unnecessary additional transfusions can be prevented by reviewing the need for additional transfusions after one unit of transfusion
Evidence and References		■ Korea Diseases Control and Prevention Agency, Korean Society of Blood Transfusion. The 4th edition of the blood transfusion guidelines (2016 full revision). 2016. ■ HIRA. Quality Assessment Report 2004.

8.

Patient-centeredness

1) Patient experience

☐ Common Criteria

※ Apply as inclusion criteria for the numerator or denominator of each indicator

○ Criteria for the subject of assessment

- **(Target patient)** Patients age 19 years or older who have been hospitalized for more than one day, and who have been discharged within 2 to 56 days (8 weeks) at the time of the investigation

○ Exclusion criteria for the subject of assessment

- Patients in the day ward, palliative ward, pediatrics, and psychiatric department
- Patients in military hospitals, hospitals subject to operational assessment of regional base public hospitals, and hospitals affiliated with the Korea Workers' Compensation and Welfare Service
- Patients who did not respond to survey questions or patients who responded to other than to questions

Indicator numbers		01PTE0001~PTE0004 ※ Assigning indicator numbers by the question
Indicator Name		Nurse field (Respect/courteous, good listening skills, explaining hospital life, efforts to handle requests for help, and providing information related to ward rounding time)
Indicator Definition		Regarding the patient experience assessment survey, the average score of questions relating to the nurse field (respectful/courteous, good listening skills, explained hospital life, made efforts to handle requests for help) answered by patients with hospitalization experience
Status of indicator use		Regular Indicator
Quality components		Patient-centeredness
Indicator type		Patient experience
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	The sum of the scores given to the following items by the subject to the denominator; 「Did the nurse in charge treat you with respect and courtesy」, 「Did the nurse in charge listen carefully to you?」, 「Did the nurse in charge explain hospital life in an easy to understand way?」, 「Did your nurse try to handle your needs when you need them?」
	Inclusion Criteria	■ Scoring Criteria 1. Not at all (0 points) 2. No (33 points) 3. Yes (67 points) 4. Always (100 points)
	Exclusion Criteria	
	Denominator	Number of patients with hospitalization experience who responded to the survey multiplied by the number of questions (4)
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on patient experience
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on patient experience
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Survey data
Risk Adjustment		Y
Risk Adjustment Variable		■ Gender, age, subjective health status, emergency room use
Interpretation of output		The higher, the better.

Population subject to assessment	Adult, Elderly
Clinical subject	(not applicable)
Background and reason for selection	■ The concept of patient-centeredness is recognized as a issue at the level of medical quality and health care system. ■ WHO (World Health Organization), OECD (Organization for Economic Cooperation and Development), and IOM (International Organization for Migration) deal with patient-centeredness or responsiveness as key factors for quality of care
Evidence and References	■ A study on the development of a patient-centered assessment model (2015) ■ A study on the development of a method for calculating patient experience assessment results (2018)

Indicator numbers		01PTE0005~PTE0008 ※ Assigning indicator numbers by the question
Indicator Name		Doctor field (Respect/courteous, good listening skills, providing opportunities to talk to a doctor, providing information related to ward rounding time)
Indicator Definition		Regarding the patient experience assessment survey, the average score of questions relating to the doctor field (respectful/courteous, good listening skills, provided a chance to talk to a doctor, provided information related to ward round times) answered by patients with hospitalization experience
Status of indicator use		Regular Indicator
Quality components		Patient-centeredness
Indicator type		Patient experience
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	The sum of the scores given to the following items by the subject to the denominator 「Did your doctor treat you with respect and courtesy?」, 「Did your doctor listen carefully to you?」, 「Did you or your guardian have frequent opportunities to meet and talk with your doctor?」, 「Have you been sufficiently informed about the doctor's rounding time or changes in rounding time?」
	Inclusion Criteria	■ Scoring Criteria 1. Not at all (0 points) 2. No (33 points) 3. Yes (67 points) 4. Always (100 points)
	Exclusion Criteria	
	Denominator	Number of patients with hospitalization experience who responded to the survey multiplied by the number of questions (4)
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on patient experience
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on patient experience
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Survey data
Risk Adjustment		Y
Risk Adjustment Variable		■ Gender, age, subjective health status, emergency room use
Interpretation of output		The higher, the better.

Population subject to assessment	Adult, Elderly
Clinical subject	(not applicable)
Background and reason for selection	■ The concept of patient-centeredness is recognized as a issue at the level of medical quality and health care system. ■ WHO (World Health Organization), OECD (Organization for Economic Cooperation and Development), and IOM (International Organization for Migration) deal with patient-centeredness or responsiveness as key factors for quality of care
Evidence and References	■ A study on the development of a patient-centered assessment model (2015) ■ A study on the development of a method for calculating patient experience assessment results (2018)

Indicator numbers		01PTE0009~PTE0011, PTE0013, PTE0030 ※ Assigning indicator numbers by the question
Indicator Name		Medication & therapeutic process (explaning the reasons of the medication/examination/treatment, explaining side effects related to medication/examination/treatment, efforts to control pain, consolation and empathy for disease, providing information on precautions and treatment plans after discharge)
Indicator Definition		Regarding the patient experience assessment survey, the average score on questions relating to medication and therapeutic processes answered by patients with hospitalization experience (① explaning the reasons of the medication/examination/treatment, ② explaining side effects related to medication/examination/treatment, ③ efforts were made to control pain, ④ consolation and empathy for disease, ⑤ providing information on precautions and treatment plans after discharge)
Status of indicator use		Regular Indicator
Quality components		Patient-centeredness
Indicator type		Patient experience
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	The sum of the scores given to the following items by the subject to the denominator ① 「Did the hospital explain the reason for medication, examination, or treatment in an easy-to-understand manner?」, ② 「Did the hospital explain the side effects that could occur after medication, examination, or treatment in an easy-to-understand manner?」, ③ 「Did the hospital take appropriate measures to reduce your pain?」, ④ 「Did you receive comfort and sympathy for your disease?」, ⑤ 「Have you been provided with information on precautions and treatment plans after discharge?」
	Inclusion Criteria	■ It is intended for all hospital staff (doctors, nurses, pharmacists, radiologists, clinical pathologists, etc.) involved in the administration and treatment process including medication, examination, treatment, etc. ■ Scoring Criteria for ①~④ 1. Not at all (0 points) 2. No (33 points) 3. Yes (67 points) 4. Always (100 points) ■ Scoring criteria for ⑤ (providing information on precautions and treatment plans after discharge) ① Yes (100 points) ② No (0 point)
	Exclusion Criteria	

	Denominator	Number of patients with hospitalization experience who responded to the survey multiplied by the number of questions (5)
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on patient experience
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on patient experience
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Survey data
Risk Adjustment		Y
Risk Adjustment Variable		■ Gender, age, subjective health status, emergency room use
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		(not applicable)
Background and reason for selection		■ The concept of patient-centeredness is recognized as a issue at the level of medical quality and health care system. ■ WHO (World Health Organization), OECD (Organization for Economic Cooperation and Development), and IOM (International Organization for Migration) deal with patient-centeredness or responsiveness as key factors for quality of care
Evidence and References		■ A study on the development of a patient-centered assessment model (2015) ■ A study on the development of a method for calculating patient experience assessment results (2018)

Indicator numbers		01PTE0012, PTE0014, PTE0019, PTE0021 ※ Assigning indicator numbers by the question
Indicator Name		Patient rights guarantee (Consideration related to shame, such as physical exposure, opportunities to participate in the treatment decision process, fair treatment, whether it was easy to file a complaint)
Indicator Definition		Regarding the patient experience assessment survey, the average score on questions relating to the patient rights guarantee answered by patients with hospitalization experience (① considerate of feelings of embarrassment, such as from physical exposure, ② opportunities to participate in the treatment decision process, ③ fair treatment, ④ whether it was easy to file a complaint)
Status of indicator use		Regular Indicator
Quality components		Patient-centeredness
Indicator type		Patient experience
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	The sum of the scores given to the following items by the subject to the denominator ① 「During the examination or treatment decision process, were you given consideration to not feel shame due to body exposure, etc.?」, ② 「Have you been given the opportunity to participate in the examination or treatment decision process?」, ③ 「Did you receive fair treatment compared to other patients during the hospitalization period?」, ④ If you had any complaints during the hospitalization period, was it easy to talk about them?」
	Inclusion Criteria	■ Scoring criteria for ① 0. There was no physical exposure, etc. (not applicable) 1. Not at all (0 points) 2. No (33 points) 3. Yes (67 points) 4. Always (100 points) ■ Scoring criteria for ②~③ 1. Not at all (0 points) 2. No (33 points) 3. Yes (67 points) 4. Always (100 points) ■ Scoring criteria for ④ 0. No complaints (not applicable) 1. Not at all (0 points) 2. No (33 points) 3. Yes (67 points) 4. Always (100 points)
	Exclusion Criteria	

	Denominator	Number of patients with hospitalization experience who responded to the survey multiplied by the number of questions (4)
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on patient experience
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on patient experience
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Survey data
Risk Adjustment		Y
Risk Adjustment Variable		■ Gender, age, subjective health status, emergency room use
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		(not applicable)
Background and reason for selection		■ The concept of patient-centeredness is recognized as a issue at the level of medical quality and health care system. ■ WHO (World Health Organization), OECD (Organization for Economic Cooperation and Development), and IOM (International Organization for Migration) deal with patient-centeredness or responsiveness as key factors for quality of care
Evidence and References		■ A study on the development of a patient-centered assessment model (2015) ■ A study on the development of a method for calculating patient experience assessment results (2018)

Indicator numbers		01PTE0017~0018 ※ Assigning indicator numbers by the question
Indicator Name		Hospital environment (clean environment, safe environment)
Indicator Definition		Regarding the patient experience assessment survey, the average score on questions relating to hospitalization experience answered by patients with hospitalization experience (clean environment, safe environment)
Status of indicator use		Regular Indicator
Quality components		Patient-centeredness
Indicator type		Patient experience
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	The sum of the scores given to the following items by the subject to the denominator 「Is the hospital overall clean?」, 「Is the hospital environment safe?」
	Inclusion Criteria	■ Scoring Criteria 1. Not at all (0 points) 2. No (33 points) 3. Yes (67 points) 4. Always (100 points)
	Exclusion Criteria	
	Denominator	Number of patients with hospitalization experience who responded to the survey multiplied by the number of questions (2)
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on patient experience
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on patient experience
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months
Assessment Cycle		Biennial
Assessment data source		Survey data
Risk Adjustment		Y
Risk Adjustment Variable		■ Gender, age, subjective health status, emergency room use
Interpretation of output		The higher, the better.
Population subject to assessment		Adult, Elderly
Clinical subject		(not applicable)

Background and reason for selection	■ The concept of patient-centeredness is recognized as a issue at the level of medical quality and health care system. ■ WHO (World Health Organization), OECD (Organization for Economic Cooperation and Development), and IOM (International Organization for Migration) deal with patient-centeredness or responsiveness as key factors for quality of care
Evidence and References	■ A study on the development of a patient-centered assessment model (2015) ■ A study on the development of a method for calculating patient experience assessment results (2018)

Indicator numbers		01PTE0023~0024 ※ Assigning indicator numbers by the question
Indicator Name		Overall assessment (Comprehensive assessment of hospitalization experience, whether to recommend to others)
Indicator Definition		Regarding the patient experience assessment survey, the average score on questions relating to overall assessment answered by patients with hospitalization experience (comprehensive assessment of hospitalization experience, whether to recommend to others)
Status of indicator use		Regular Indicator
Quality components		Patient-centeredness
Indicator type		Patient experience
Types of health care services		Acute treatment
Types of service provision		In-patient
Calculation formula	Numerator	The sum of the scores given to the following items by the subject to the denominator 「If you could rate your hospitalization experience at this hospital on a scale of 0 to 10, how many points would you give it?」, 「If any of your family or friends ever need to be hospitalized, would you recommend this hospital to them?」
	Inclusion Criteria	■ Scoring criteria 1. 0 point (0 point) 2. 1 point (10 points) 3. 2 points (20 points) 4. 3 points (30 points) 5. 4 points (40 points) 6. 5 points (50 points) 7. 6 points (60 points) 8. 7 points (70 points) 9. 8 points (80 points) 10. 9 points (90 points) 11. 10 points (100 points)
	Exclusion Criteria	
	Denominator	Number of patients with hospitalization experience who responded to the survey
	Inclusion Criteria	■ Apply common criteria to the subject of assessment on patient experience
	Exclusion Criteria	■ Apply common exclusion criteria to the subject of assessment on patient experience
Things to be considered for calculation		
Institution subject to assessment		General Hospital
Assessment Period		6 months

Assessment Cycle	Biennial
Assessment data source	Survey data
Risk Adjustment	Y
Risk Adjustment Variable	■ Gender, age, subjective health status, emergency room use
Interpretation of output	The higher, the better.
Population subject to assessment	Adult, Elderly
Clinical subject	(not applicable)
Background and reason for selection	■ The concept of patient-centeredness is recognized as a issue at the level of medical quality and health care system. ■ WHO (World Health Organization), OECD (Organization for Economic Cooperation and Development), and IOM (International Organization for Migration) deal with patient-centeredness or responsiveness as key factors for quality of care
Evidence and References	■ A study on the development of a patient-centered assessment model (2015) ■ A study on the development of a method for calculating patient experience assessment results (2018)

Annex

1. Definition of Assessment indicator classification system
2. Assessment indicators by Assessment items

2022
HIRA Healthcare Quality Indicators

1. Definition of Assessment indicator classification system

○ Indicator type

- The indicator is classified according to the type of medical service provision, such as whether the environment is suitable for providing medical services, whether an appropriate process has been performed to treat patients, and whether the treatment results are desirable.

Kinds of information	Definition
Structure	An indicator to assess whether the human resources and facilities for providing appropriate medical services are well established
Process	An indicator related to the activities of medical staff throughout the process of providing medical services
Outcome	An indicator related to medical service provision results, such as medical usage and medical service provision results, patient health status, etc.
Composite	An indicator that is a combination of two or more indicators of different types
Patient experience	An indicator to assess whether the rights of patients are guaranteed and patient-centered services are provided

○ Quality components

- Classified into areas of improvement of medical quality according to the purpose of the assessment results.

Kinds of information	Definition
Patient safety	An indicator to protect patients from risks that may occur during treatment, such as unexpected healthcare-associated infections and accidents
Effectiveness	An indicator to assess whether accurate and effective medical services are provided for the best treatment outcomes
Patient-centeredness	An indicator to improve a patient's ability to manage their own body and improve patient satisfaction through education relating to the provision of medical services
Efficiency	An indicator to reduce unnecessary resource waste and achieve the best results for the resources spent
Coordination	An indicator to increase the linkage between medical service providers, such as transferring patients to medical institutions that can provide appropriate treatment according to symptom relief or worsening
Equity	An indicator to ensure fair use of medical services regardless of economic and geographic differences

○ Clinical subject

- Classify diseases and injuries by grouping them by body part and disease characteristics.
- Based on the KCD(Korean Standard Classification of Diseases), the MDC(Major Diagnostic Category) of the KDRG(Korean Diagnosis Related Group) classification system was used as an auxiliary means.

Kinds of information
Diseases and Disorders of the Nervous system
Diseases and Disorders of the Eye
Diseases and Disorders of the Ear, Nose, Mouth and Throat
Dental Diseases and Disorders
Diseases and Disorders of the Respiratory System
Diseases and Disorders of the Circulatory System
Diseases and Disorders of the Digestive System
Diseases and Disorders of the Hepatobiliary System and Pancreas
Diseases and Disorders of the Musculoskeletal System and Connective Tissue
Diseases and Disorders of the Skin, Subcutaneous Tissue and Breast
Endocrine, Nutritional and Metabolic Diseases and Disorders
Diseases and Disorders of the Kidney and Urinary Tract
Diseases and Disorders of the Male Reproductive System
Diseases and Disorders of the Female Reproductive System
Pregnancy, Childbirth and Puerperium
Newborns
Diseases and Disorders of the Blood and Blood-Forming Organs and Immunological Disorders
Neoplasms
Infectious and Parasitic Diseases
Mental Diseases and Disorders
Alcohol/Drug Use and Alcohol/Drug-induced Organic Mental Disorders
Multiple Trauma and Injuries, Poisoning and Toxic Effects of Drugs
Burns

○ Types of health care services

- Types of health care services are classified according to the treatment period and treatment method of the disease in consideration of the urgency of symptomatic treatment due to the disease.

Kinds of information	Definition
Prevention and Health promotion	Health promotion activities through improvement of nutritional status and health management to prevent diseases in advance
Primary care and Chronic disease management	The first medical service that patient's encounters for treatment, and includes chronic disease management and patient continuous health status management
Acute treatment	Medical service provided to patients in need of short-term and rapid treatment, including emergency treatment, trauma treatment, surgery, intensive care, and inpatient treatment
Rehabilitation treatment	Activities that help people with disabilities to carry out their daily lives on their own, including exercise therapy, speech and occupational therapy, etc.
Long-term care	When it is impossible for patients to carry out their daily activities by themselves, help them live as safely as possible and provide necessary nursing services
Hospice and palliative care	Medical care that aims to provide comprehensive care and support including physical, psychosocial, and spiritual areas to patients and their families at the end of the life cycle

○ Types of service provision

- Types of medical services provided by medical institutions

Kinds of information	Definition
In-patient	A case of receiving medical services while staying in an inpatient room at a medical institution for a certain period of time
Out-patient	A case of visiting a medical institution and receiving medical services while staying for less than 6 hours
Emergency medical services	Receive measures such as counseling, rescue, transport, first aid, and medical treatment for emergency patients until they recover from life-threatening condition
Others	Types of service provision other than inpatient, outpatient, and emergency, such as home care

○ Population subject to assessment

- Classification of the total population subject to assessment by age

Kinds of information	Definition
Newborn baby	Population under 1 year old
Children and Adolescents	Population aged 1 to under 18 years old
Adult	Population aged 18 to under 65 years old
Elderly	Population aged 65 years and older

○ Institution subject to assessment

- Classification of medical institutions providing medical services according to the classification criteria set by the Medical Act and the Regional Health Act

Kinds of information	Definition
General Hospital	A medical institution that can treat more than 100 inpatients
Hospital	A medical institution that can treat more than 30 inpatients
Clinic	Medical institutions where doctors provide medical services mainly for outpatients
Long-term care hospital	A medical institution that can treat 30 or more long-term inpatients for the purpose of recuperation
Mental hospital	A medical institution that can treat 30 or more inpatients primarily for the treatment of mentally ill patients
Dentistry	A medical institution where dentists provide medical services mainly for outpatients
Korean medicine	A medical institution in which oriental doctors mainly perform medical treatment for outpatients
Public health institution	Local health care institutions corresponding to public health centers, health subcenters, and centers for supporting healthy living

○ Assessment data source

- Classification of assessment data used to calculate assessment results according to collection method

Kinds of information	Definition
Medical records (Survey form)	Materials prepared and submitted by medical institutions
Administrative data	Administrative data such as billing statements, long-term care institution status report data, and resident registration data from the Ministry of Public Administration and Security
Survey data	Data collected through questionnaires such as phone calls, websites, visits, etc.
Others	Materials other than medical records, administrative data, and surveys

○ Status of indicator use

- Classify the status of the indicator according to the purpose and use of the indicator

Kinds of information	Definition
Preliminary Indicator	An indicator used for pre-assessment whether it is a feasible indicator before evaluating actual medical institutions
Regular Indicator	An indicator used for medical institution assessment (used for disclosure of results by long-term care institution, etc.)
Pilot Indicator (Monitoring Indicator)	An indicator used for the purpose of identifying the status of medical services provided by medical institutions
Terminated Indicator	Indicators that are terminated after being used as preliminary, regular, and pilot(monitoring) indicators

2. Assessment indicators by Assessment items

Ⅰ Cancer

■ Colorectal cancer

■ Breast cancer

■ Lung cancer

■ Stomach cancer

■ Liver cancer treatment outcome

Ⅰ Acute disease

■ Coronary artery bypass graft (CABG)

■ Ischemic heart disease (IHD) (PCI, percutaneous coronary intervention)

■ Ischemic heart disease (IHD) (AMI, acute myocardial infarction)

■ Acute stroke

■ Pneumonia

Ⅰ Chronic disease

■ Hypertension

■ Diabetes

■ Asthma

■ Chronic obstructive pulmonary disease (COPD)

| Infectious disease

■ Tuberculosis

| Mental health

■ Psychiatric care for Medical Aid beneficiaries

■ Psychiatric hospitalization

■ Depression (out-patient)

Ⅰ Drugs

■ Pharmaceutical benefits (antibiotics prescription rate)

■ Pharmaceutical benefits (injection prescription rate)

■ Pharmaceutical benefits (number of pharmaceutical products)

■ Pharmaceutical benefits (pharmaceutical cost)

Ⅰ Medical institution

■ Use of prophylactic antibiotics for surgery

■ Hemodialysis

■ Hospital standardized mortality ratio

■ Risk-standardized readmission ratio

■ Long-term care hospital

■ Intensive care unit (ICU)

■ Neonatal intensive care unit (NICU)

■ Small & medium hospitals

■ Anesthesia

■ Root canal treatment

| Patient-centeredness

2020
HIRA Healthcare Quality Indicators

발 행 일 2022년 6월

발행기관 건강보험심사평가원

발행부서 평가운영실 평가가치향상부

인 쇄 처 (사)한국장애인문인복지후원회