

OUTCOMES

Samsung Comprehensive Cancer Center

BOOK

2023

Vol. 03



SAMSUNG MEDICAL CENTER
Comprehensive Cancer Center

At the Center of Hyper Precision Cancer Medicine



In 2008, Samsung Comprehensive Cancer Center was established as Korea's first and largest cancer medical center. With the spirit of respect for life, the best treatment, research, and education have been diligently performed to realize healthy humanity and a happy life.

It has been 16 years since its establishment, and by publishing the 3rd <Outcomes Book>, Samsung Comprehensive Cancer Center presents the new standard of cancer treatment by doubling its efforts and seeking medical quality improvement.



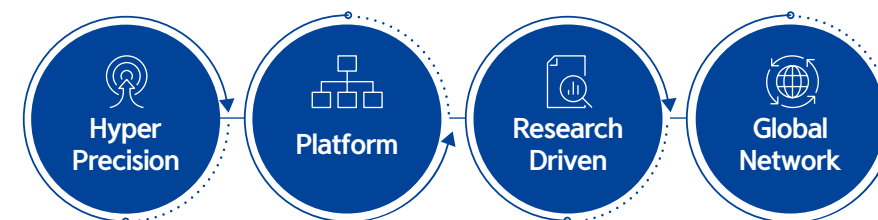
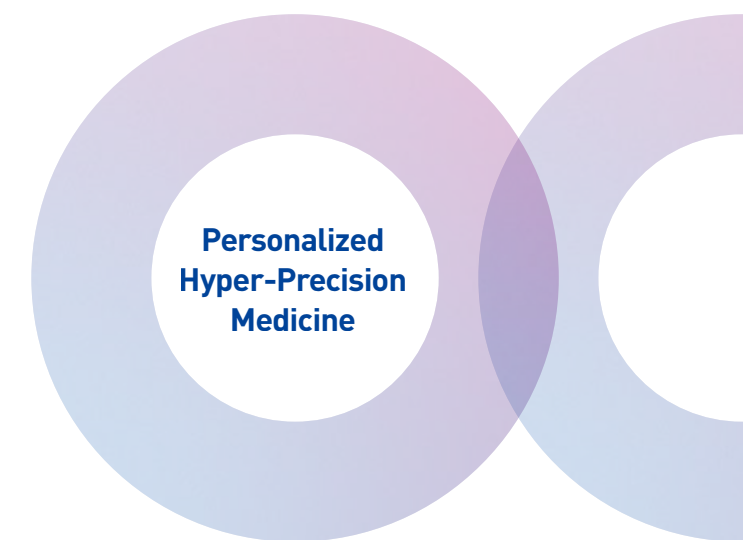


One Step Further: From Treating Cancer to Becoming a Hub for Cancer Research and Development

At Samsung Comprehensive Cancer Center, we've moved beyond our role as a leading cancer treatment facility in Asia to become a pioneering hub for cancer research and development.

Our commitment to implementing the most advanced cancer treatments, including genomic analysis, immunotherapy, proton therapy and robotic surgery, has raised the standard of care. These advances are central to our journey toward "hyper-precision medicine" a goal we are pursuing with tools such as next-generation sequencing (NGS) and artificial intelligence. This approach enables detailed analysis of cancer characteristics, genetic profiles, family history and specific patient complications.

Our multidisciplinary and comprehensive approach to cancer care sets us apart as an innovator in the field. This includes the use of minimally invasive robotic surgery, which improves precision and recovery, and the use of advanced radiation therapies, such as intensity-modulated radiation therapy (IMRT) and proton therapy, which provide targeted and effective treatment. In addition to excellence in cancer care, our center serves as a leader in oncology research and development. We actively participate in groundbreaking studies and trials that advance the understanding and application of novel therapeutic modalities. This progressive stance pushes us beyond the boundaries of conventional treatment methods and positions us at the forefront of innovation in cancer treatment and research.



At Samsung Comprehensive Cancer Center, we understand that effective cancer care goes far beyond treatment. By taking a holistic approach, we cover every aspect of the cancer journey, from initial diagnosis to post-treatment support. This comprehensive care model is exemplified by our establishment of Korea's first Cancer Education Center and Supportive Care Center. These facilities play a critical role in educating and supporting patients and their families throughout their cancer journey. In addition, our innovative New Visitor Center process ensures that each patient's treatment plan is carefully tailored from the outset.

These initiatives, combined with our superior clinical outcomes, such as remarkable five-year survival rates that exceed SEER and National Cancer Statistics in Korea, underscore our commitment not only to lead in advanced cancer treatments but also to provide compassionate, patient-centered care.

Our dedication to quality and innovation is exemplified in this Outcomes Book. It reflects our ongoing efforts to improve the quality of cancer care and establish benchmarks for patient treatment. By sharing key metrics such as survival and re-operation rates, we aim to raise the bar for cancer care.

General Director of Samsung Comprehensive Cancer Center

Woo-Yong Lee

01

Core Values

Mission, Vision and Core Values



In April 2013, we expanded our cancer center to the Comprehensive Cancer Center in an effort to provide a more specialized and comprehensive care. In 2023, we re-structured our long-term strategies and vision to achieve 'Hyper-precision Medicine'.

Mission

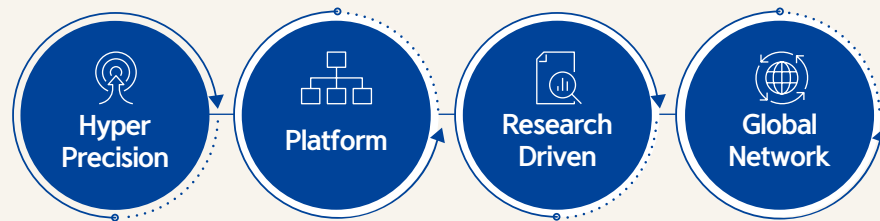
With the spirit of respect for life, the best treatment, research, and education are diligently performed to contribute to a healthy humanity and happy life

Vision

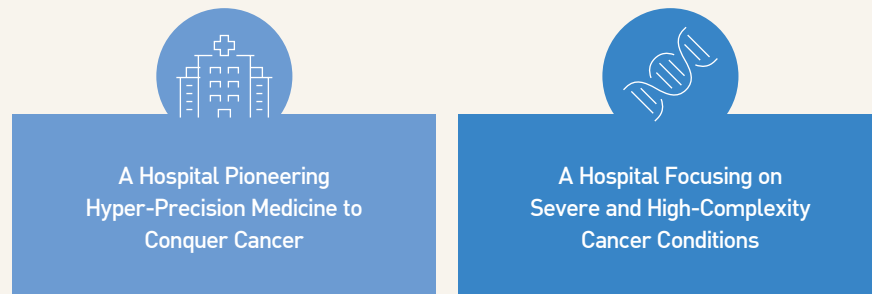
The Core of Hyper-Precision Cancer Medicine, SCCC (Samsung Comprehensive Cancer Center)



Core Values



Direction of Strategy



Strengths of Cancer Medical Center



Multidisciplinary Treatment

Specialists in various fields providing the best treatment to patients

Specialized Treatment

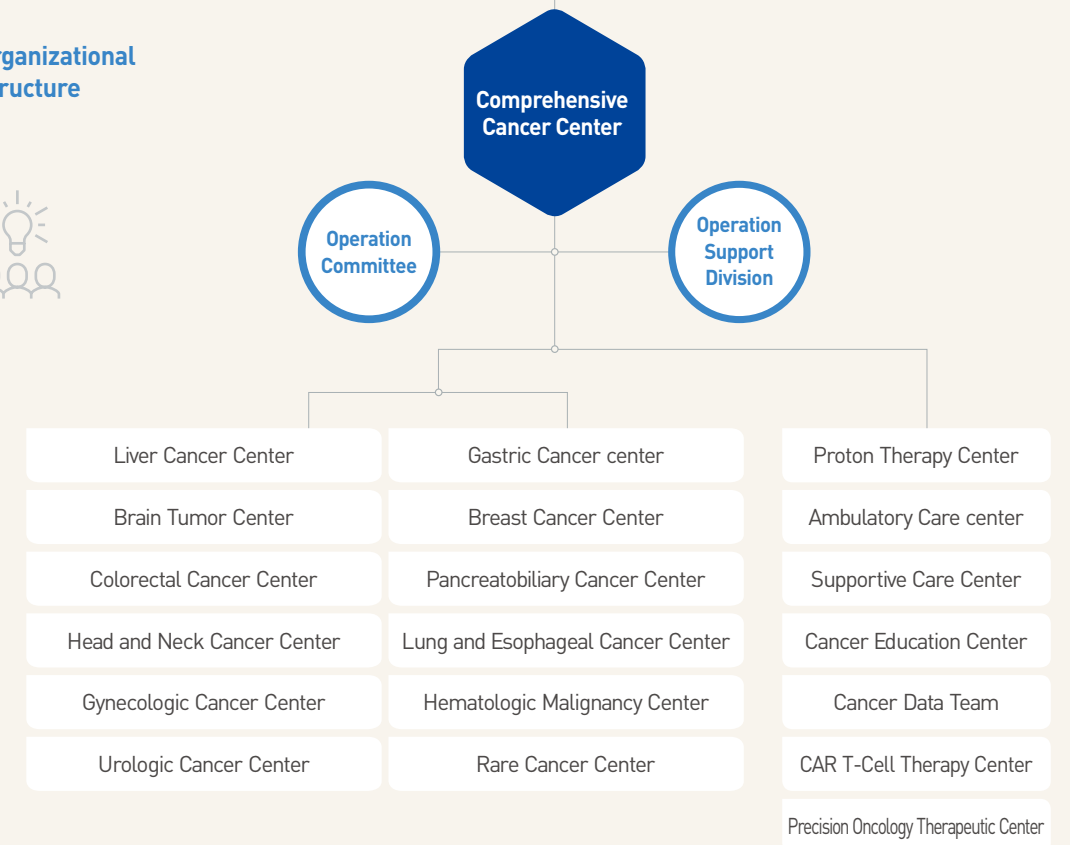
Fast Track, CP (Clinical Pathway), etc.

Patient-Centered Care Process

Comprehensive Cancer Treatment

Comprehensive cancer treatment including prevention and research as well as treatment, thus balancing these three factors

Organizational Structure



02 Milestone

2008~2011, 2013, 2018
Medical Korea Award
 in General Hospital Cancer Center

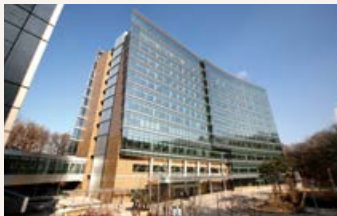
Selected by 2023 Newsweek
Ranked 1st in Asia (5th in the World)
 in the field of cancer in 'World's Best Specialized Hospitals 2024'



2008

2008

- Opening of the Samsung Cancer Center (largest in Asia)
- Performed 100 robotic-assisted prostate cancer surgeries
- Successfully performed the first single-port laparoscopic surgery (SPLS) in South Korea



“Contribute to healthy and happy lives among humans by providing the best possible care, research, and education in the spirit of respect for life.”

2011

- Performed 5,000 radiofrequency heat treatments for liver cancer (the highest number of treatments in the world)
- Performed 1,000 single-port surgeries (first in South Korea)
- Ranked no. 1 for lung cancer clinical trials in South Korea
- Hosted the first international symposium

2014

- Opening of the SCCC Supportive Care Center
- Performed 3,000 robotic-assisted prostate surgeries
- Performed the world's first one-stop robotic-assisted surgery for stomach and kidney cancer
- Performed 300 microvascular free-flap reconstructions for head and neck cancer
- Samsung Medical Center (SMC) and AstraZeneca signed an MOU for the clinical trials of a new anti-cancer drug for stomach cancer
- Held the 3rd Samsung Comprehensive Cancer Center Symposium



2012

- Performed 10,000 thoracoscopic surgeries (first in South Korea)
- Performed 5,000 gamma knife surgeries in the shortest time in South Korea
- Achieved the lowest 30-day postoperative mortality rate for stomach and colorectal cancer (Health Insurance Review and Assessment Service; HIRA)
- Held the 2nd Samsung Cancer Center Symposium

2013

- Official opening of the Samsung Comprehensive Cancer Center
- Conducted the first successful 3D printer-assisted sinus cancer surgery in South Korea
- Ranked no. 1 for stomach and colon cancer, with the lowest mortality rates (HIRA)
- Designated as a research center hospital by the Ministry of Health and Welfare in 2013
- The Intractable Cancer Research Initiative identified a new mechanism of brain tumor formation for first time in the world

2015

- Opening of the personalized cancer care clinics at the Gastric Cancer Center
- Performed 500 non-endoscopic brain tumor resections
- Suggested the personal genome analysis treatment for brain tumor for the first time in the world
- SMC and KT signed an MOU for collaborative research on cancer genome analysis
- Genome-based personalized cancer treatment in full swing: Signed an MOU with the Translational Genomics Research Institute (TGen)

2018

- 10th anniversary of SCCC
- Performed 1,000 robotic-assisted nephrectomies (first in South Korea)
- Treated 1,000 patients with proton therapy
- Held the 5th Samsung Comprehensive Cancer Center Symposium

2023

- Signed an MOU with Gustave Roussy Hospital, France
- Signed an MOU with Charité Comprehensive Cancer Center, Germany
- Treated 100 patients with CAR T-cell therapy
- Performed 20,000 gamma knife radiosurgeries



2023

2016

- Opening of the Proton Therapy Center
- Performed 1,000 endoscopic brain tumor surgeries
- Reached 2,000 hematopoietic stem cell transplantations for adults with hematological malignancies (first in South Korea)
- Held the 4th Samsung Comprehensive Cancer Center Symposium



2017

- Performed 10,000 lung cancer surgeries
- Treated 10,000 patients with gynecologic cancer
- Performed 10,000 laparoscopic surgeries for colorectal cancer
- Signed an MOU for collaborative research to develop a precision medicine platform for liver cancer: Agency for science, Technology and Research (A*STAR)

2019

- Gastric cancer team demonstrated the effectiveness of genomic analysis personalized treatment for gastric cancer (September issue of Nature)
- Introduced innovative research proposals

2021

- Inauguration of the CAR T-Cell Therapy Center
- Performed 3,000 breast cancer surgeries annually at the Breast Cancer Center

2022

- Inauguration of the Precision Oncology Therapeutic Center
- Performed 15,000 robotic-assisted surgeries
- Held the 6th Samsung Comprehensive Cancer Center Symposium
- Performed 4,000 esophageal cancer surgeries
- Treated 5,000 patients with proton therapy

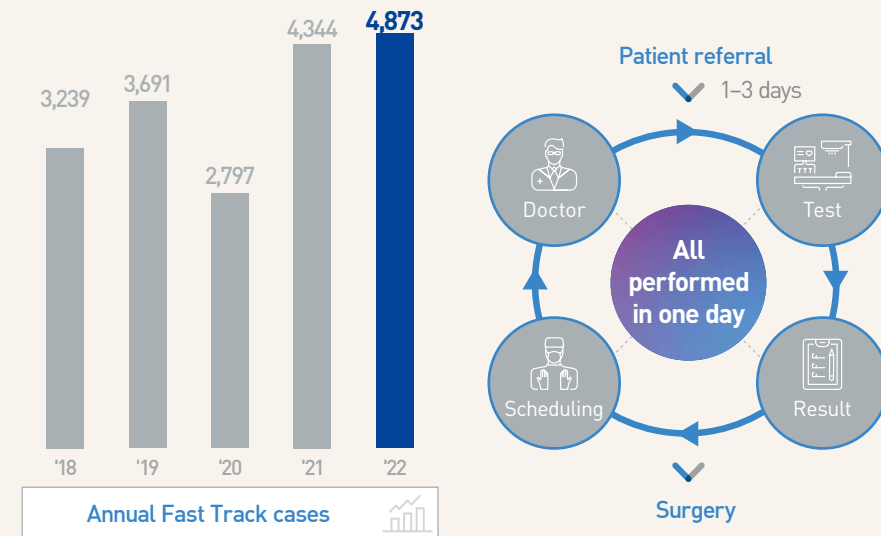
03

The SCCC Specialized Program

Fast Track



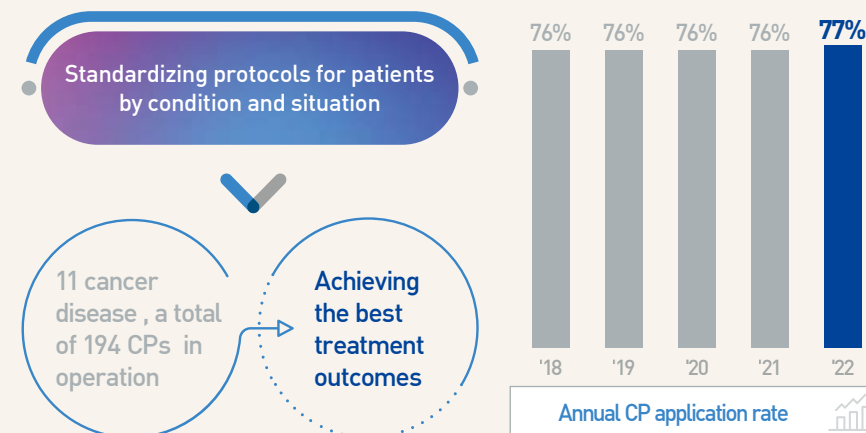
For patients in need of prompt care, SCCC offers Fast Track that allows patients to get tested, obtain the results, and decide on a treatment plan the same day.



Clinical Pathway (Standard treatment guideline)



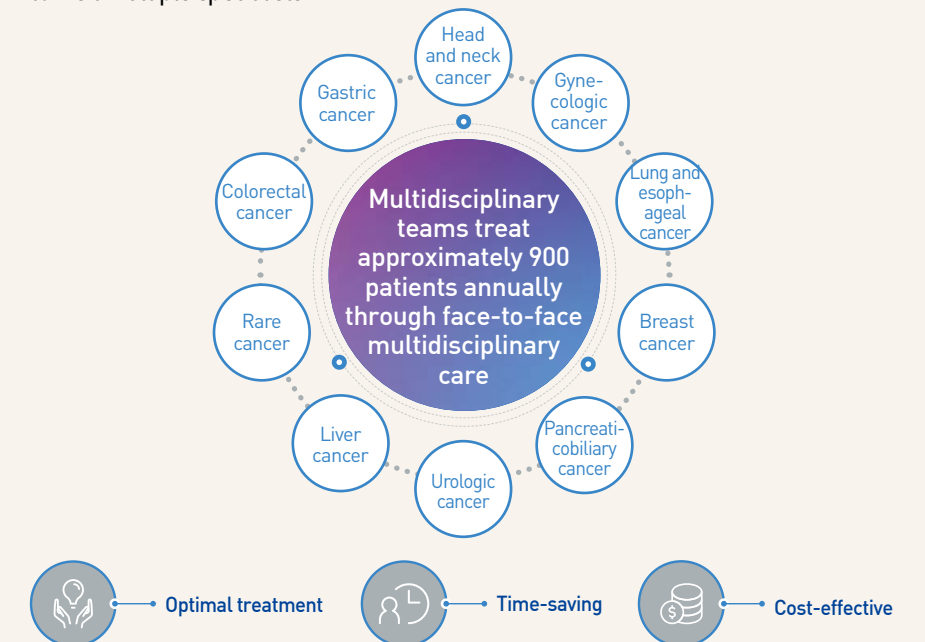
The SCCC established clinical pathways as the basis for patient care, and adherence to these guidelines has led to the best possible cancer outcomes.



Face-to-Face Multidisciplinary Treatment



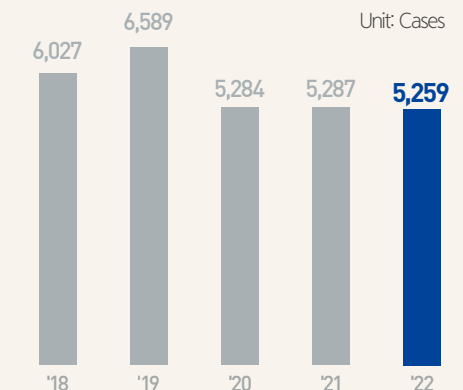
The SCCC was the first to establish center-driven operations and a patient-centered, face-to-face multidisciplinary care system in the country. Face-to-face multidisciplinary care for cancer patients refers to a system in which patients and their caregivers meet with specialists from three or more disciplines involved in the disease in one location to discuss the best course of treatment, rather than having to visit multiple specialists.



Non-face-to-face Multidisciplinary Treatment



Non-face-to-face multidisciplinary care for cancer patients refers to a system in which multiple specialists gather in one location to examine a patient's disease state in depth and discuss the best course of treatment without having to meet the patient or caregiver face-to-face.



03

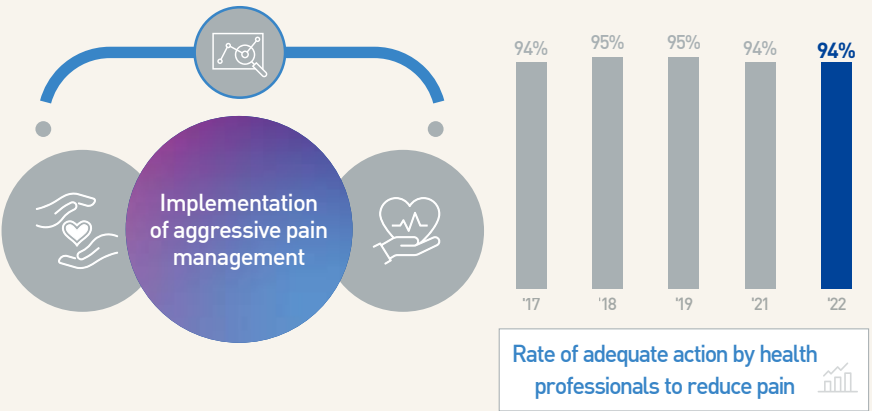
The SCCC Specialized Program

Pain Management for Cancer Patients



Pain is the fifth vital sign, and beyond the burden of pain itself, it is a symptom that needs to be managed because it can cause anxiety, depression, and other problems. Aggressive pain management is used to minimize the physical and psychological distress of cancer patients and increase the effectiveness of treatment.

- Care: Outpatient Cancer Pain Clinic
Inpatient Pain Management Computerized System



Cancer Education Center



The SCCC operates a Cancer Education Center to provide information to help cancer patients and their caregivers cope with treatment and life and to provide psychosocial support during treatment. At the Cancer Education Center, cancer education specialists provide evidence-based cancer information through a variety of educational programs and resources.

Providing the right information

- Cancer-specific pathfinders
- Information about rare cancers
- Cancer Information videos

- Collecting and providing cancer-related educational materials from other organizations, both domestically and internationally

Developing cancer education materials

- Developing and delivering personalized cancer education materials for cancer patients and caregivers

Providing cancer education programs

- Implementing education programs for the psychosocial support of patients and caregivers
- Maximizing the effectiveness of treatment and improving the quality of life

Providing individual counseling

- Oncology nurses are available for individual counseling for patients and caregivers

Cancer Education Center Wellness Program



The Cancer Education Center offers more than 30 different programs to help cancer patients and their caregivers navigate their cancer journey and improve their quality of life.

Types of Cancer Education Programs

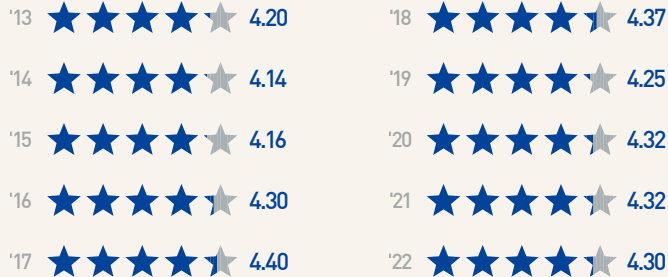
- New Cancer Patient Orientation Program for newly diagnosed patients and their families
- Education on how to care for patients with central venous catheters
- Survivorship after cancer treatment
- 14 things to know about pancreatic cancer diagnosis and treatment
- Sexuality and intimacy during cancer treatment
- Art therapy
- Look good, feel better
- Emotional coaching for mental health, etc.



Cancer Education Center Satisfaction Survey



To improve the quality of the Cancer Education Center, an annual satisfaction survey is conducted with patients and caregivers who visit the Cancer Education Center. Scores range from 5 points for "strongly agree" to 1 point for "strongly disagree," with higher scores indicating greater satisfaction. Year after year, the satisfaction results have been high, with scores of 4 or higher.



Satisfaction with use of Cancer Education Center (out of 5 points)

5 points: Very Satisfied, 4 points: Satisfied, 3 points: Neutral, 2 points: Dissatisfied, 1 point: Very dissatisfied

03

The SCCC Specialized Program

Digitalizing Cancer Education Program



In order to enhance the accessibility and participation of education, tailored to the needs of cancer patients, we offer remote education in both interactive and post-treatment management education.

1. Online and live education through Zoom

- Can cancer patients continue or return work?
- Life after breast cancer
- Living After Ovarian Cancer Treatment
- Dealing with stress
- Emotional coaching for mental health
- Art therapy
- Look good, feel better
- Sexuality and intimacy during cancer treatment
- Understanding hospice palliative care

2. Education on YouTube

- Breast cancer stories not told in the doctor's office
- Live well after cancer

3. Development of a Chabot for Peripheral Central Catheter Management

- A Chabot was developed to increase patient satisfaction and self-management by providing information on how to care for a central line without time and space constraints.



Digitalizing Cancer Education Materials



By digitizing the way cancer information is delivered, digital materials are provided in a variety of ways.

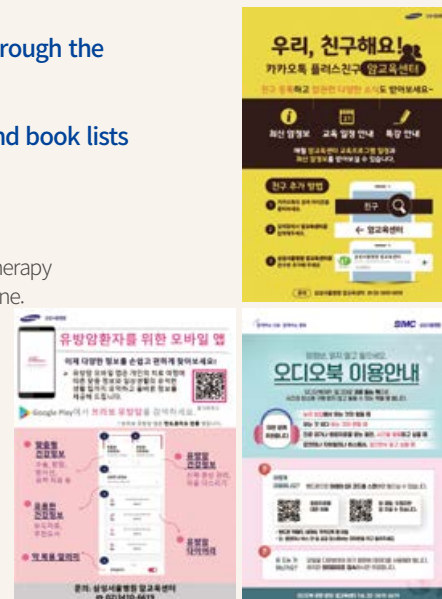
1. Cancer information and education through the KakaoTalk channel

2. QR coding of recommended video and book lists

3. Audio books

- Understanding Chemotherapy
- 27 Questions and Answers about Radiation Therapy
- A cancer recurrence is scary, but you will be fine.
- Going back to work after cancer treatment
- Guide to life after cancer treatment
- Life after Hematopoietic Stem Cell Transplantation

4. BRAVO Mobile App for Breast Cancer Patients



Distress Screening



SCCC was the first in South Korea to set the paradigm for cancer treatment based on comprehensive care. In order to minimize physical and emotional stress, especially for cancer patients, distress screening is conducted at the diagnosis stage.

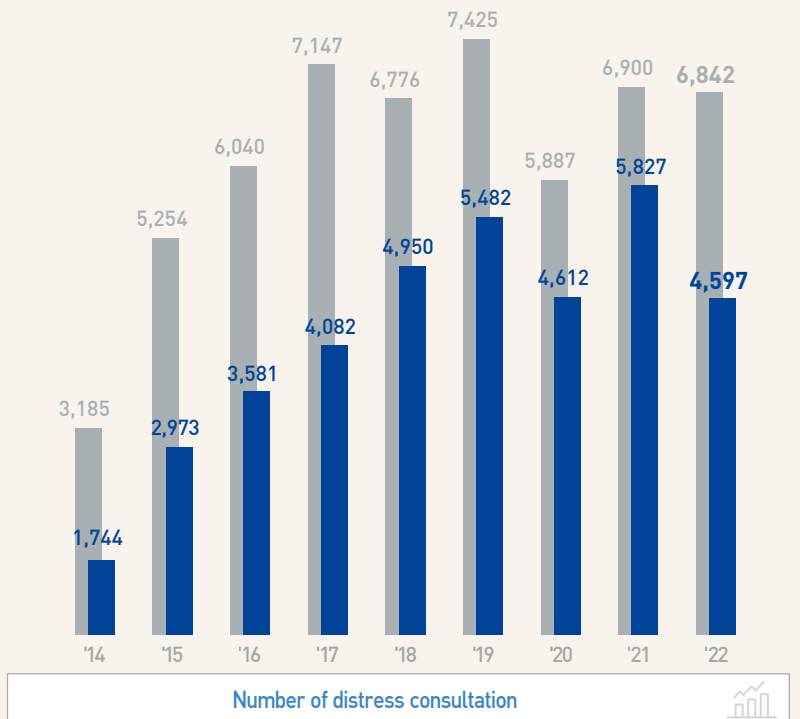


Number of Distress Consultations



The number of stress consultations was as follows:

- Number of patients to be screened for DT
- Number of patients screened



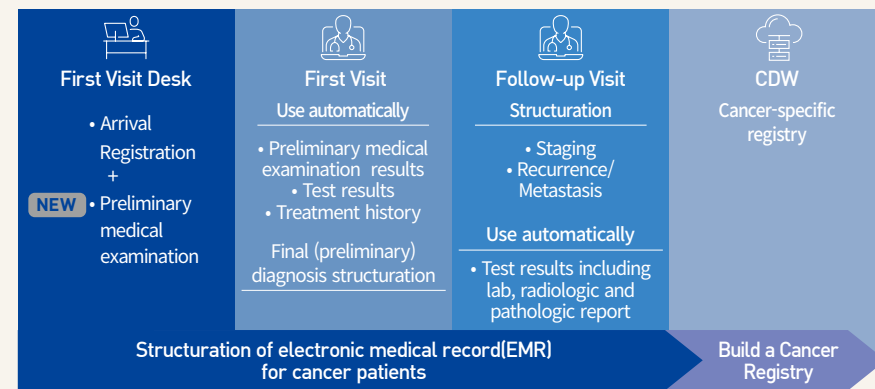
04 The SCCC Cancer Registry

Process



Cancer registry prospectively and simultaneously collects data and deposits the entire treatment journey of cancer patients in Samsung Comprehensive Cancer Center(SCCC) with quality control. This effort strengthens the basis with cancer patients' big data.

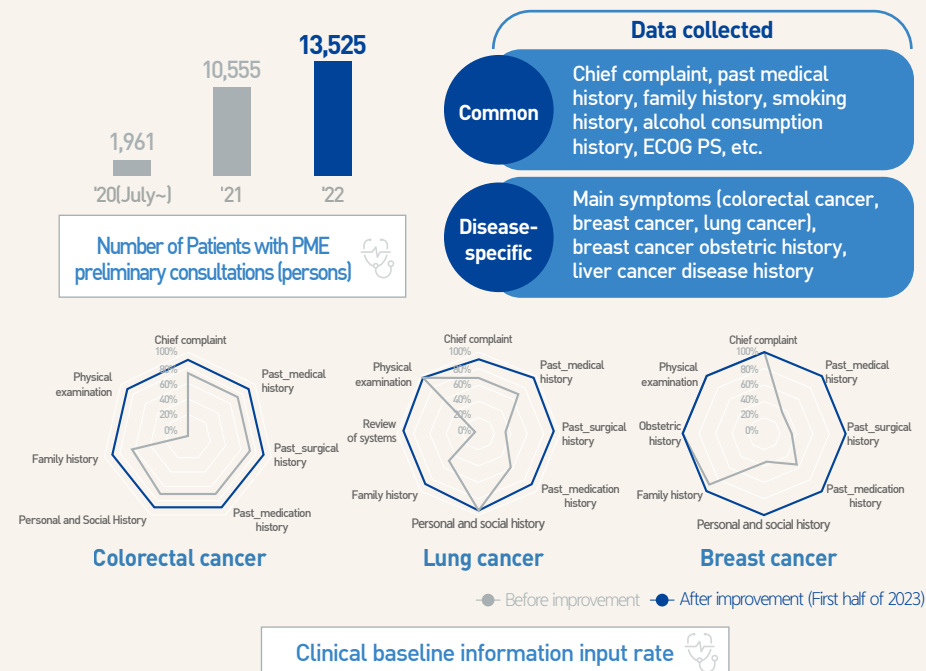
- 1) First, we make the structure of electronic medical record(EMR) and operate the pre-medical examination according to the cancer types for collecting data properly.
- 2) In clinical data warehouse (CDW), we establish cancer-specific registry according to the specific cancer type.
- 3) In order to make CDW optimization, we have regular meetings with clinicians.



Preliminary Medical Examination (PME)



At the time of first visit, an expert nurse performs cancer-specific and disease-specific medial examination by interview. Currently, we operate PME on patients with liver cancer, colon cancer, breast cancer, lung cancer, and lymphoma; the list of cancers will be expanded sequentially.



EMR form and Cancer Registry



EMR form structuration increased clinical data entry rates with a focus on improvement of collecting data including diagnosis, staging, and current disease status (recurrence/metastasis). The collected data are automatically and simultaneously uploaded into a cancer specific registry in CDW after anonymization, laying the foundation for big data research. We prospectively collected cancer patients information by cancer type with structured EMR as below. The type of cancer would be expended for EMR structuration and cancer specific registry development in CDW.

| Lung cancer | Breast cancer | Colorectal cancer | Lymphoma |
|-----------------------------|------------------------------|----------------------------------|----------------------------------|
| 10,003 patients | 7,201 patients | 5,208 patients | 627 patients |
| (July 2020 – December 2022) | (March 2021 – December 2022) | (September 2021 – December 2022) | (September 2022 – December 2022) |

Data content

| Major categories | Subcategories | Classification | Items collected |
|-----------------------------|--|-------------------|-----------------|
| Basic information | Basic patient information, date of diagnosis, etc. | Lung cancer | 218 |
| Diagnosis /staging | Diagnosis, staging, etc. | Breast cancer | 106 |
| Test information | Blood tests, imaging tests, surgical pathology, etc. | Colorectal cancer | 211 |
| Treatment information | Surgery, procedures, anticancer treatment, radiation therapy, etc. | Lymphoma | 58 |
| Current disease information | Recurrence, metastasis, death information, etc. | | |

Research Achievements



Using data from cancer registry, four research papers have been published in the field of breast cancer. Now, many investigators perform research using the data from cancer registry in CDW.

| Year | DOI |
|------|--------------------------|
| 2021 | 10.3390/cancers13225835 |
| 2021 | 10.3389/fonc.2021.759150 |
| 2023 | 10.2196/43359 |
| 2023 | 10.3390/cancers15133431 |

Expectation



We will provide the high quality research environment in order to establish and maintain the quantity and quality of cancer registry. This effort ultimately contributes to the improvement of cancer patient treatment.



- EMR standardization
- Save a time for preparation and clinic
- Data collection with a constant criteria
- Prevention of vanishing clinical data



- Build and maintain a qualified cancer registry with multidisciplinary discussions



- Save a time for data analysis
- Facilitation of research using cancer big data from cancer registry

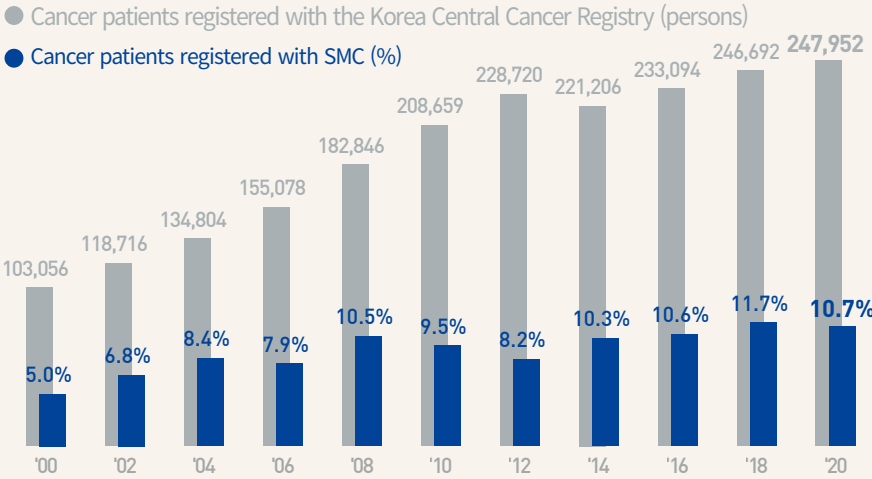
05

The SCCC Patient Status

Cancer Incidences in Korea



According to the Korea Central Cancer Registry in 2023, there were about 248,000 cancer patients in Korea in 2020. Of total 26,500 patients, which comprised about 11% of the entire cancer patient population in Korea, were treated at the Samsung Comprehensive Cancer Center.

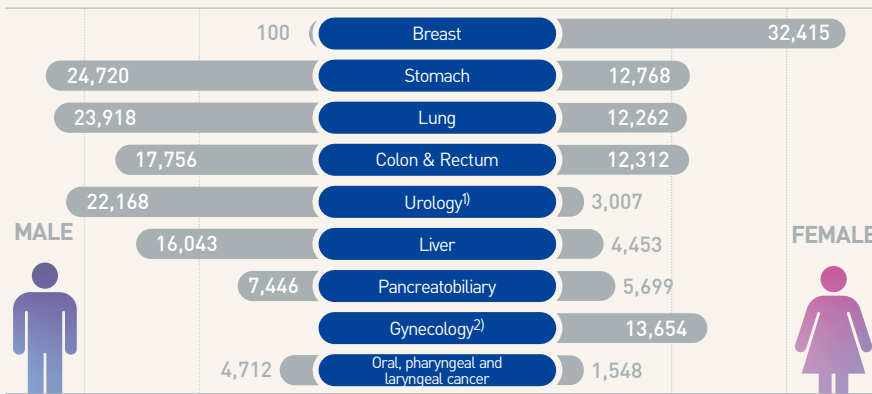


※ Source: Korea Central Cancer Registry (December 2020)

Distribution of Cancer patient by Sex and Cancer type



The distribution of patients by gender and cancer type for 10 years from 2008 to 2020 showed that gastric, lung, and urologic cancers were most common in men, in order of incidence rate. Breast, gynecological, and gastric cancers were most common in women.

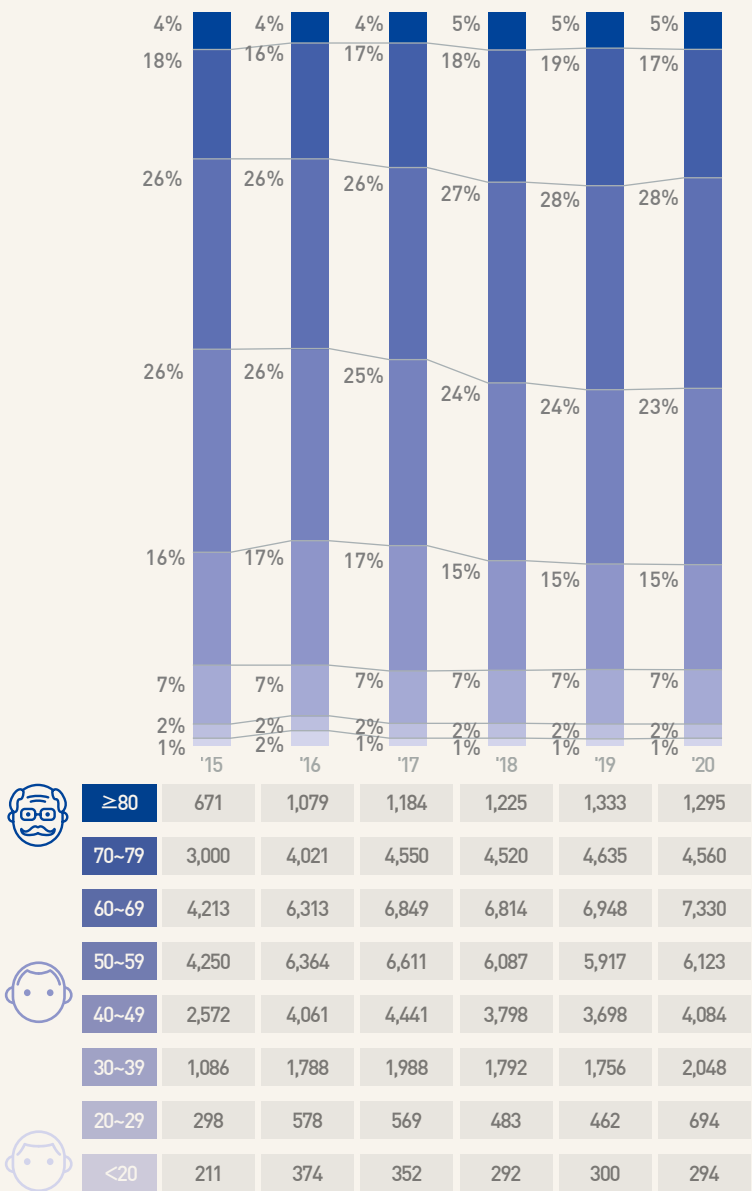


※ ¹⁾Urology (prostate cancer, bladder cancer, kidney cancer), ²⁾Gynecology (ovarian cancer, cervical cancer)

Distribution of Cancer patients by Age



There are wide range of cancer patients by age at Samsung Comprehensive Cancer Center. When examining the trend since 2008, it is evident that the number of cancer patients aged 60 and above has been steadily increasing. In 2020, among the cancer patients treated at Samsung Comprehensive Cancer Center, those aged 60 and above account for 50% of the total patient population.



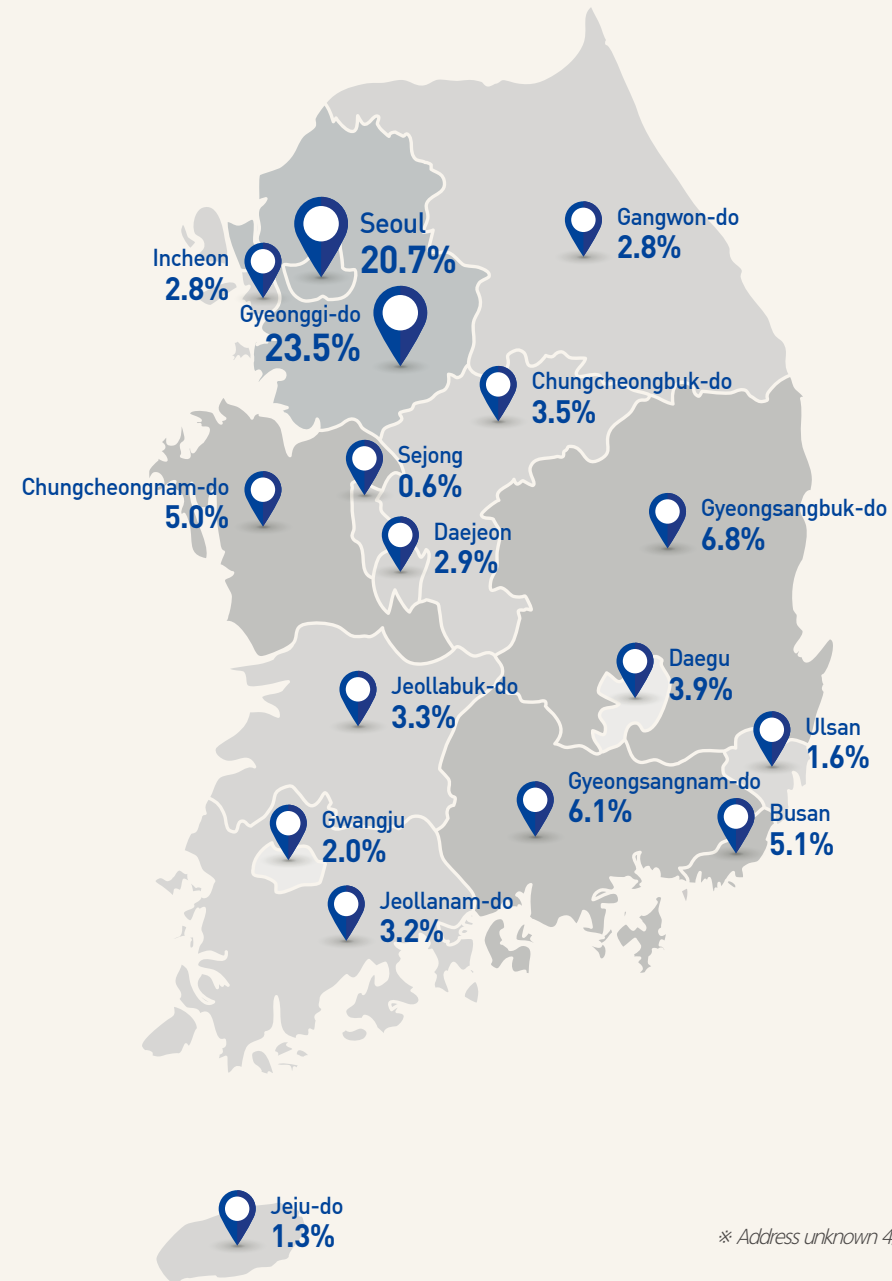
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The SCCC Patient Status

Distribution of Cancer patients by Region



Cancer patients from all over the country visit the SCCC, and approximately 45% of the patients treated at the SCCC are from the Seoul-Gyeonggi region.

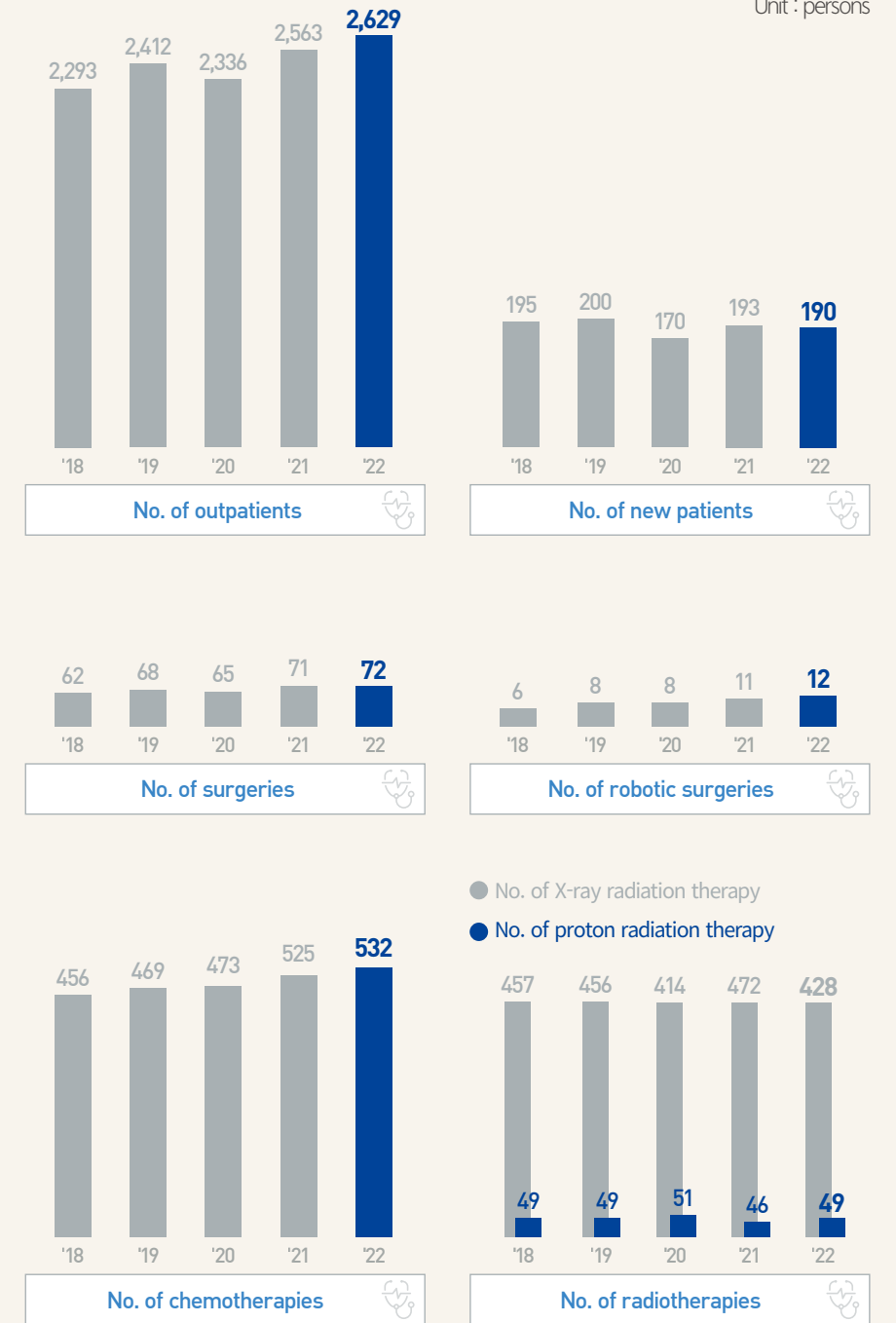


Average Cancer patients treated per day



The diagnosis and treatment status of average daily cancer patients is as follows;

Unit : persons



* Outpatient chemotherapy at the Ambulatory Treatment Center

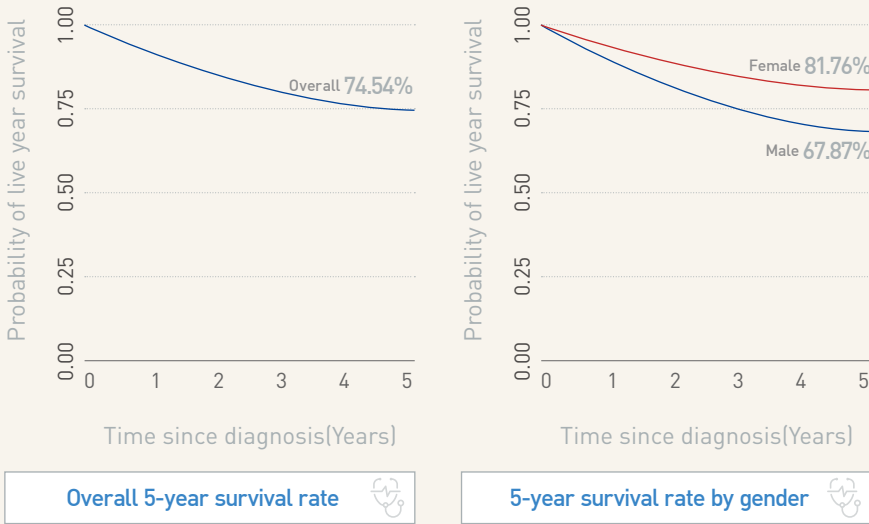
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The SCCC Cancer Patient Survival Rates

Survival rates of Cancer Patients



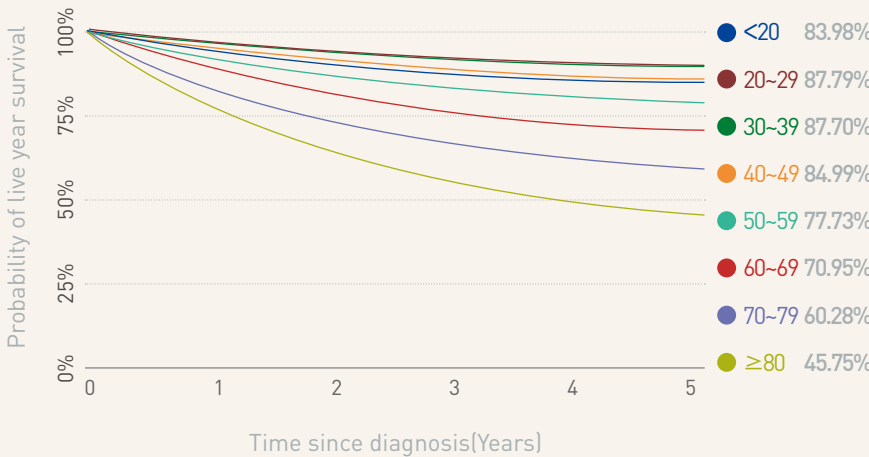
The SCCC has an excellent reputation in the surgical treatment of early-stage cancer patients as well as in the treatment of advanced cancer patients. Based on the surveillance, epidemiology, and end results (SEER) program, distant-stage patients account for about 28.32% of all cancer patients, receiving the best treatment through multidisciplinary care. The 5-year observed survival rate for all cancer patients treated at the SCCC is 74.54%: 67.87% for men and 81.76% for women—the highest in the world.



Survival rates by Age



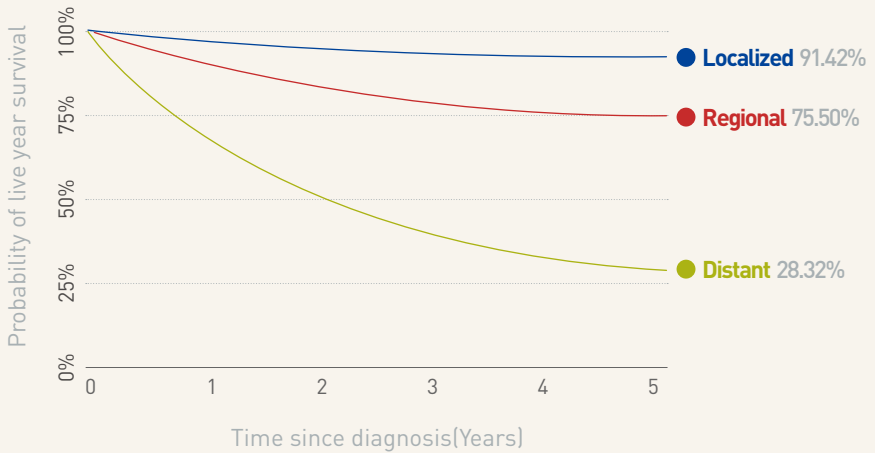
The survival rate varies by age groups. The 5-year survival rate is over 60% even for those older than 70 years of age.



Survival rates by Stage



Observed survival rate by stage also exceeds 91% for localized stages and 28% for distant stages.



5-year Relative Survival rates



Comparisons of 5-year relative survival rates among the SMC, national statistics of South Korea, and United States have demonstrated the superiority of SMC.

Unit : %

| Cancer type | USA ¹⁾ ('13~'19) | Korea ²⁾ ('16~'20) | SMC ³⁾ ('08~'21) |
|--------------------------------|-----------------------------|-------------------------------|-----------------------------|
| Stomach | 35.7 | 78.0 | 88.2 |
| Colon & Rectum | 65.0 | 74.3 | 84.0 |
| Lung | 25.4 | 36.8 | 54.1 |
| Esophagus | 21.7 | 42.2 | 60.1 |
| Breast | 90.8 | 93.8 | 95.6 |
| Liver | 21.6 | 38.7 | 57.6 |
| Prostate | 97.1 | 95.2 | 101.6 |
| Kidney | 78.7 | 85.7 | 92.6 |
| Bladder | 77.9 | 76.5 | 80.2 |
| Pancreas | 12.5 | 15.2 | 19.4 |
| Gallbladder and Biliary tract | 20.7 | 29.0 | 42.9 |
| Non-Hodgkin lymphoma | 74.3 | 65.4 | 73.0 |
| Cervix | 67.2 | 80.1 | 84.7 |
| Ovary | 50.8 | 64.7 | 66.6 |
| Brain & Central nervous system | 33.8 | 40.5 | 43.7 |

※ ¹⁾ Surveillance Epidemiology and End Results (SEER) (2022) ²⁾ Cancer registration statistics (2023) ³⁾ Samsung Medical Center Cancer patient statistics (2023)

07

Patient Experience Assessment

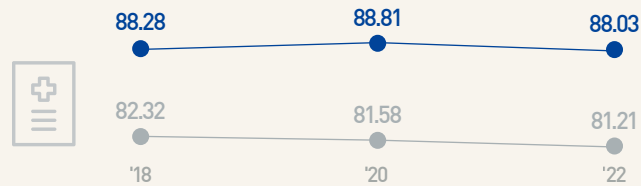
Patient Experience Assessment Results



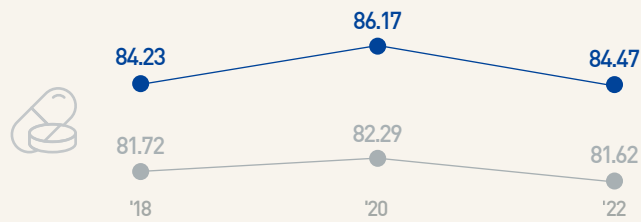
According to the Health Insurance Review and Assessment Service, Samsung Medical Center was recognized as the center of excellence in all areas of patient evaluation, including drug administration and treatment, physician service, and nursing service.

—●— SMC —●— General hospital

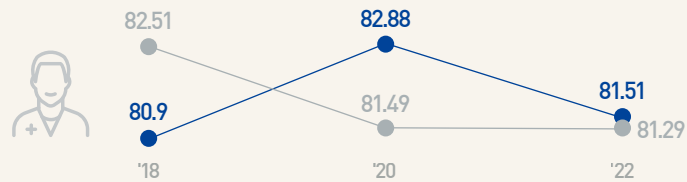
Overall



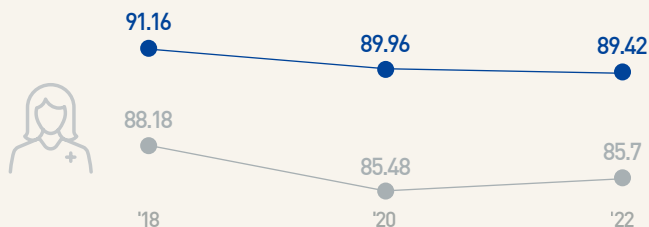
Drug Administration and Treatment



Physician Service



Nursing Service

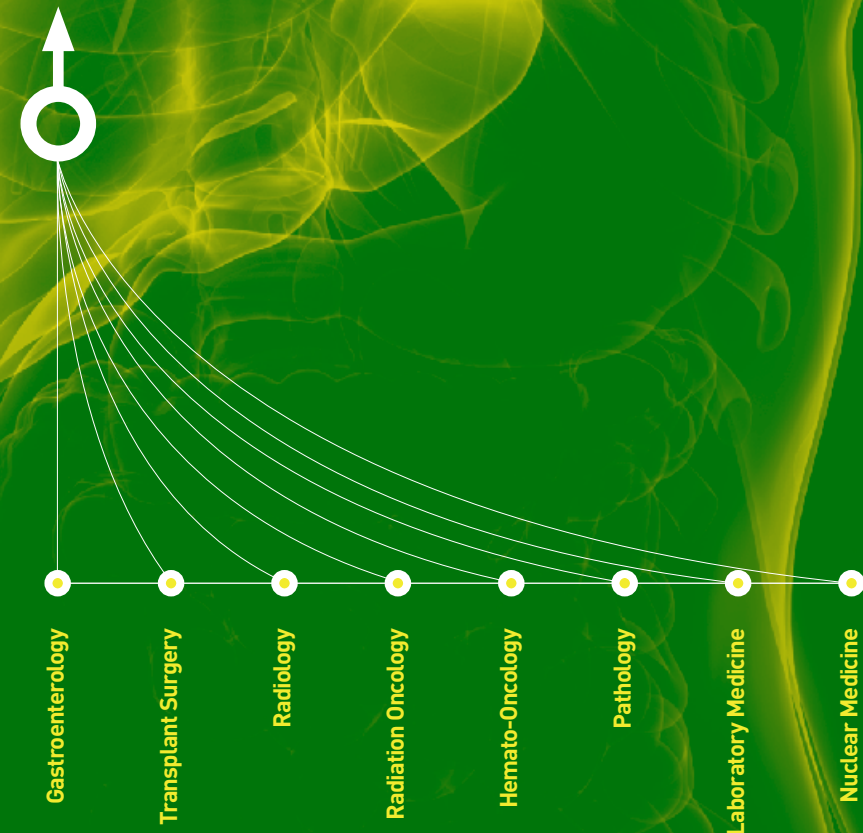


* Health Insurance Review and Assessment Service Announcement (2022)

LIVER CANCER CENTER

The Liver Cancer Center is leading the treatment of liver cancer by providing the best treatment options for patients with liver cancer.

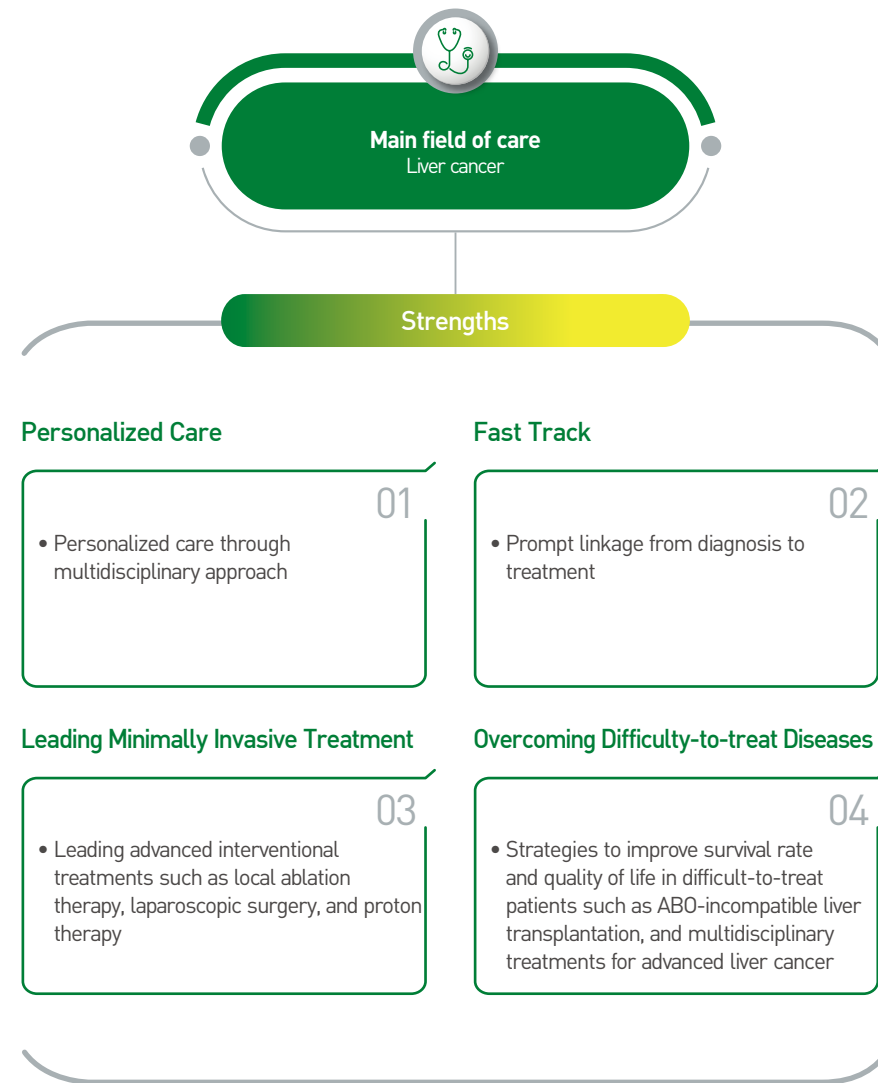
- We provide personalized treatment through patient-centered multidisciplinary approach.
- Our expertise and experiences have shown world-class outcomes in all areas of liver cancer treatment.



01 Introduction

General Information

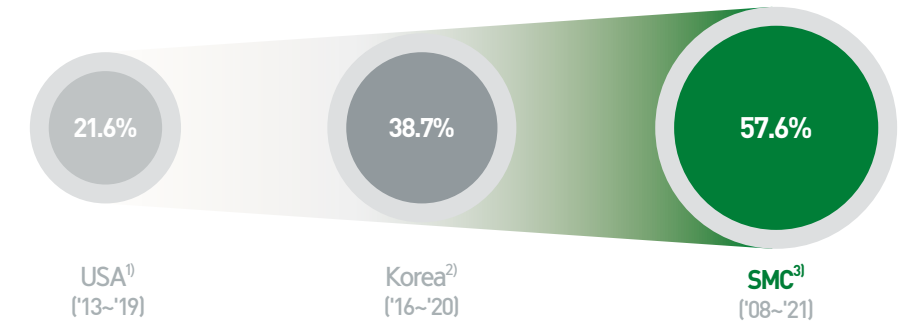
Medical faculties of the Liver Cancer Center are active in liver cancer treatment, research and development of novel medical device. We perform world-class medical care and research in all fields, including liver resection, liver transplantation, local ablation therapy, transarterial embolization, external beam radiotherapy, and systemic treatment.



02 Treatment Result

5-year Survival rate

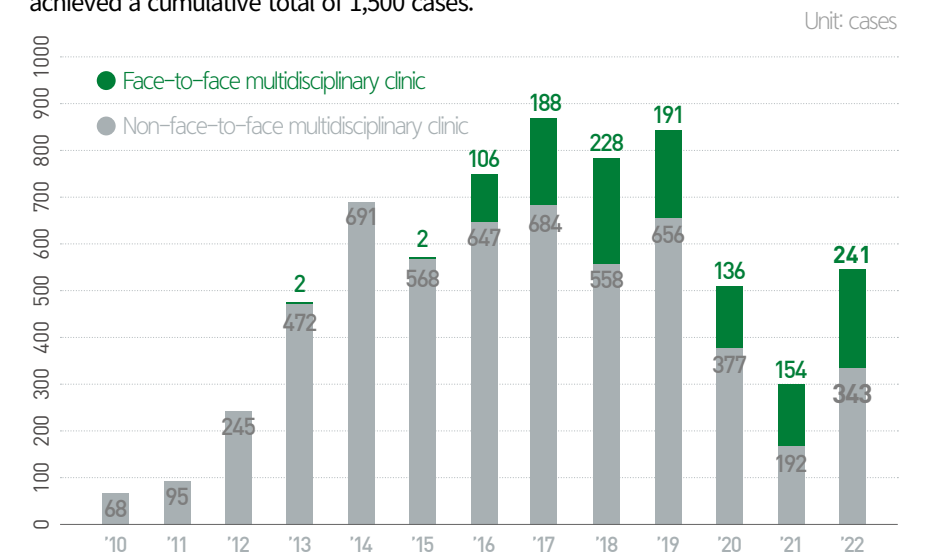
The 5-year relative survival rate of patients treated at the liver cancer center is 57.6%, which is far beyond the survival outcomes of other institutions.



※ ¹⁾Surveillance Epidemiology and End Results (SEER) (2022), ²⁾Cancer registration statistics (2023), ³⁾Samsung Medical Center Cancer patient statistics (2023)

Multidisciplinary Treatment

Personalized therapy is pursued through multidisciplinary approach to improve treatment outcomes in patients with liver cancer. Since 2016, we have been actively operating face-to-face multidisciplinary clinics and as of July 2023, we have achieved a cumulative total of 1,500 cases.

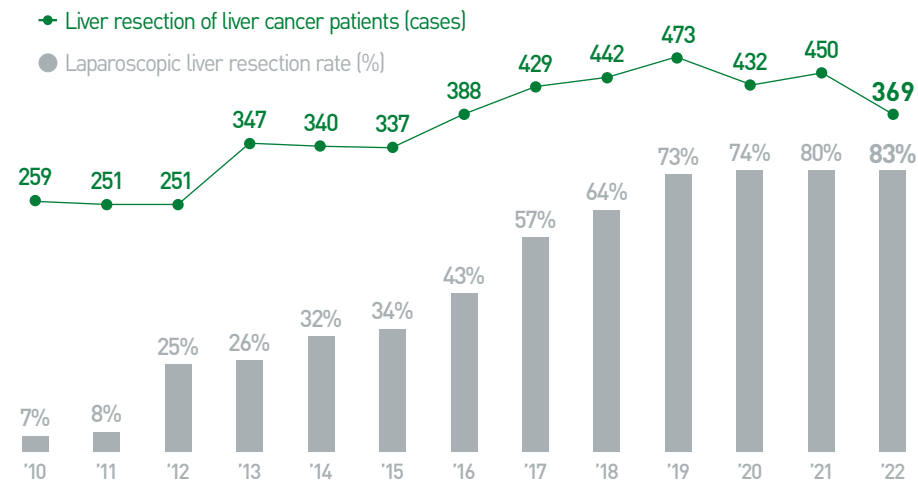


02

Treatment Result

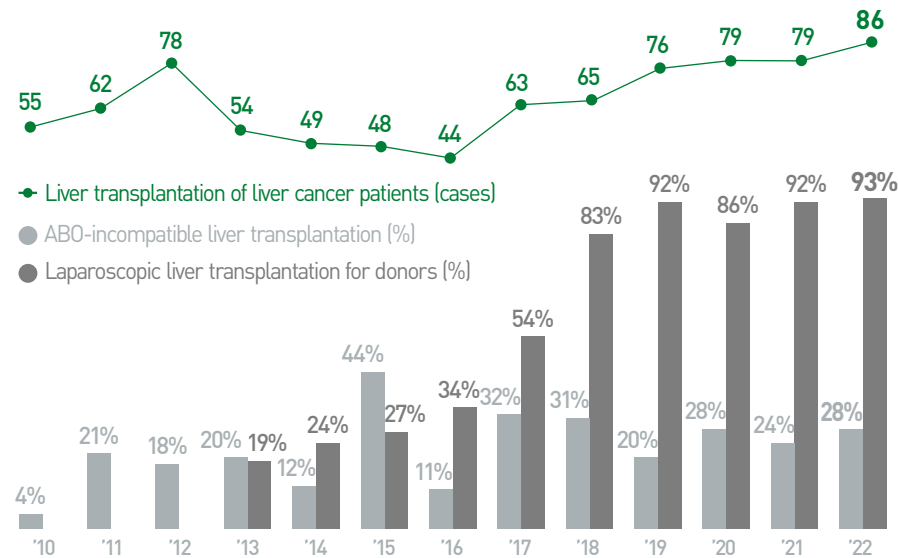
Liver Resection

We have extensive experience in performing more than 400 liver resections per year for liver cancer patients. Recently, laparoscopic liver resection is performed in more than 80% of total cases. Moreover, laparoscopic liver resection is also actively performed in patients over 70 years of age.



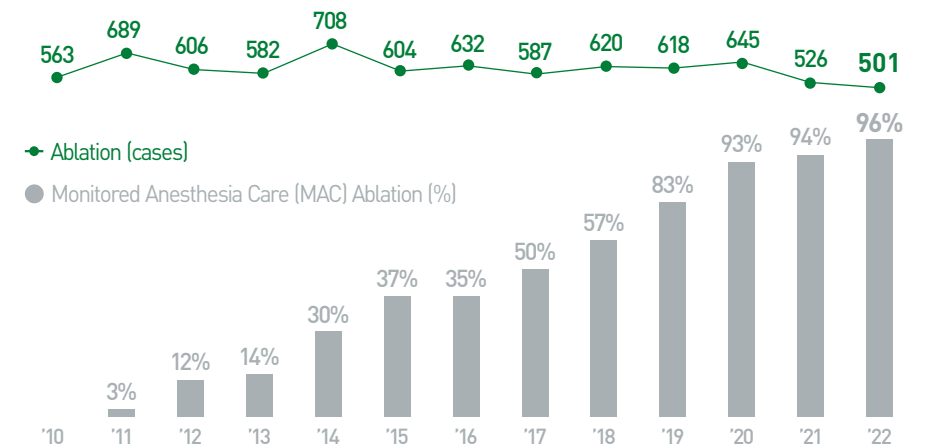
Liver Transplantation

The optimal time for liver transplantation in patients with liver cancer is determined through multidisciplinary approach. Moreover, laparoscopic surgery is performed to ensure the safety of liver donors. Recently, liver transplantation has become possible for those with different blood types.



Local Ablation Therapy (Radio Frequency Ablation, Microwave Ablation, Cryoablation)

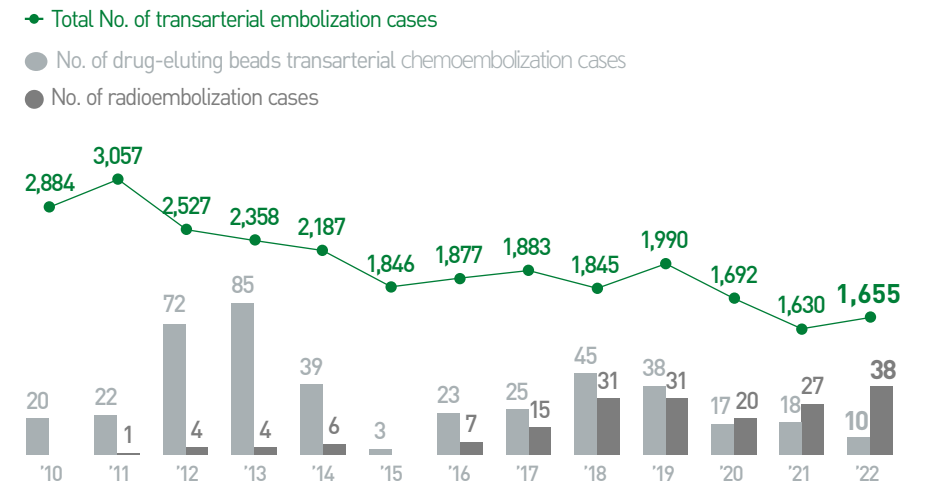
Local ablation therapy is the core of minimally invasive treatment for liver cancer. Since the first experience of radiofrequency ablation (RFA) in Korea in April 1999, the liver cancer center has accumulated over 13,000 cases by September 2023. These accumulated experiences and achievements are leading the world in related treatment fields.



Transarterial Embolization

In consideration of the characteristics of the tumor, transarterial chemoembolization, drug-eluting bead transarterial chemoembolization (DEB+TACE), and radioembolization are performed. Procedures combining radiofrequency ablation or external beam radiotherapy are also actively performed.

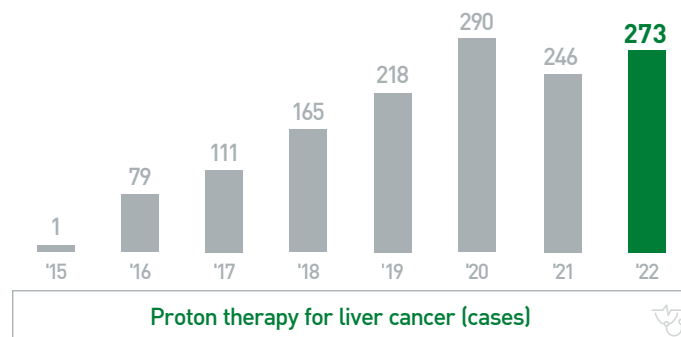
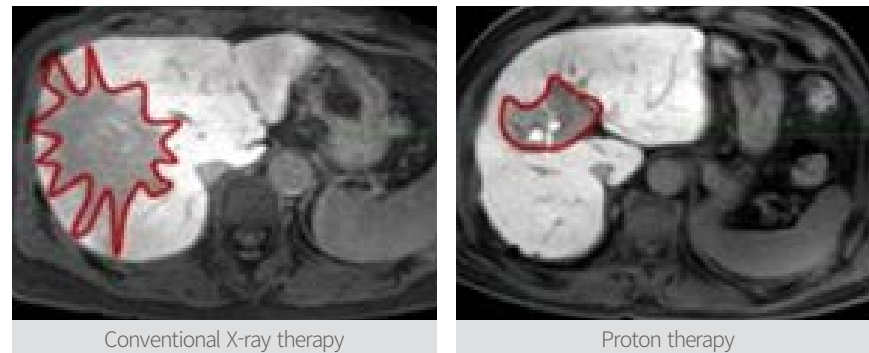
Unit: cases



02 Treatment Result

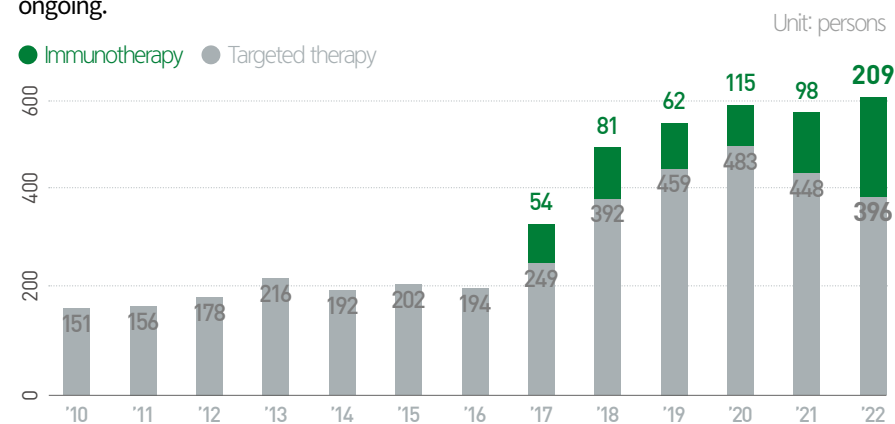
Proton Therapy

Since the opening of the Proton Therapy Center in January 2016, the Liver Cancer Center has been establishing itself as a new hope for liver cancer patients based on excellent treatment outcomes.



Systemic Therapy

Currently, we provide targeted therapy and immunotherapy to more than 600 liver cancer patients annually. We offer personalized patient care through a multidisciplinary approach and NGS (next-generation sequencing) testing. Various new clinical trials using novel targeted therapies and immunotherapies are currently ongoing.



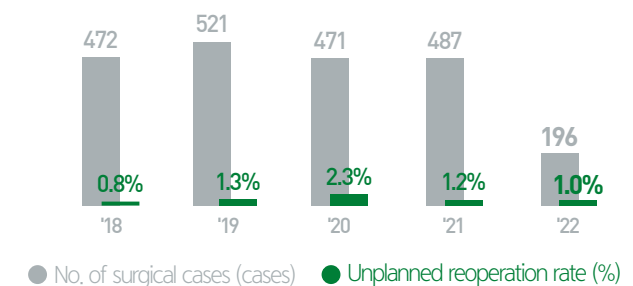
03 Quality Management

Quality Management

Each year, the Liver Cancer Center evaluates and improves the quality of clinical services to ensure a safe clinical environment and provide best treatment.

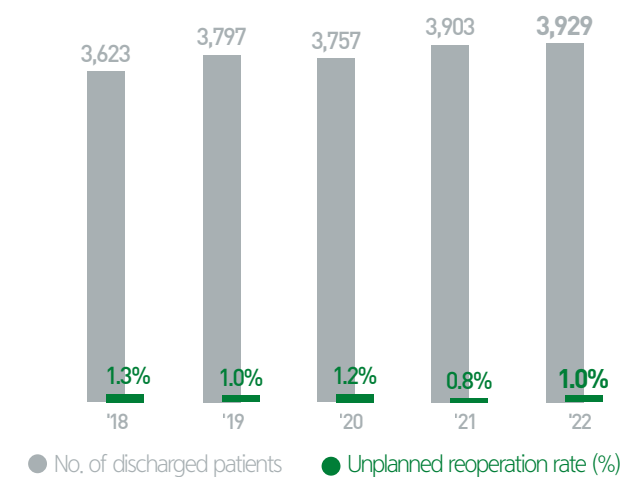


* ¹⁾ 4th Appropriateness Evaluation Report for Liver Cancer Treatment from Health Insurance Review and Assessment Service (October 2022), (C22.0 Liver cell carcinoma, C22.1 Intrahepatic bile duct carcinoma, C78.7 Secondary malignant neoplasm of liver and intrahepatic bile duct)



Unplanned reoperation rate within the same hospitalization period

* Excluding liver transplantation cases due to liver cancer



Unplanned readmission rate within 7 days

BRAIN TUMOR CENTER

The Brain Tumor Center leads the comprehensive treatment of brain tumor patients with the most renowned medical faculties in Korea and cutting-edge medical technology.

- We boasts the highest number of surgeries and procedures in the country, demonstrating our unparalleled expertise.
- We provide the latest personalized treatments, combining active clinical practice and research.

01

Introduction

General Information

The Brain Tumor Center is attempting personalized treatment by combining clinical application and research for intractable brain tumors. We actively participate in advancing drug development and important clinical trials related to the latest treatment. This provides patients with expanded treatment opportunities, while taking the lead in developing and applying cutting-edge treatments faster.



Main field of Care

Brain tumor, Pituitary tumor, Skull base tumor, Malignant brain tumor, Metastatic brain tumor

Strengths

Highest Number of Surgeries and Procedures

01

- Since the introduction of Gamma knife radiosurgery in December 2001, achieved 20,000 cases in 2023
- Set the Gamma knife ICON (first in Asia)

Brain Tumor Clinics

02

- Brain Cancer Clinic
- Pituitary Tumor Clinic
- Neuroendoscopy Clinic

Intraoperative Navigation System

03

- Accurate surgery using magnetic resonance imaging (MRI) performed just before surgery

Neurophysiological Monitoring

04

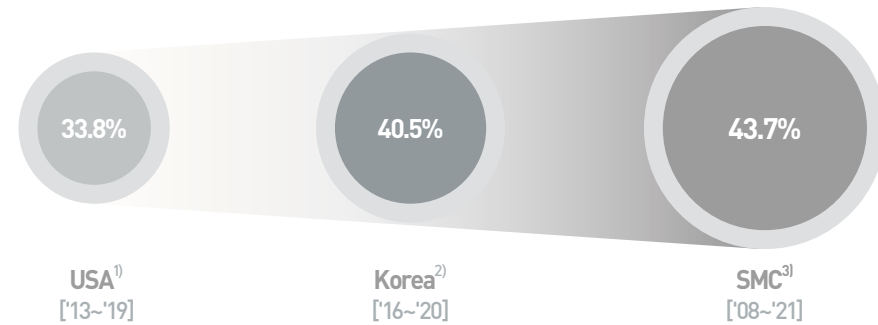
- Minimize postoperative complications by monitoring brain and nerve conditions in real time

Neurosurgery
Radiology
Pathology
Radiation Oncology
Hemato-Oncology
Otorhinolaryngology
Endocrinology
Neurology
Rehabilitation Medicine
Anesthesiology

02 Treatment Result

5-year Survival rate

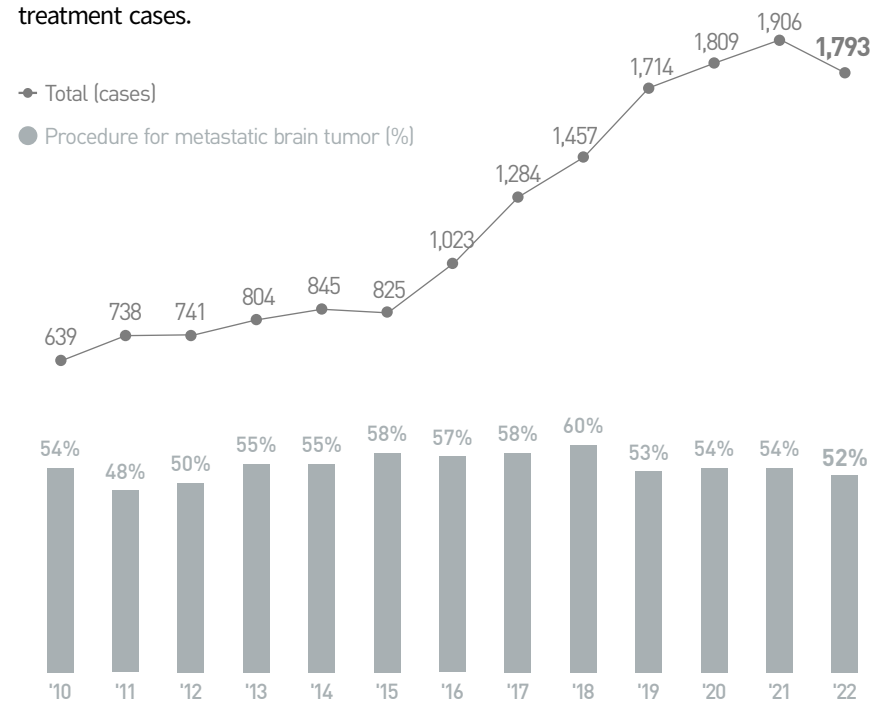
The 5-year relative survival rate of patients treated at the Brain Tumor Center is 43.7%, higher than the global average.



※ ¹⁾Surveillance Epidemiology and End Results (SEER) (2022), ²⁾Cancer registration statistics (2023), ³⁾Samsung Medical Center Cancer patient statistics (2023)

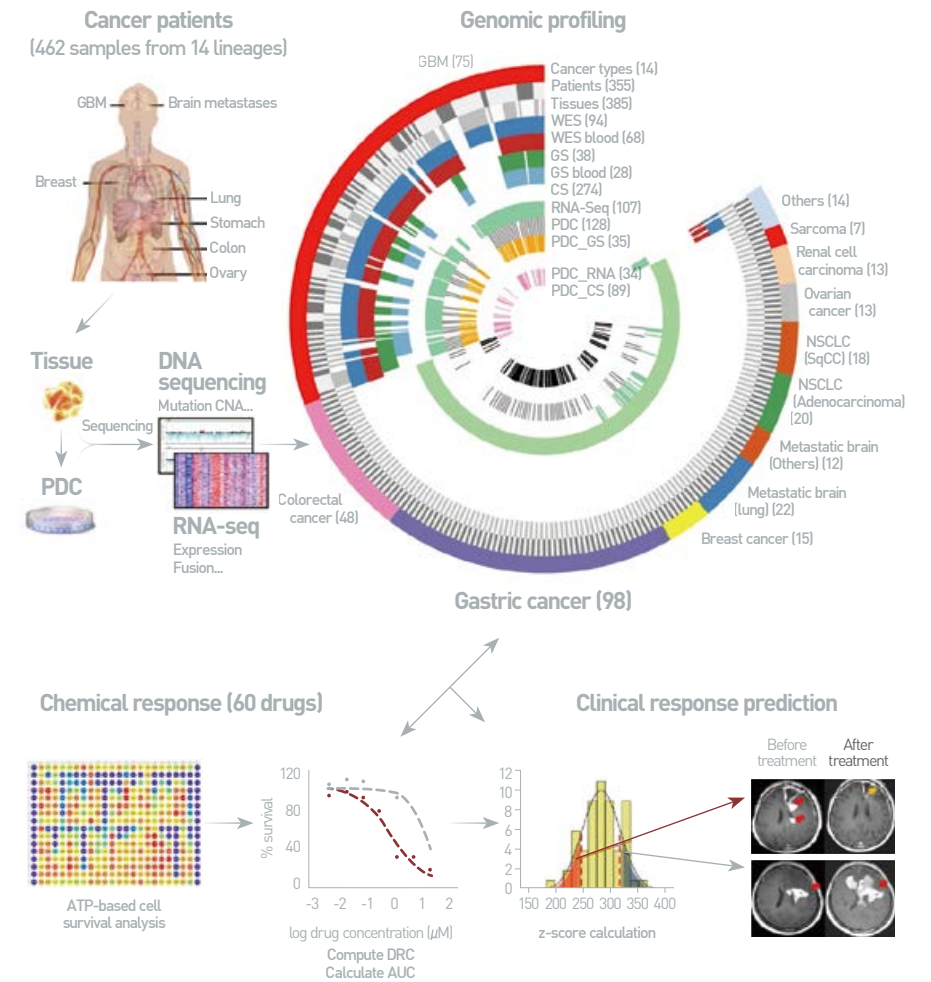
Gamma Knife Surgery (GKS)

Starting with the first patient treatment in 2002, we have achieved 20,000 cases in 2023. As of 2023, patients with metastatic brain tumors accounted for 52% of treatment cases.



Research

We propose a personalized and targeted treatment using tumor spheroids for cancer patients. By increasing treatment accuracy through a large-scale genome-drug response analysis of tumor spheroids, it is expected that this will be a significant step in improving the survival period and quality of cancer patients' life.



More Information

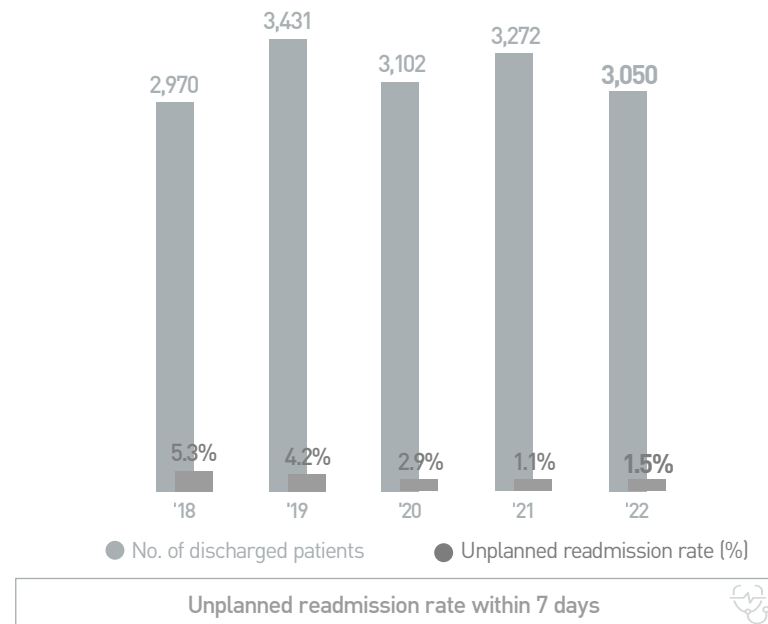
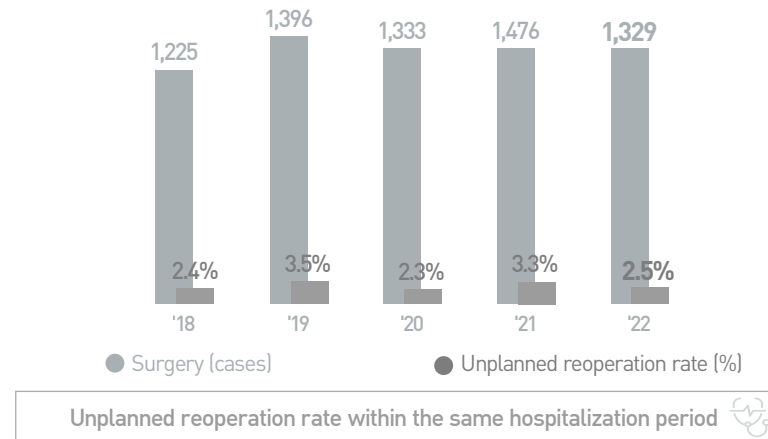
Verification of 2016 WHO classification of central nervous system

The Brain Tumor Center of Samsung Comprehensive Cancer Center reclassified 'intracranial solitary fibrous tumor' and 'hemangiopericytoma' into one disease and reclassified them pathologically. From clinical outcomes, it has been found that the 2016 WHO classification of central nervous system tumors better reflected the prognosis of the two tumors than the previous classification system.

03 Quality Management

Quality Management

Each year, the Brain Tumor Center evaluates the quality of clinical services to improve quality of care and ensure a safe clinical environment.

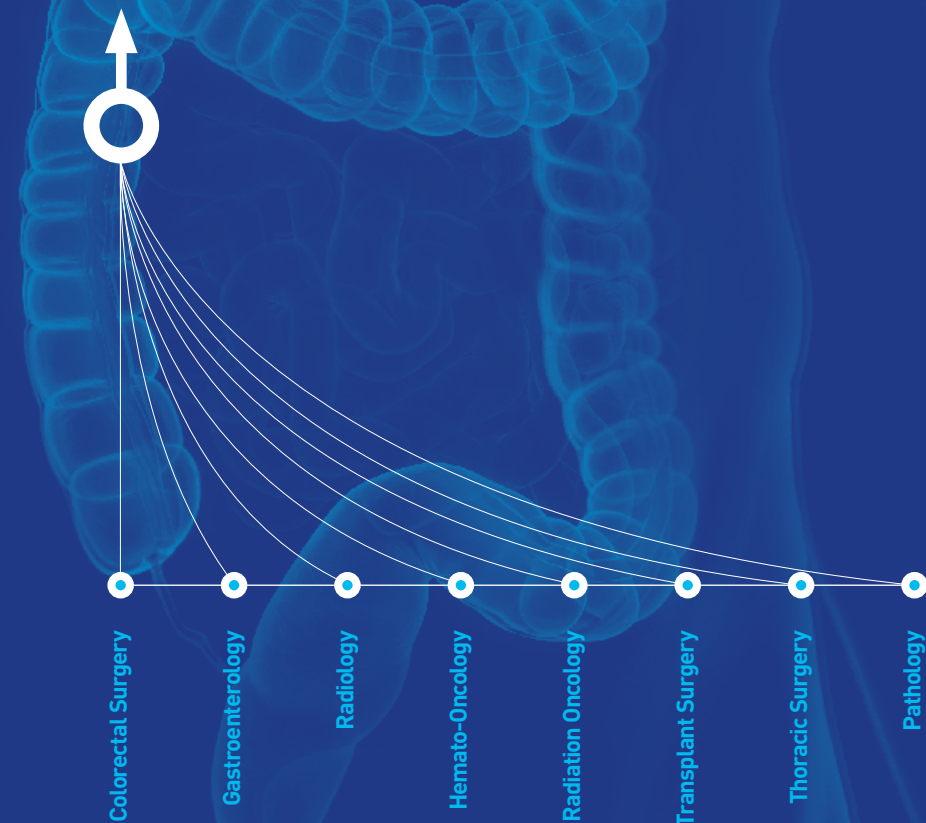


COLORECTAL CANCER CENTER

The colorectal cancer center leads the best treatment culture through its cutting-edge technology.

We strive to achieve patient happiness with our endeavor for optimal diagnosis and surgery.

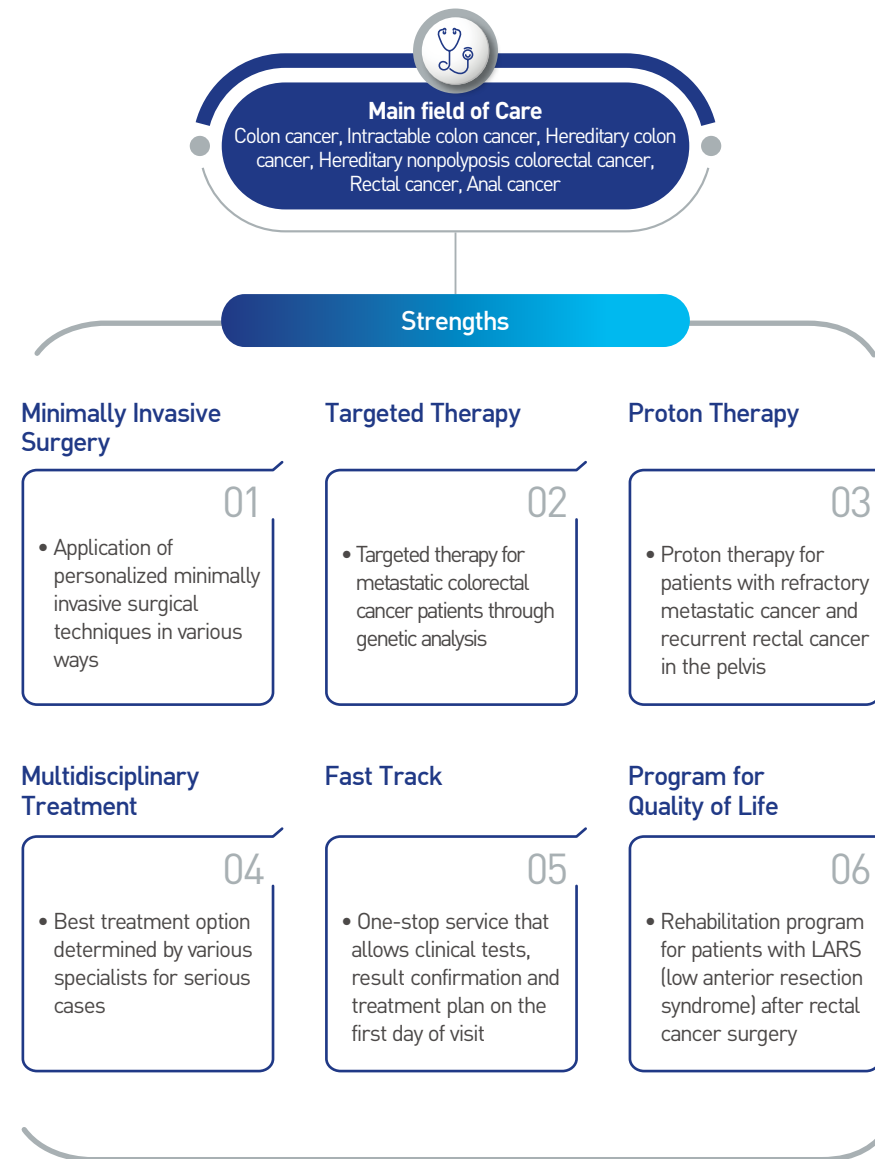
- We improve the treatment outcome by actively introducing the most advanced treatment.
- We run various therapeutic methods and programs to improve the patients' quality of life.



01 Introduction

General Information

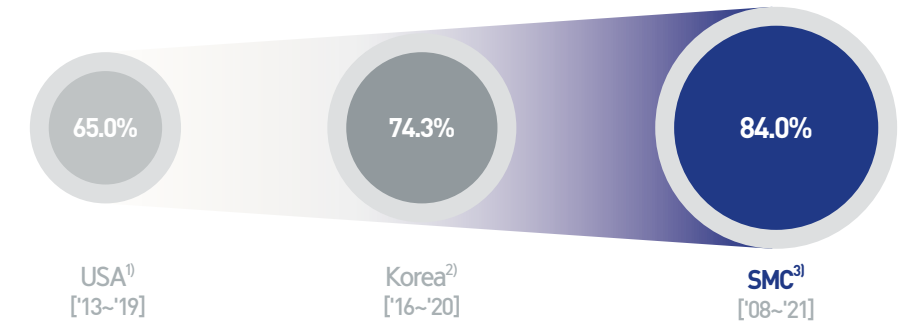
The Colorectal Cancer Center has improved its treatment outcome by actively introducing high-tech treatment modalities such as robotic surgery, targeted therapy, proton therapy, and minimally invasive surgery. All departments use the common protocol based on the international guidelines to provide standardized treatment.



02 Treatment Result

5-year Survival rate

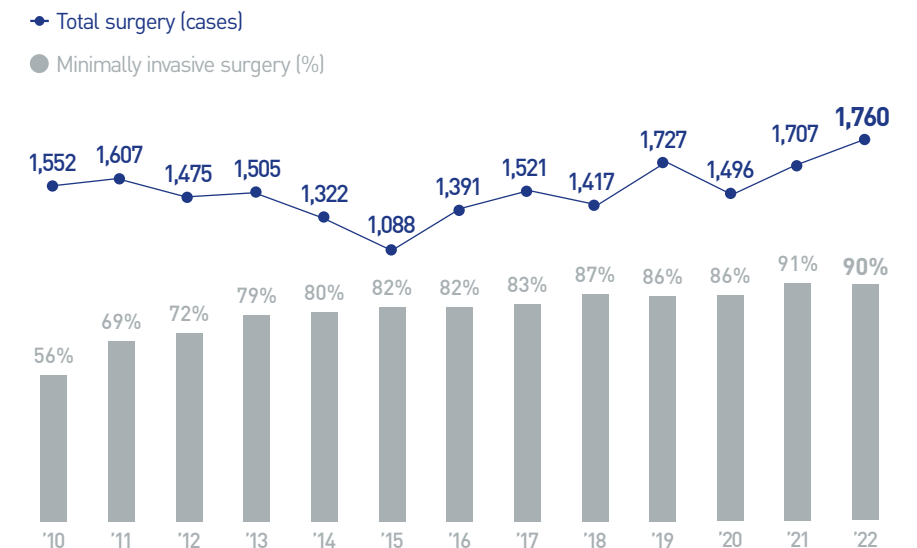
The 5-year relative survival rate of patients treated at the Colorectal Cancer Center is 84%, which is a top-notch outcome compared to other cancer hospitals.



※ ¹⁾ Surveillance Epidemiology and End Results (SEER) (2022), ²⁾ Cancer registration statistics (2023), ³⁾ Samsung Medical Center Cancer patient statistics (2023)

Minimally Invasive Surgery

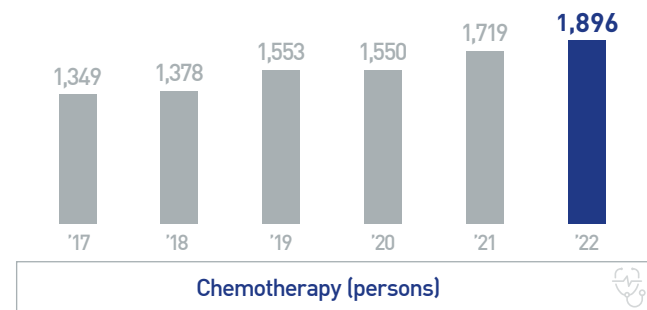
In 2021, we performed a cumulative number of 15,000 minimally invasive surgery cases for colorectal cancer. Among the total number of colon cancer surgery, the minimally invasive surgery consisted of 85% and more. We continue to strive for more sophisticated surgery, minimal incisions, less pain, and rapid recovery.



02 Treatment Result

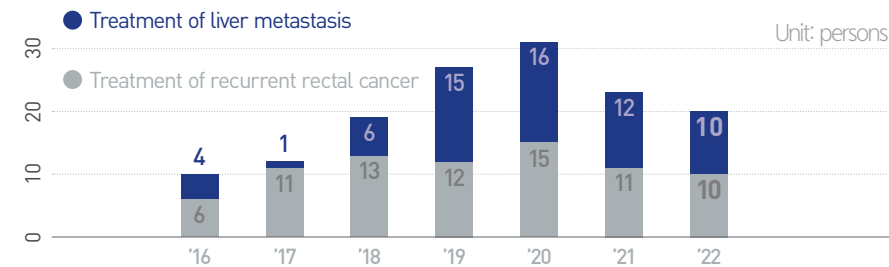
Chemotherapy

Chemotherapy for colon cancer continues to increase and more than 1,500 patients were treated every year since 2019. We are steadily carrying out clinical trials to apply targeted therapy or immunotherapy to patients with intractable colorectal cancer who have failed in standard treatment. We make steady and persistent effort to improve the survival rate of patients with colorectal cancer.



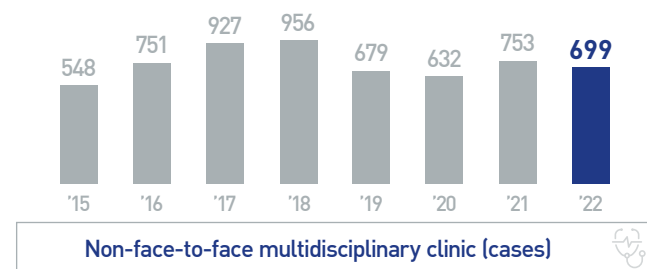
Proton Therapy

Samsung Medical Center has performed proton therapy since 2016. The goal of Colorectal Cancer Center is to cure patients with unresectable liver metastasis of colorectal cancer previously evaluated as intractable and recurrent rectal cancer in the pelvis, and to improve their quality of life. With this goal, we treat more than 20 patients with colorectal cancer every year.



Multidisciplinary Treatment

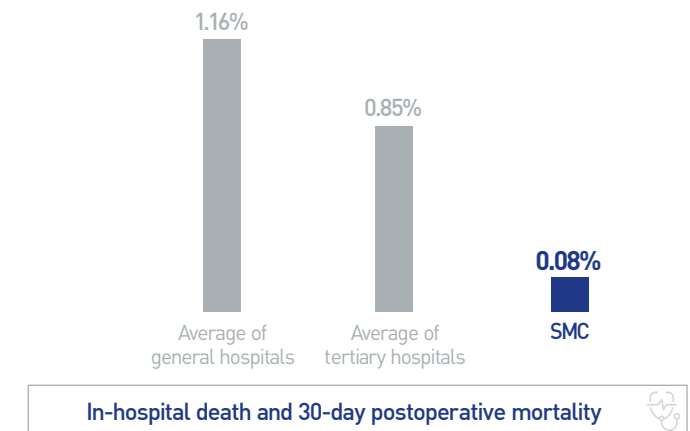
We provide multidisciplinary treatment for patients with refractory/recurrent colorectal cancer who have difficulty in deciding treatment plans. Several specialists from relevant departments gather together to discuss the best treatment options.



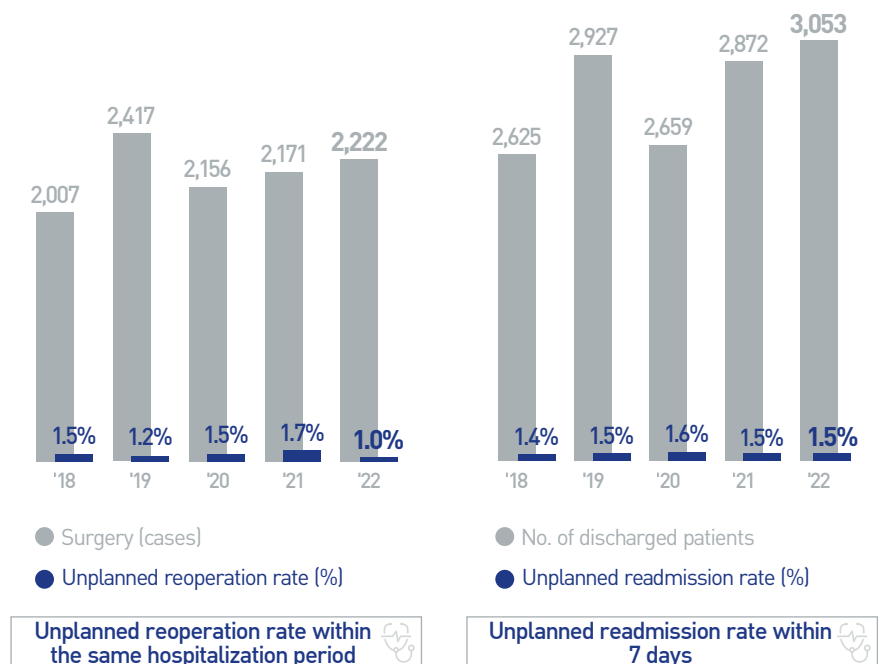
03 Quality Management

Quality Management

Each year, the Colorectal Cancer Center evaluates and improves the quality of clinical services to ensure a safe clinical environment and provide best treatment.



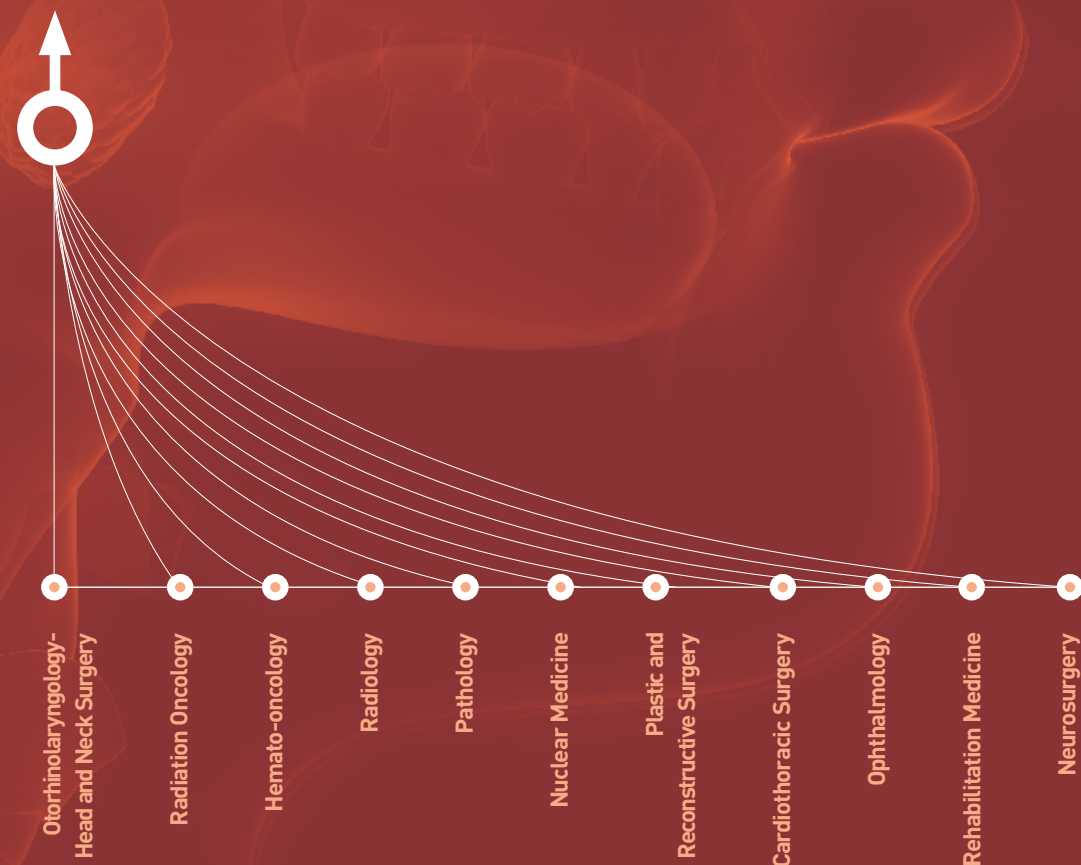
※ 7th Appropriateness Evaluation Report for Colon Cancer Treatment from Health Insurance Review and Assessment Service(June 2020)



HEAD AND NECK CANCER CENTER

The Head and Neck Cancer Center provides the best treatment to pursue the highest cure rate and the best quality of patients' life.

- We treat more than 10% of newly registered head and neck cancer patients in Korea.
- We provide complementary multimodal treatments for patients with intractable or advanced stage cancer as well as early stage cancer.

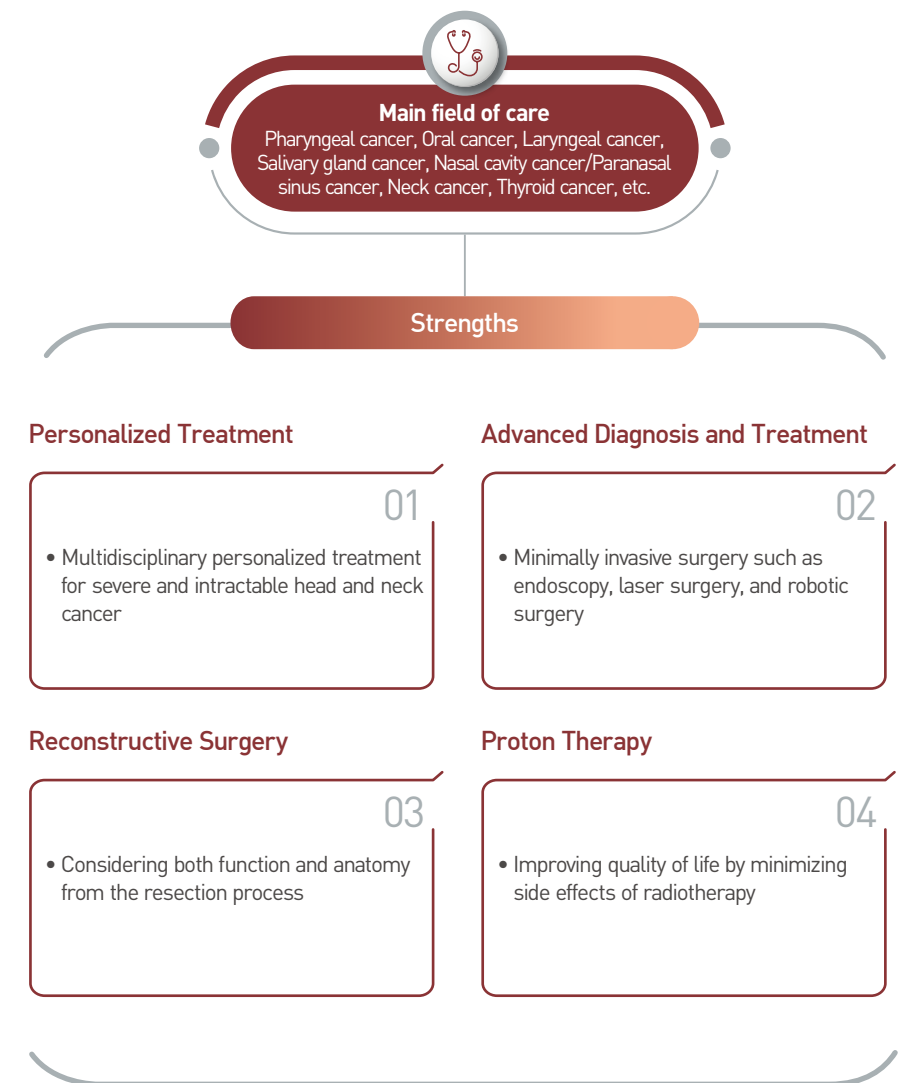


01

Introduction

General Information

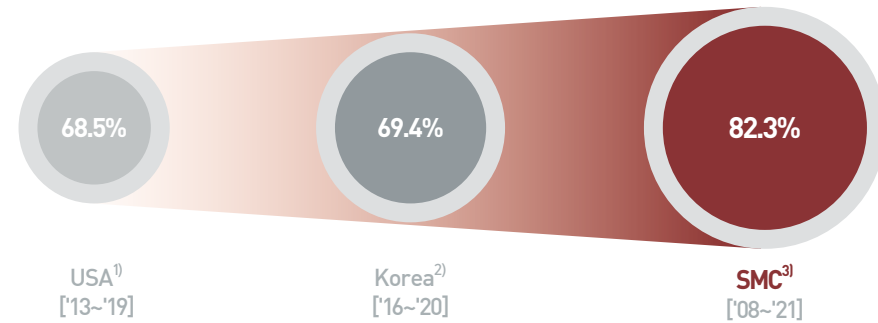
The Head and Neck Cancer Center cares more than 10% of the newly registered head and neck cancer patients in Korea. As one of the major Korean hospitals, we are leading all aspects of cancer management for head and neck cancer patients in Korea, including diagnosis, treatments, and patient care.



02 Treatment Result

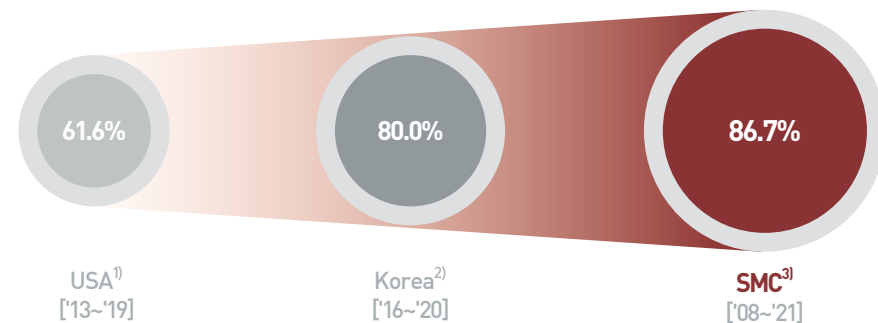
5-year Survival rate, Oral and Pharyngeal Cancer

The 5-year relative survival rate of patients with oral and pharyngeal cancer treated at the Head and Neck Cancer Center is 82.3%, which is far higher than the average worldwide.



5-year Survival rate, Laryngeal Cancer

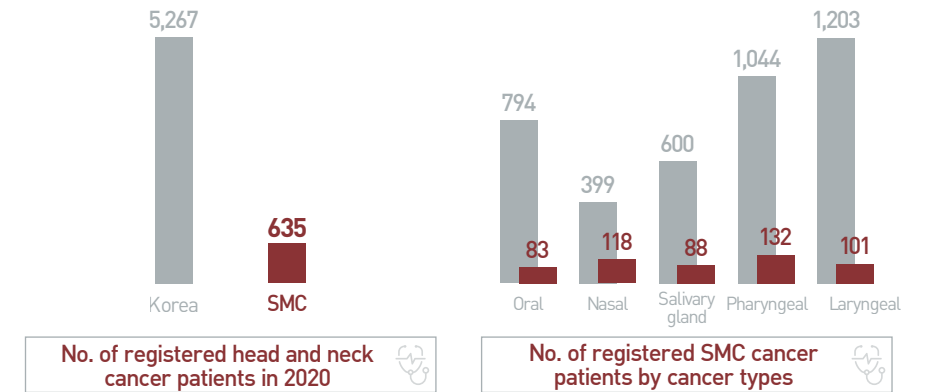
The 5-year relative survival rate of laryngeal cancer patients treated at the Head and Neck Cancer Center is 86.7%, which also outperforms other hospitals.



※ ¹⁾ Surveillance Epidemiology and End Results (SEER) (2022) ²⁾ Cancer registration statistics (2023)
³⁾ Samsung Medical Center Cancer patient statistics (2023)

Cancer types

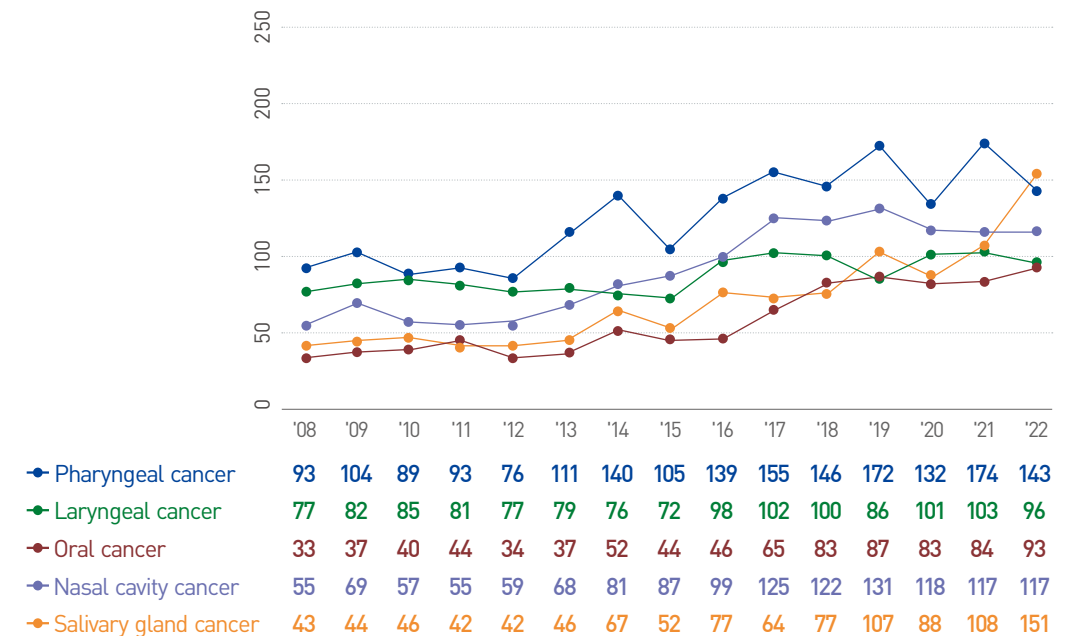
In 2020, 12% of head and neck cancer patients in Korea visited our Head and Neck Cancer Center. Patients who visited Samsung Comprehensive Cancer Center showed the following proportions: 10% oral, 30% nasal cavity, 13% salivary gland, 13% pharyngeal, and 8% laryngeal cancers.



※ Excluding cancer with unknown cause

No. of Registered by Cancer types

As a result of analyzing the number of registered patients by detailed cancer type, the number of patients with pharyngeal and oral cancer is rapidly increasing.

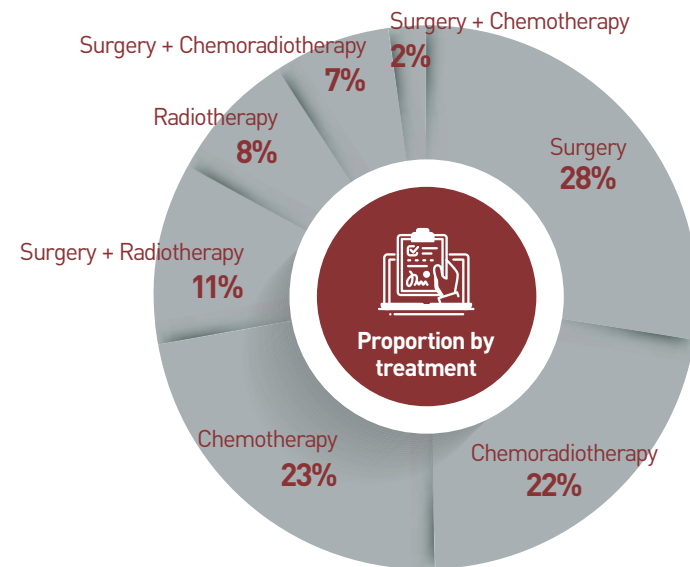


※ Excluding cancer with unknown cause

02 Treatment Result

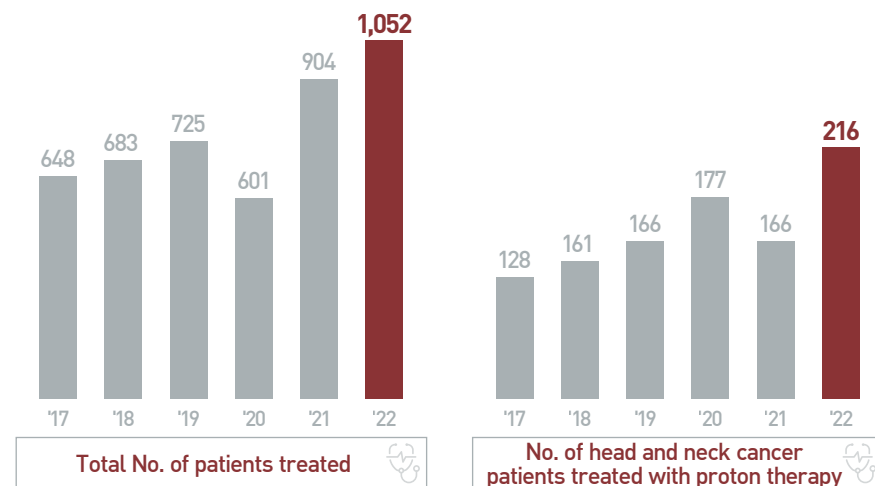
Treatment Method

The Head and Neck Cancer Center offers multimodal treatments to 39% of our patients.



No. of Patients Treated

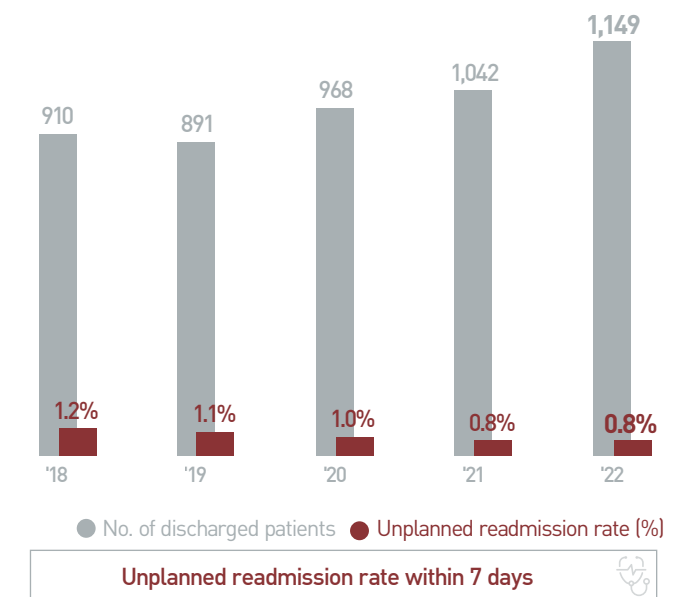
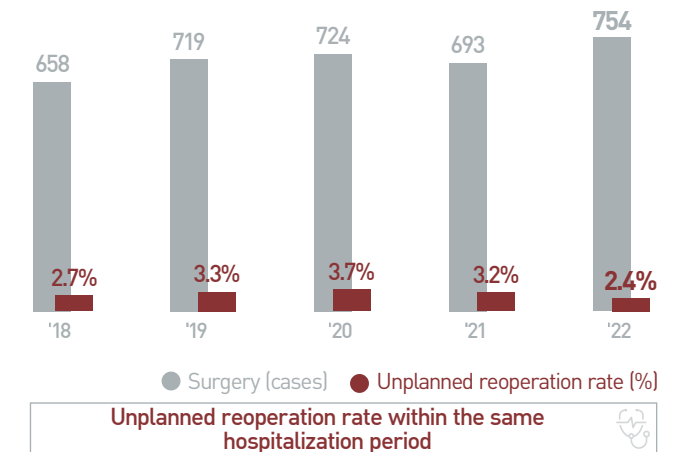
In addition to early-stage disease, the center provides specialized treatment for patients with severe, intractable, and advanced-stage cancers. Since the introduction of proton therapy in 2016, patients treated with the therapy have increased every year.



03 Quality Management

Quality Management

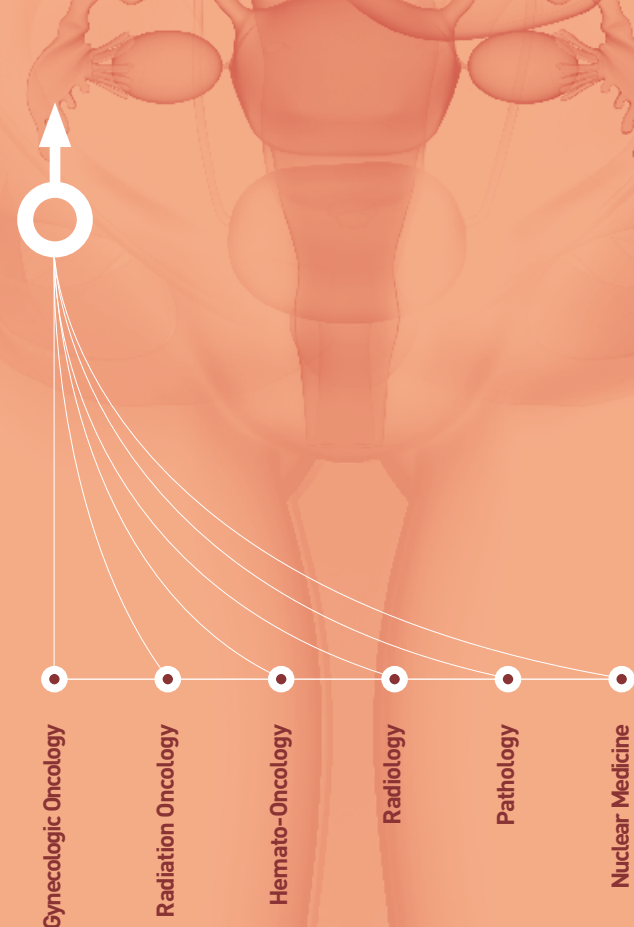
Each year, the Head and Neck Cancer Center evaluates and improves the quality of clinical services to ensure a safe clinical environment and provide best treatment.



GYNECOLOGIC CANCER CENTER

Under the motto of "The First & the Best", the Gynecologic Cancer Center provides optimal treatment with systematic cooperation from all medical faculties, and actively conducts research to realize this motto.

- The Gynecologic Cancer Center has consistently demonstrated the best treatment outcomes in South Korea.
- The faculty members of the Center have abundant clinical experience in the treatment of ovarian cancer and have shown excellent treatment outcomes.

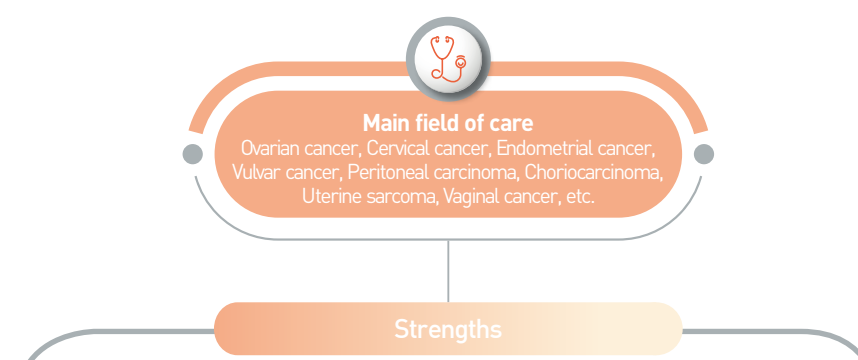


01

Introduction

General Information

The Gynecologic Cancer Center is actively conducting research by participating in numerous multi-national, multi-institutional joint clinical trials, and is among the first to accept and standardize new treatment methods. The Center strives to develop new treatment methods by elucidating the causes of gynecologic cancer and the mechanism of therapeutic drug actions. It is continuing research to discover new targets and analyze the mechanisms and therapeutic effects of molecular target medicine to provide personalized cancer treatment.



Best Treatment Outcomes

01

- About 500 ovarian cancer surgeries performed per year (One of high volume centers in Korea).
- Ovarian Cancer Surgery Institution certified by the European Society of Gynaecological Oncology (ESGO) (first in Asia)

*ESGO: European Society of Gynaecological Oncology

Post-surgery Recovery Program

02

- Implementation of the enhanced recovery after surgery (ERAS) program to accommodate faster diet, pain relief, and improved quality of life after surgery

Multidisciplinary Treatment

03

- Face-to-face/Non-face-to-face multidisciplinary treatment meetings for patients with gynecologic cancer

Pioneering Research

04

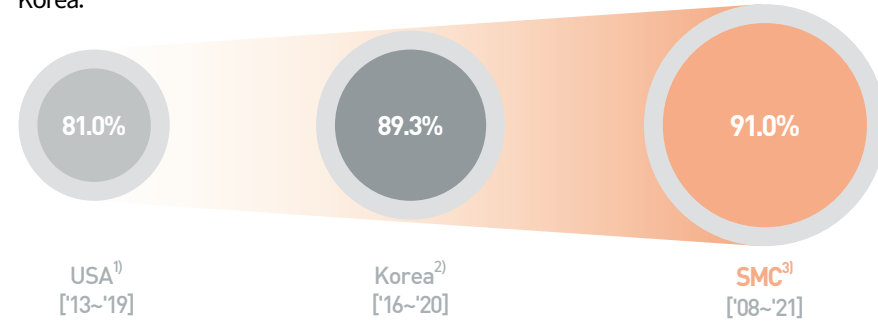
- Discovering new treatment targets and leading personalized medicine
- Actively participating various international clinical trials

02

Treatment Result

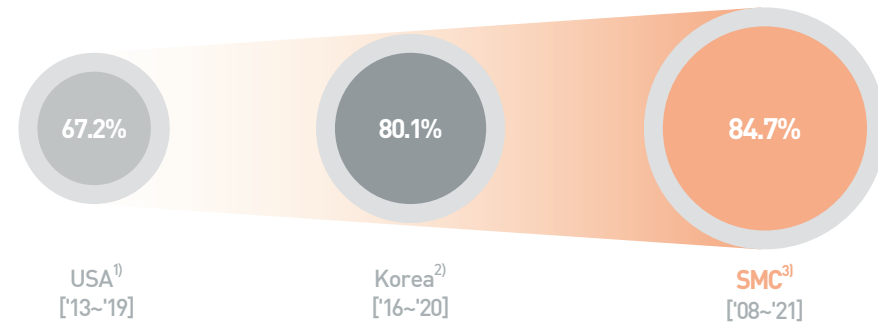
5-year Survival rate, Endometrial Cancer

The 5-year relative survival rate of endometrial cancer patients treated at the Gynecologic Cancer Center is 91%, which is superior to that of the USA and South Korea.



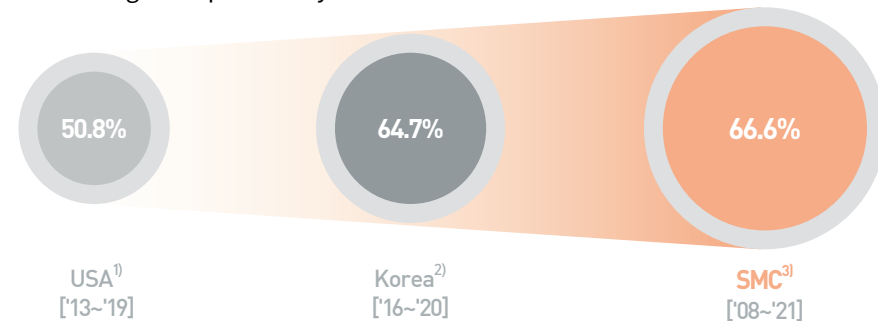
5-year Survival rate, Cervical Cancer

The 5-year relative survival rate of cervical cancer patients treated at the Gynecologic Cancer Center is 84.7%, which is not only the best performance outcome in the nation, but is also one of the best figures in the world.



5-year Survival rate, Ovarian Cancer

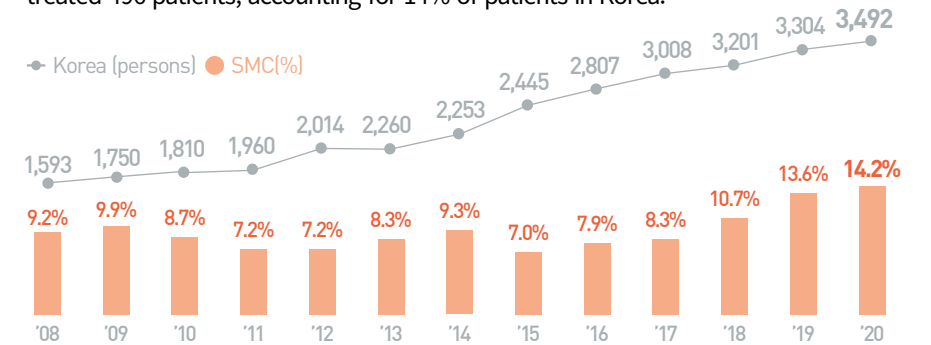
Ovarian cancer is considered difficult to treat because it is often detected at an advanced stage due to the location and characteristic of tumors, thereby generally classified as a cancer with poor prognosis. The 5-year relative survival rate of ovarian cancer patients treated at the Gynecologic Cancer Center is 66.6%, which is also among the top nationally and worldwide.



※ ¹⁾ Surveillance Epidemiology and End Results (SEER) (2022), ²⁾ Cancer registration statistics (2023), ³⁾ Samsung Medical Center Cancer patient statistics (2023)

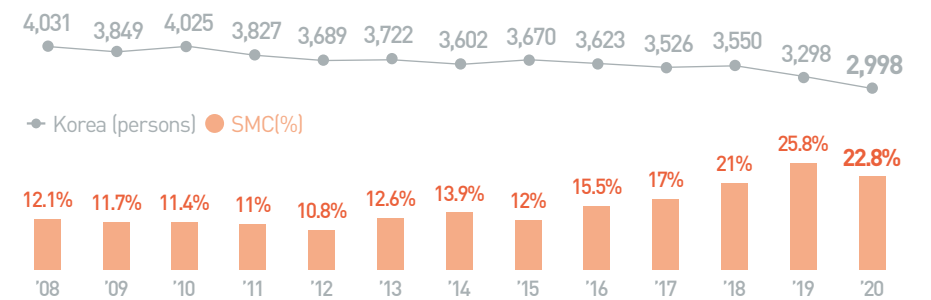
No. of Registered Endometrial Cancer

In 2020, there were 3,492 cases of endometrial cancer patients in Korea, and this number has been on the rise each year. In 2020, the Gynecologic Cancer Center treated 496 patients, accounting for 14% of patients in Korea.



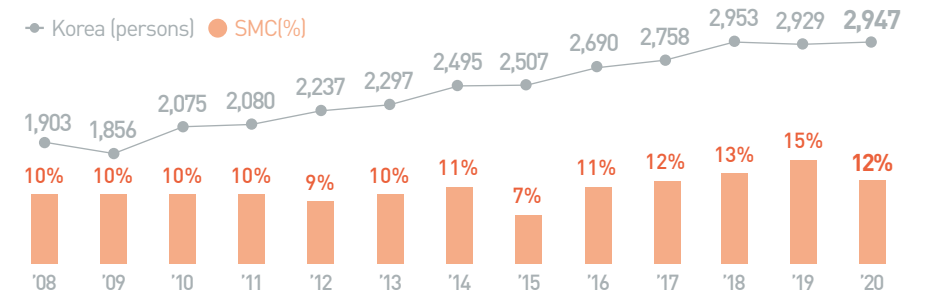
No. of Registered Cervical Cancer

In 2020, there were 2,998 cases of cervical cancer reported in the country. Thanks to early screening and the development of cervical cancer prevention vaccines, the number of cases has been decreasing each year. In 2020, the Gynecologic Cancer Center treated 685 patients, accounting for 22% of patients in Korea.



No. of Registered Ovarian Cancer

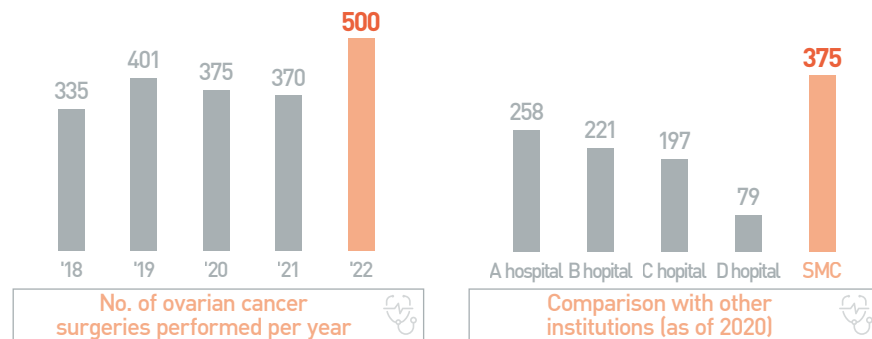
In 2020, the number of ovarian cancer patients in South Korea was 2,947 which is also increasing every year. The Gynecologic Cancer Center treats about 351 ovarian cancer patients annually, accounting for about 12% of the total patients.



03 Quality Management

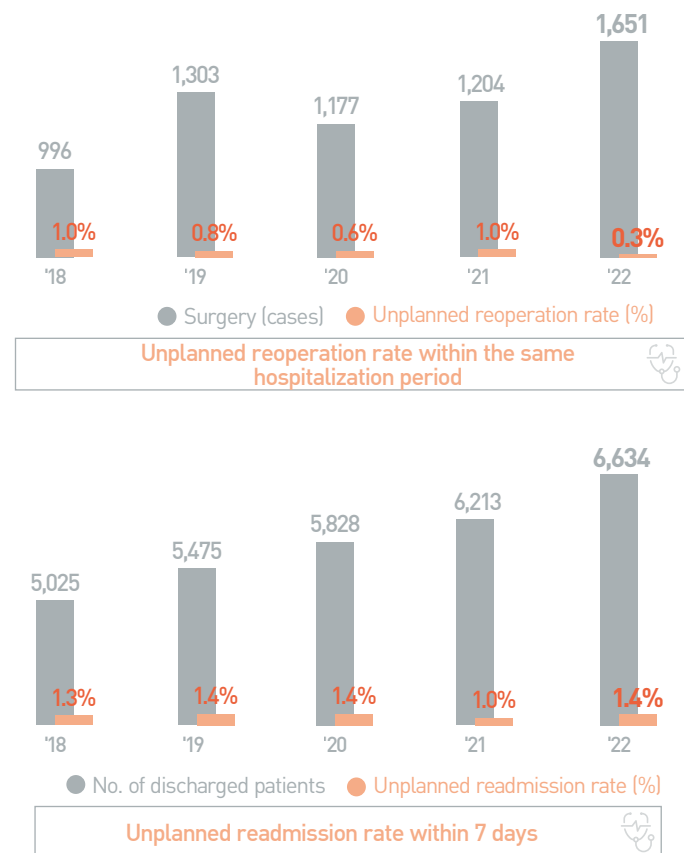
Performance of Ovarian Cancer Surgery

Along with the increase in patients, the number of surgeries is also increasing every year, with approximately 500 surgeries per year. We have a record of superior treatment performance even when compared to other hospitals.



Quality Management

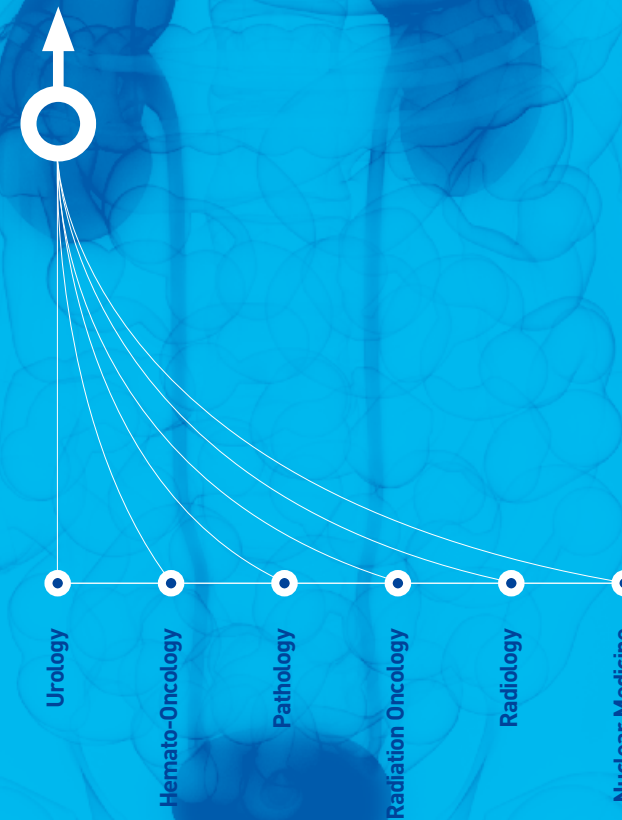
Each year, the Gynecological Cancer Center evaluates the quality of clinical services to maintain the high quality of care and to ensure a safe clinical environment.



UROLOGIC CANCER CENTER

The Urologic Cancer Center will rewrite the history of urologic cancer treatment and shape the future. We provide the best treatment as from A to Z, with optimal treatment protocol for urologic cancer treatment.

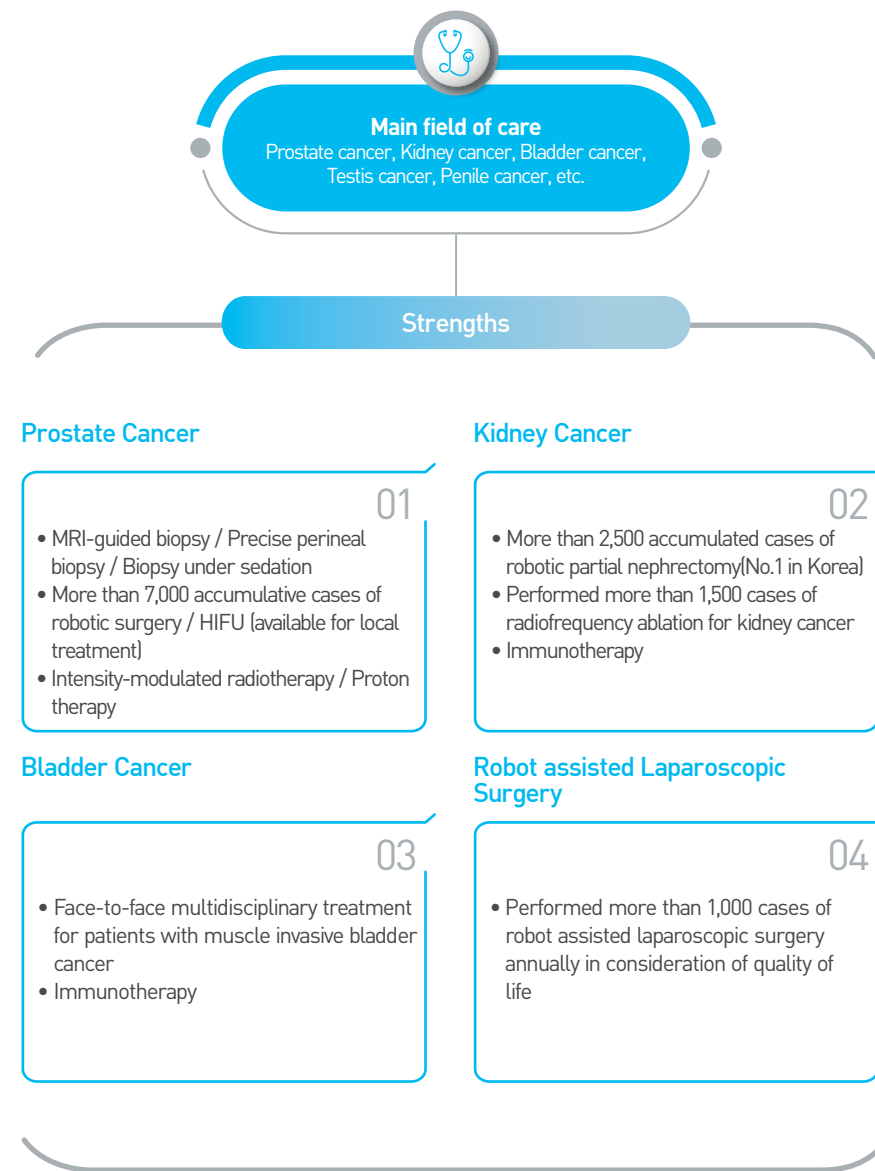
- We pursue minimally invasive treatment, considering the quality of patient's life.
- We provide the best medical care with abundant clinical experience and a multidisciplinary approach.



01 Introduction

General Information

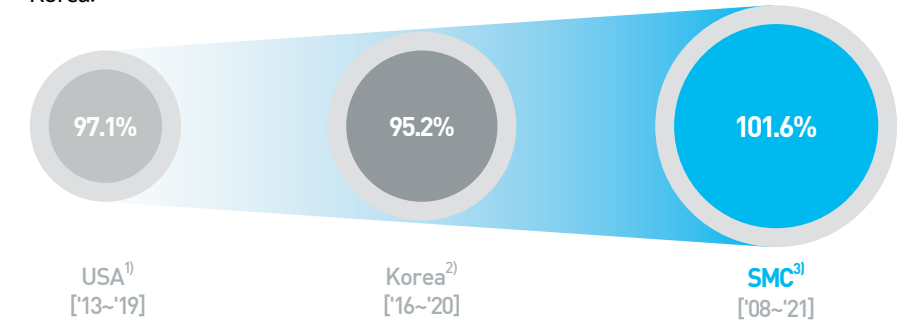
The Urologic Cancer Center provides the best diagnosis and treatment based on the best medical faculties and the most advanced medical technology. We produce the best results through multidisciplinary treatment and actively perform robot assisted laparoscopic surgery, considering the quality of patient's life.



02 Treatment Result

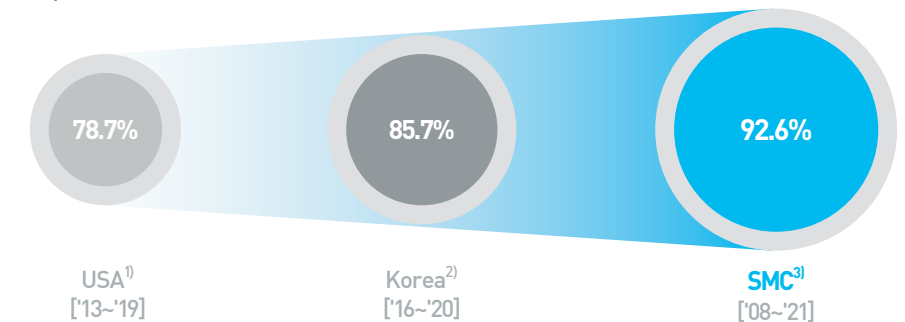
5-year Survival rate, Prostate Cancer

Prostate cancer continues to increase due to a westernized diet and promotion of early screening. The 5-year relative survival rate of prostate cancer patients treated at the Urologic Cancer Center is 101.6%, which is superior to that of the US and Korea.



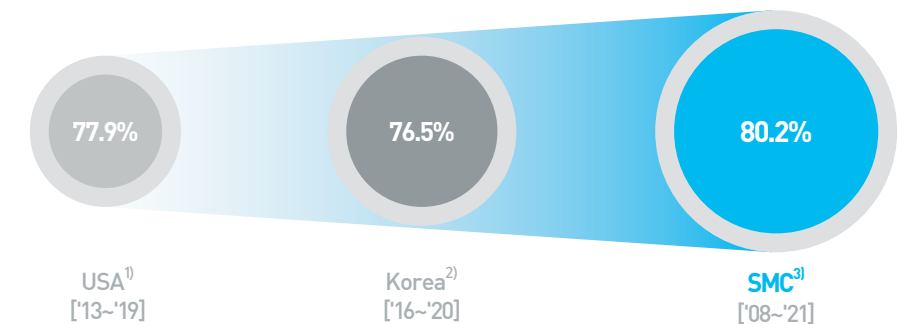
5-year Survival rate, Kidney Cancer

The 5-year relative survival rate of kidney cancer patients is 92.6%, which is superior to that of the US and Korea.



5-year Survival rate, Bladder Cancer

The 5-year relative survival rate of bladder cancer patients is 80.2%, which is higher than that of the USA.

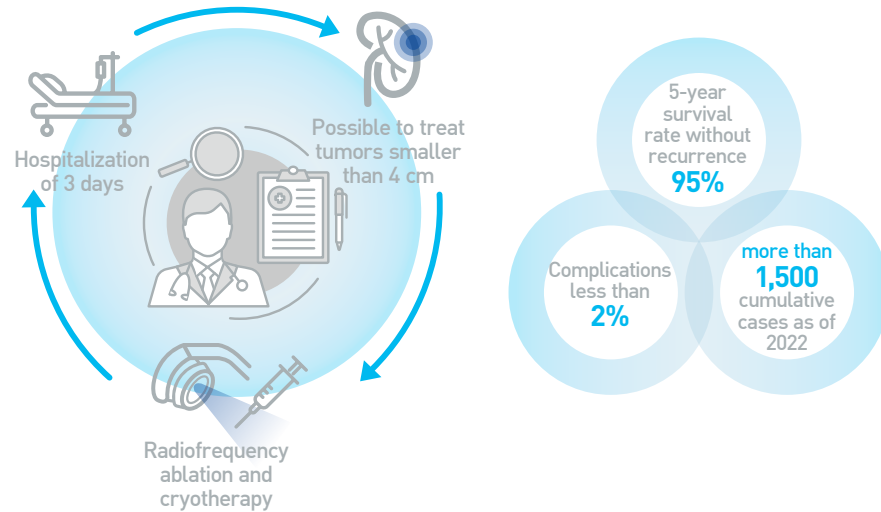


※ ¹⁾Surveillance Epidemiology and End Results (SEER) (2022), ²⁾Cancer registration statistics (2023), ³⁾Samsung Medical Center Cancer patient statistics (2023)

02 Treatment Result

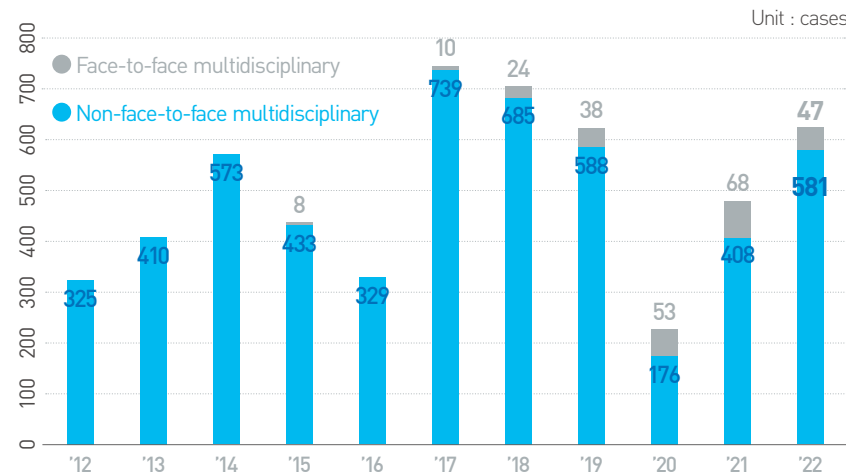
Radio-Frequency Ablation

Radiofrequency ablation for kidney cancer is limited to the patients who are sensitive to surgical therapy, the elderly patients who have difficulties in receiving surgery due to old age, and the cases where the kidney tissue needs to be preserved as much as possible. As of 2022, we have accumulated more than 1,500 clinical cases.



Multidisciplinary Treatment

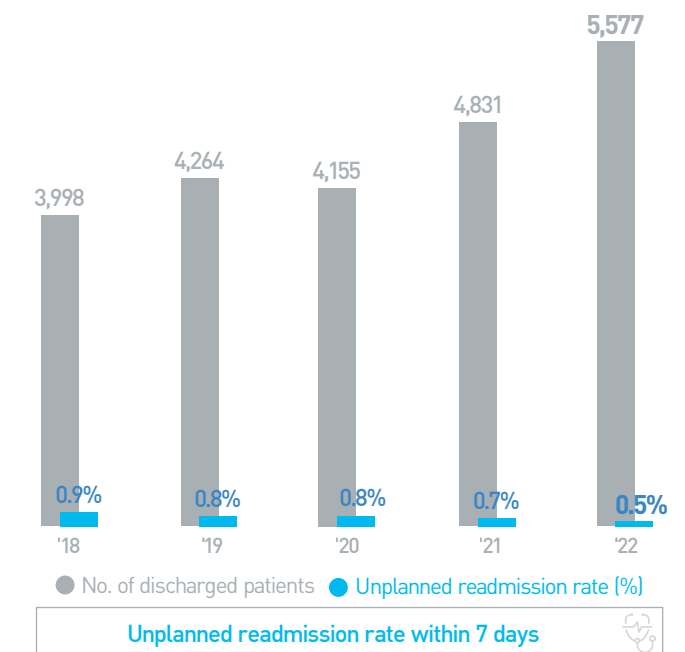
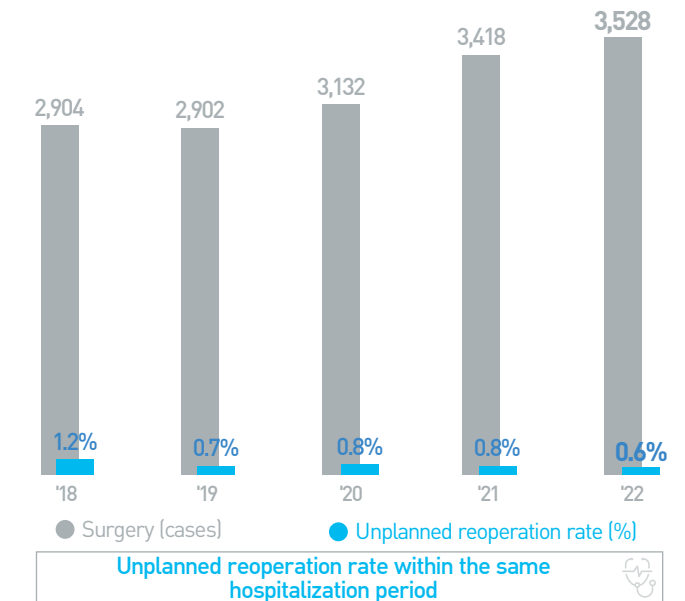
Through non-face-to-face multidisciplinary treatment in which specialists from 6 medical departments participate, we determine the optimal treatment plan and improve treatment outcomes. In cases of muscle-invasive bladder cancer, we run a face-to-face multidisciplinary clinic where specialists from 5 departments gather to treat and decide whether to preserve the bladder.



03 Quality Management

Quality Management

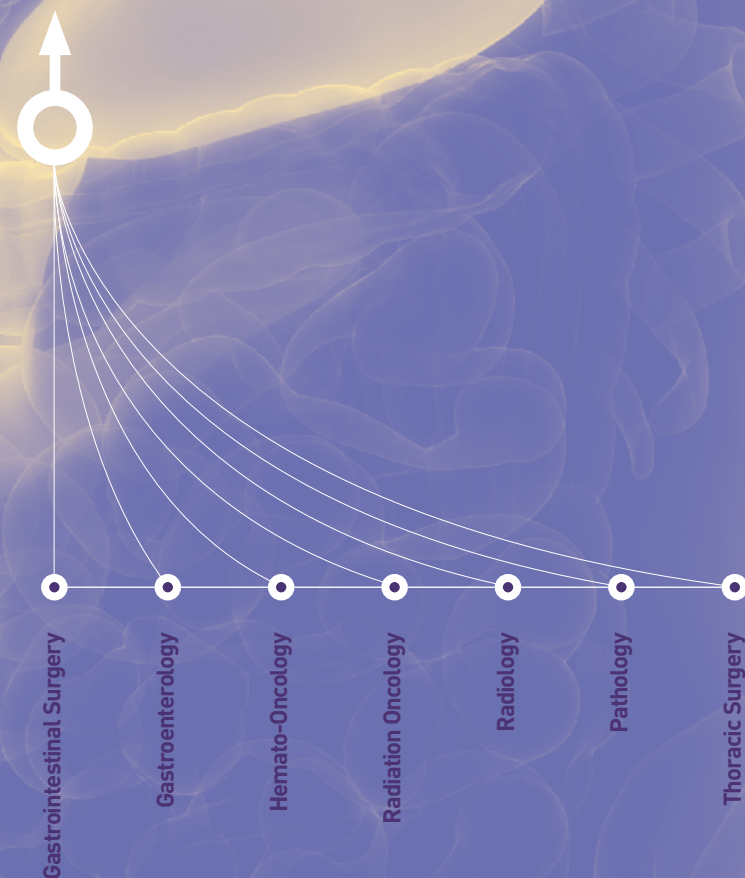
Each year, the Urologic Cancer Center evaluates the quality of clinical services to improve quality of care and ensure a safe clinical environment.



GASTRIC CANCER CENTER

Gastric Cancer Center will open the new chapter of gastric cancer care with accurate diagnosis and the most optimal treatment. We at Gastric Cancer Center strive to fulfill patient happiness.

- We proudly present the best treatment outcomes.
- We have demonstrated the scientific benefits of 'personalized cancer therapy' for the first time in the world.

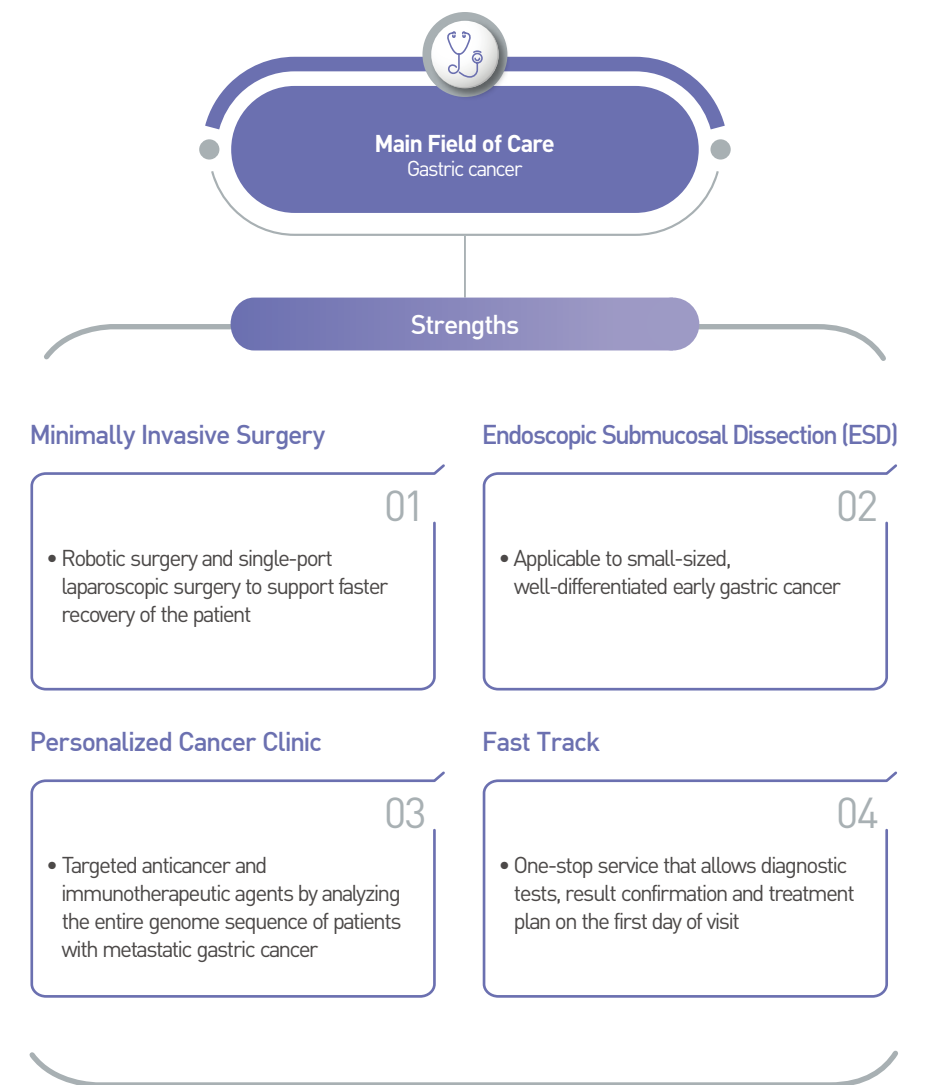


01

Introduction

General Information

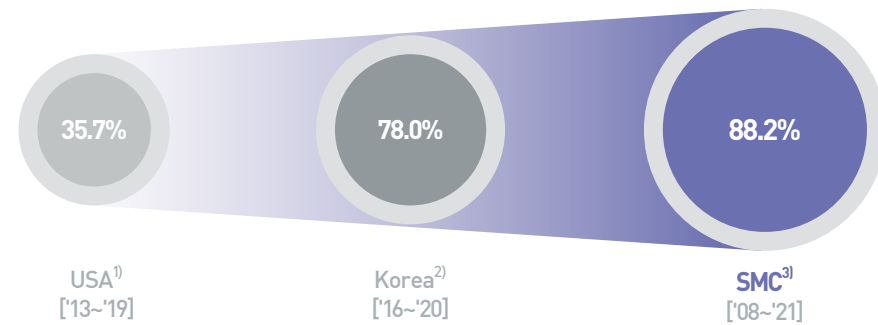
As of 2020, the Gastric Cancer Center has an unprecedented 30-day postoperative mortality of zero. With our Fast Track program which allows one-stop and in-person multidisciplinary treatment, we will provide the most prompt and comprehensive treatment possible.



02 Treatment Result

5-year Survival rate

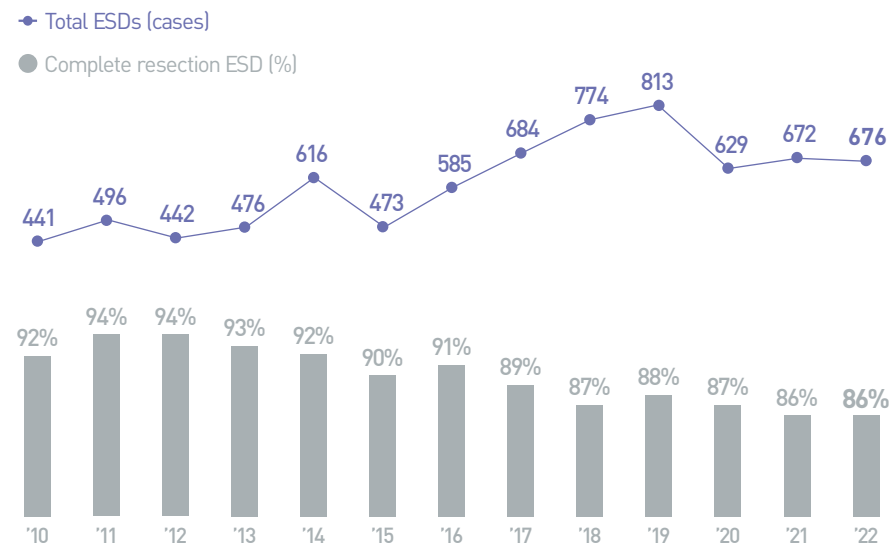
The 5-year relative survival rate of patients treated at the Gastric Cancer Center is 88.2%, a number that is far more superior than other medical institutions around the world.



※ ¹⁾Surveillance Epidemiology and End Results (SEER) (2022), ²⁾Cancer registration statistics (2023), ³⁾Samsung Medical Center Cancer patient statistics (2023)

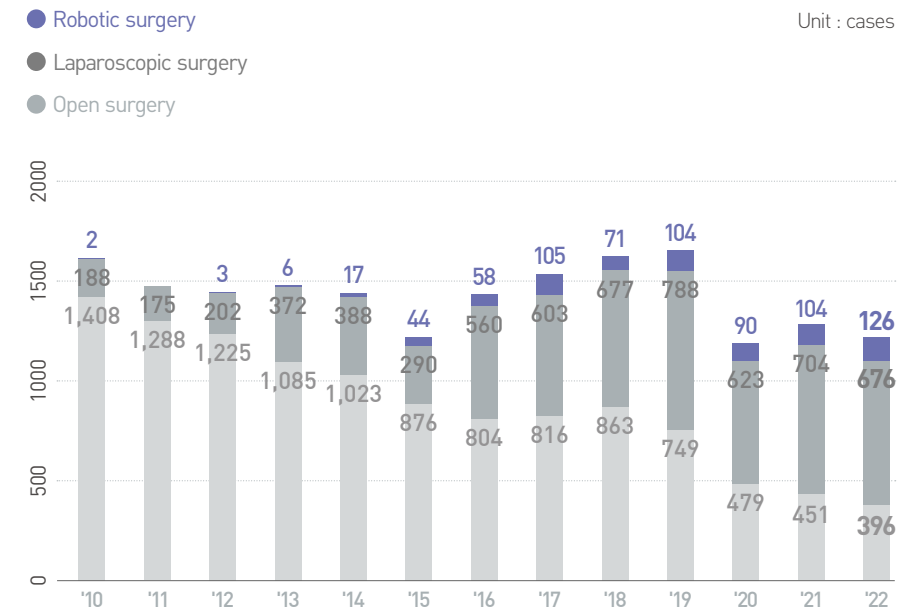
ESD Outcomes

The Gastric Cancer Center performs more than 670 cases of Endoscopic Submucosal Dissection (ESD) annually for patients with early gastric cancer.



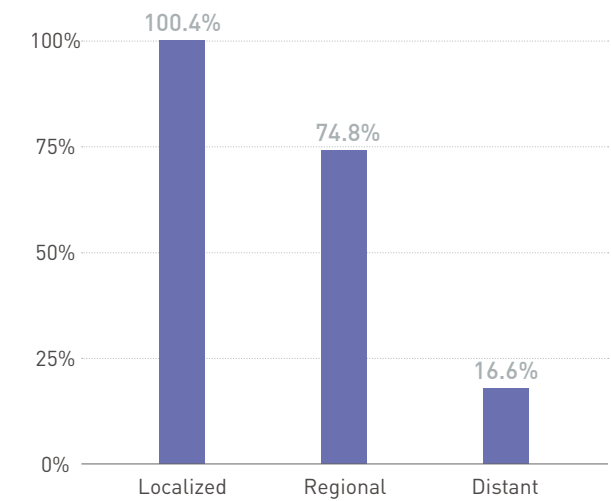
Gastric Cancer Surgery

We perform more than 1,200 cases of gastric cancer surgery per year. The number of minimally invasive surgeries (laparoscopic surgery, robotic surgery) that can minimize the pain, bleeding and scarring is steadily increasing.



5-year Survival rate after Gastric Cancer Surgery

The 5-year relative survival rate after gastric cancer surgery in patients diagnosed at the Gastric Cancer Center from 2008 to 2021 is as follows:

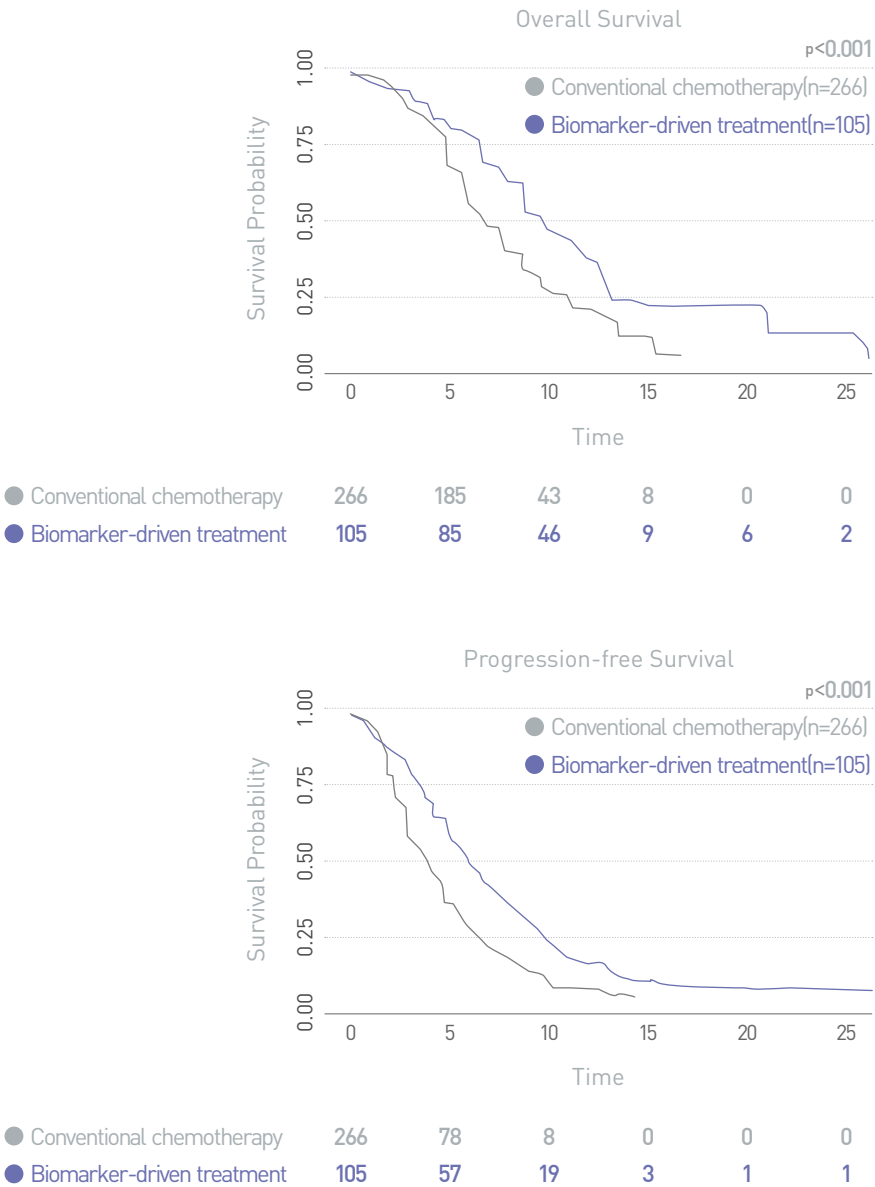


※ Based on SEER Staging

02 Treatment Result

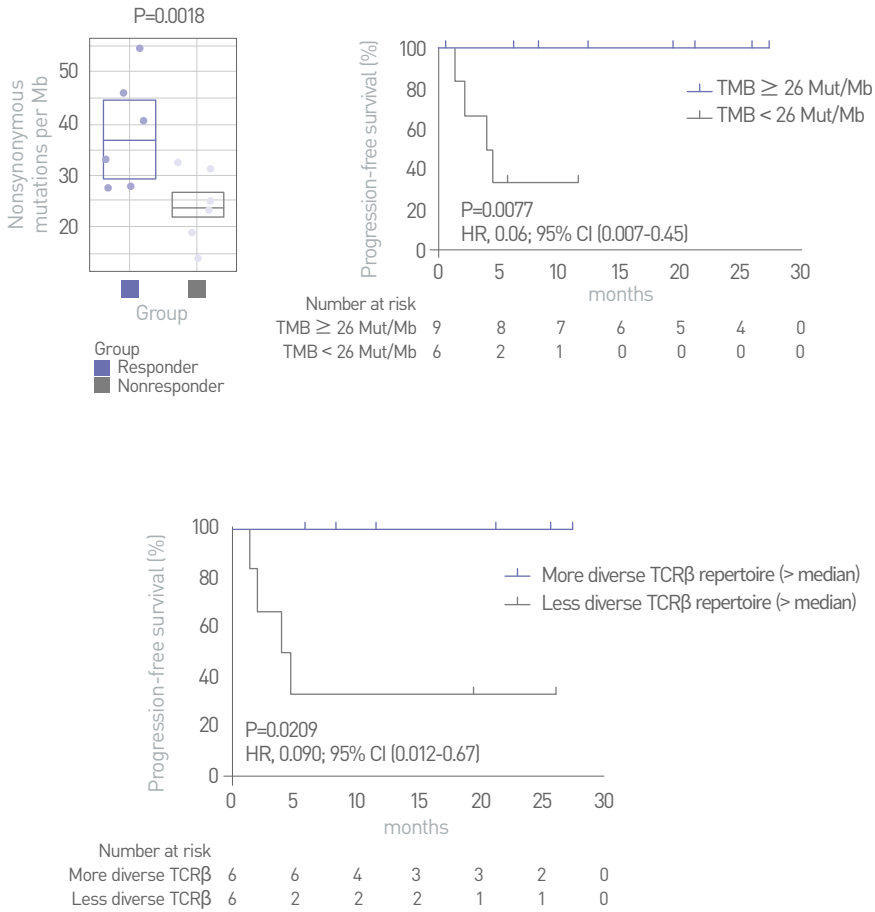
Research

In October 2019, we provided scientific evidence to show clinical efficacy of 'personalized cancer treatment' based on the genome analysis for the first time in the world. Based on genomic and proteomic data, targeted anticancer agent was administered to patients with metastatic gastric cancer. We observed an increase of median survival of 3 months. As immunotherapy has become applicable for some patients, it will be an opportunity to activate personalized cancer treatment.



Personalized Treatment for Cancer Patients

Continuous efforts are being made in 'personalized treatment for cancer patients' through genomic analysis of metastatic gastric cancer. The use of targeted anticancer drugs and immune checkpoint inhibitors is expanding. Research has been conducted to predict the treatment response of immune checkpoint inhibitors in metastatic gastric cancer patients with microsatellite instability. It has been observed that an improved response to immunotherapy occurs with a higher number of tumor genetic mutations and diverse configurations that allow specific antigen recognition by T-cell receptors. As a result, more than 50% of patients have experienced disease stabilization for over 2 years. Through research on the tumor microenvironment and immune response, it is expected that the concurrent use of immunotherapy will enhance the therapeutic effect of metastatic gastric cancer treatment.

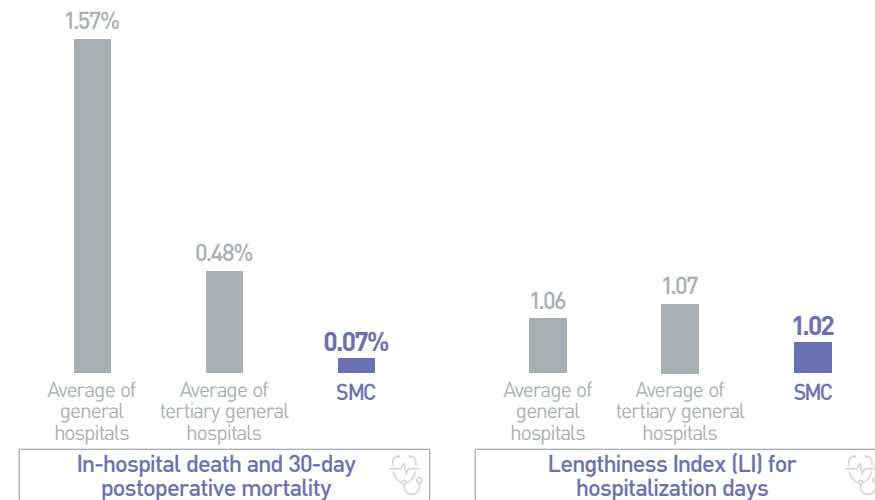


Ref) Cancer Discov. 2021 Sep;11(9):2168-2185

03 Quality Management

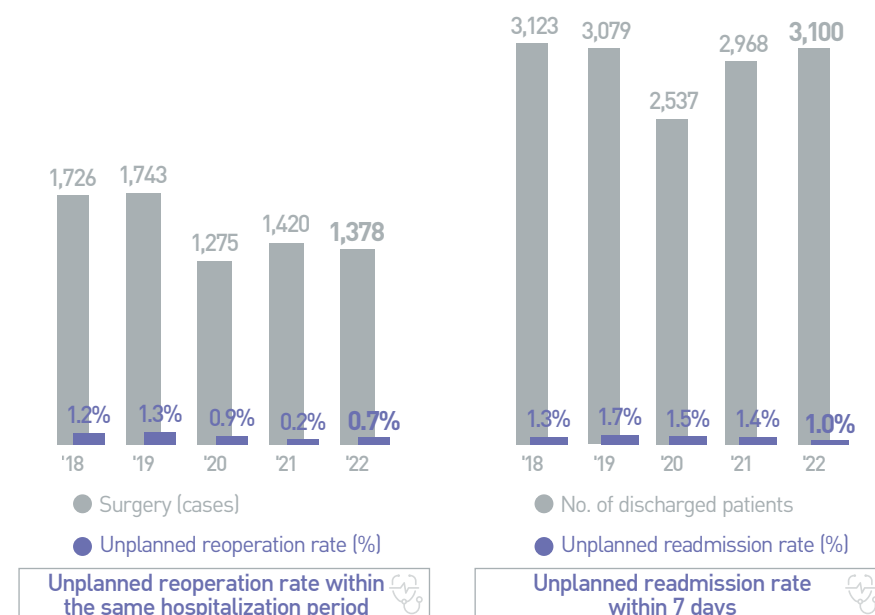
Quality Management

Each year, the Gastric Cancer Center evaluates and improves the quality of clinical services to ensure a safe clinical environment and provide best treatment.



※ LI (Lengthiness Index): An index indicating the duration of actual hospitalization compared to the expected appropriate duration of hospitalization, considering the Diagnosis-Related Group (DRG) of the nursing institution.

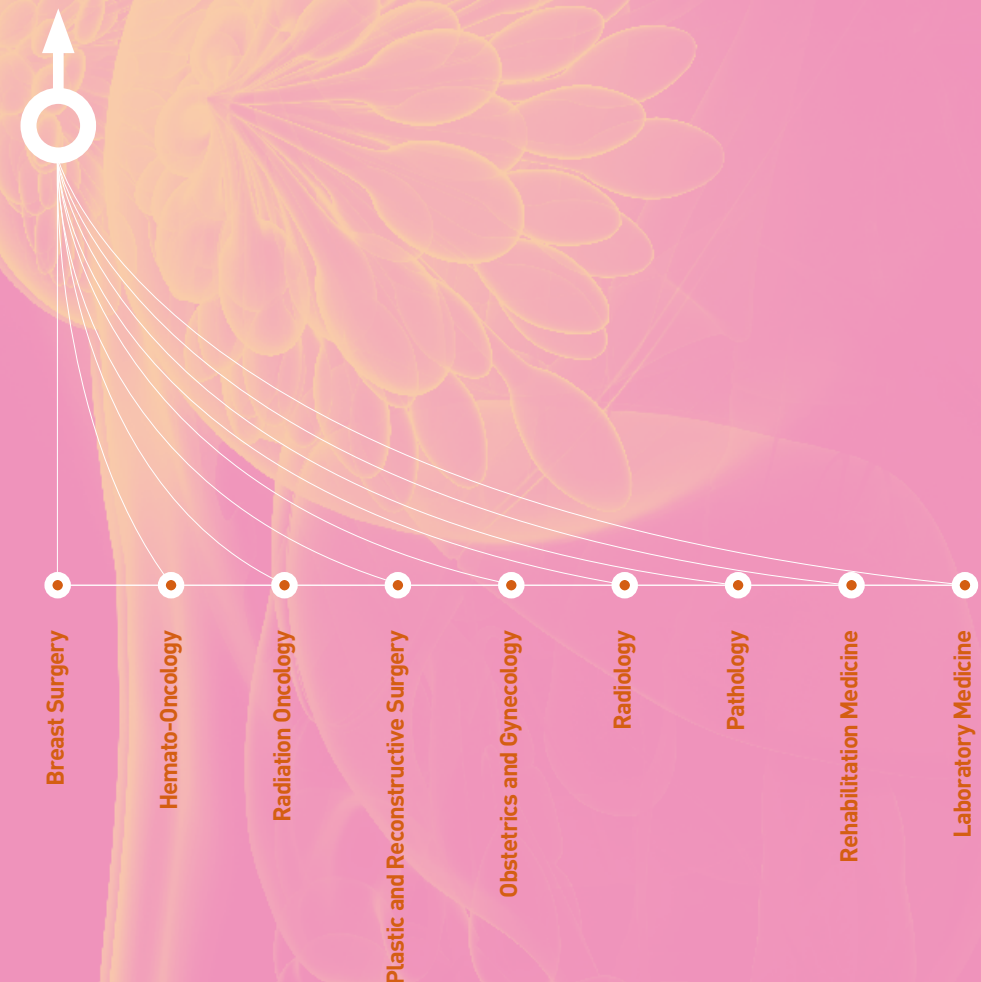
※ 5th Appropriateness Evaluation Report for Gastric Cancer Treatment from Health Insurance Review and Assessment Service (May 2021)



BREAST CANCER CENTER

The Breast Cancer Center leads the paradigm of breast cancer treatment. In addition to providing state-of-the-art diagnosis and treatment, we are committed to supporting mental health of our patients even years after the treatment.

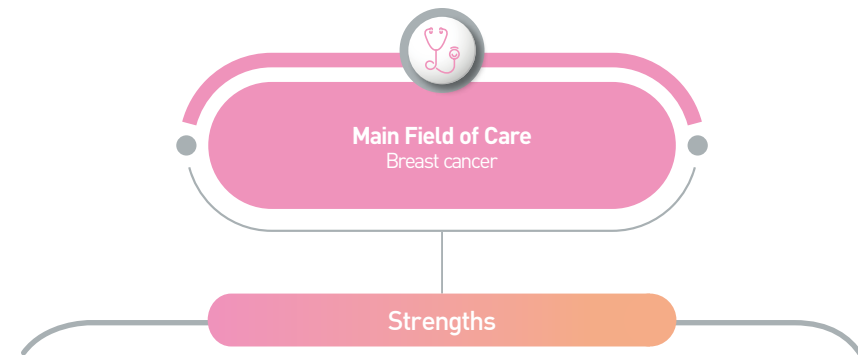
- We are proud of having the best breast cancer treatment result.
- We provide the best care through multidisciplinary treatment.



01 Introduction

General Information

The Breast Cancer Center provides personalized care through patient-centered multidisciplinary approach. With extensive experience in breast cancer, we are at the forefront of treating early and advanced breast cancer, young women's breast cancer, and hereditary breast cancer. With inclusion of male breast cancer patients, we also treat patients with gestational, recurrent, metastatic, and refractory breast cancers.



Optimal Treatment Plan

01

- Personalized care by patient-centered, multidisciplinary approaches

Best Surgical Outcome in Korea

02

- More than 2,800 breast cancer surgeries per year
- The world's highest 5-year relative survival rate of 95.6%

Pioneering Clinical Research

03

- Leading the latest clinical research related to the 4th industrial revolution such as big data and artificial intelligence
- Personalized care delivered through continuous clinical trials

Operation of Various Clinics

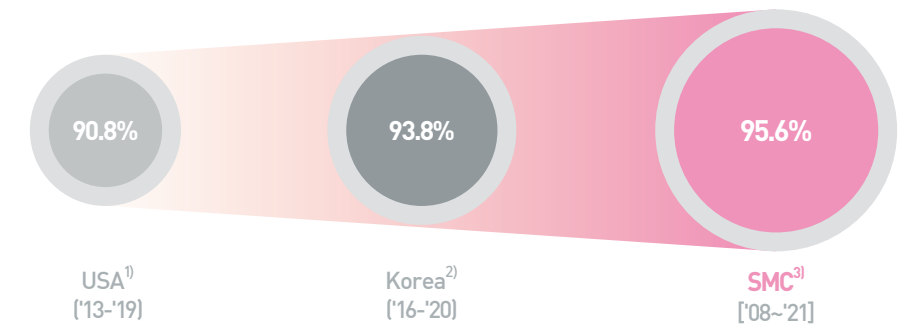
04

- Hereditary Breast Cancer Clinic
- Lifelong Health Clinic
- 'Young Breast cancer Clinic' for younger patients

02 Treatment Result

5-year Survival rate

The 5-year relative survival rate of patients treated at the Breast Cancer Center is 95.3%, which is superior outcomes worldwide.



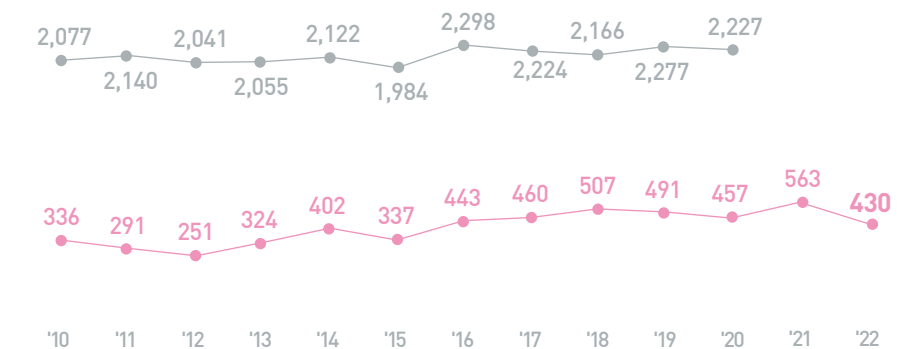
※ ¹⁾Surveillance Epidemiology and End Results (SEER) (2022), ²⁾Cancer registration statistics (2023), ³⁾Samsung Medical Center Cancer patient statistics (2023)

Young Breast Cancer Clinic

Young Breast cancer Clinic (YBC for younger patients) offers in-person multidisciplinary treatment in which several specialists from various departments gather together to provide quick diagnosis and optimal treatment plan for high-risk breast cancer patients under the age of 39. In addition to treating breast cancer, we are committed to supporting family planning (pregnancy, delivery) after the completion of treatment.

◆ Breast cancer patients in Korea (39 years old or younger)

◆ New breast cancer patients of SMC (39 years old or younger)

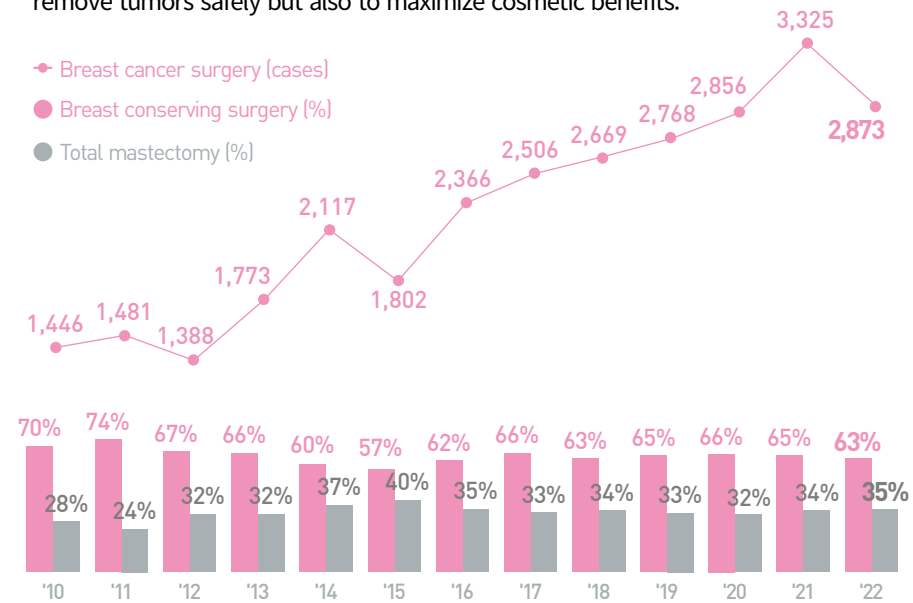


※ Registered SMC breast cancer patients / National Cancer Registry Information

02 Treatment Result

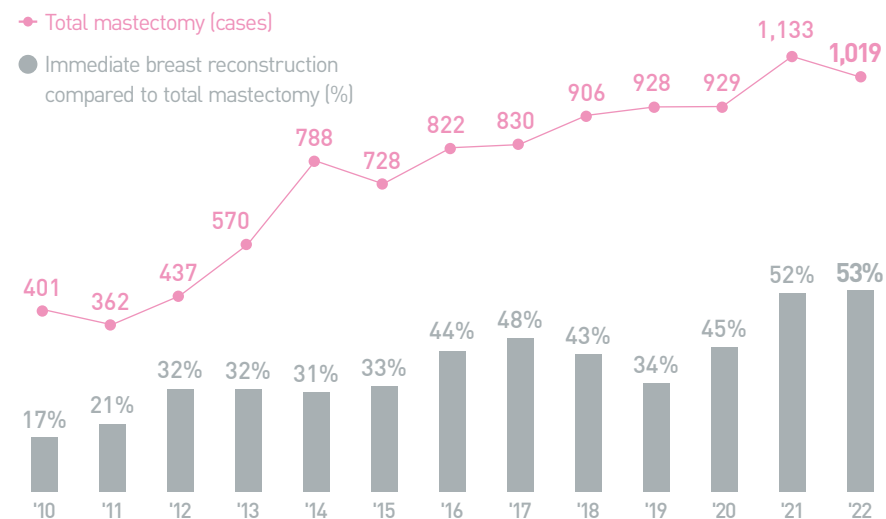
Breast cancer Surgery

The number of breast cancer surgeries continues to increase, and reached 2,870 cases in 2022, of which 63% underwent breast conserving surgery and 35% received total mastectomy. We actively perform oncoplastic surgery not only to remove tumors safely but also to maximize cosmetic benefits.



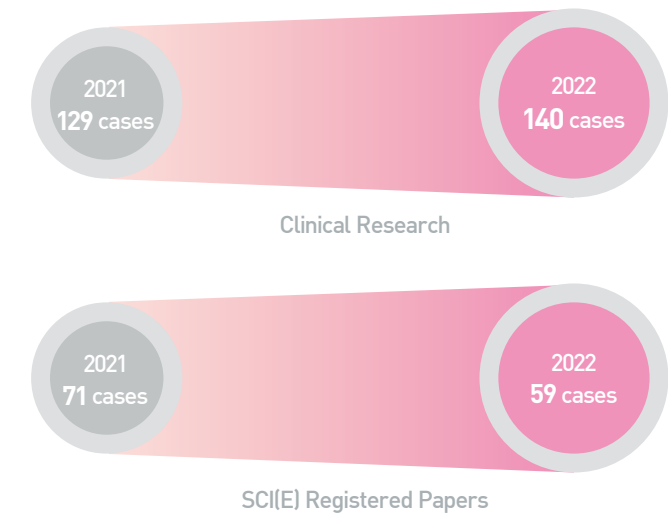
Immediate Breast Reconstruction

The number of patients undergoing total mastectomy and immediate breast reconstruction is on the rise. More than 53% of patients undergoing mastectomy receive immediate breast reconstruction.



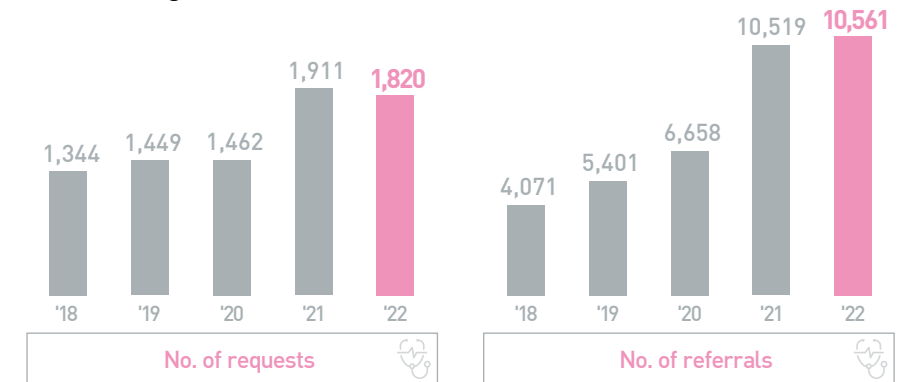
Leading Global Research

We are conducting various clinical trials on new treatments and novel drugs for breast cancer and have published numerous high-impact (SCI/E) papers through active academic research.



Activation of Network with Affiliated Hospitals

We have established a cooperative network system with local medical institutions and are actively interacting with each other. Prompt care and symptom management are achieved through quick but accurate reservation system for the breast cancer patients referred to our hospital from local medical institutions. Patients are referred back to local hospitals for symptom managements, regular examinations, and additional prescriptions. Even the long-term breast cancer survivors who have completed treatment can continue to be managed through our network linkage.

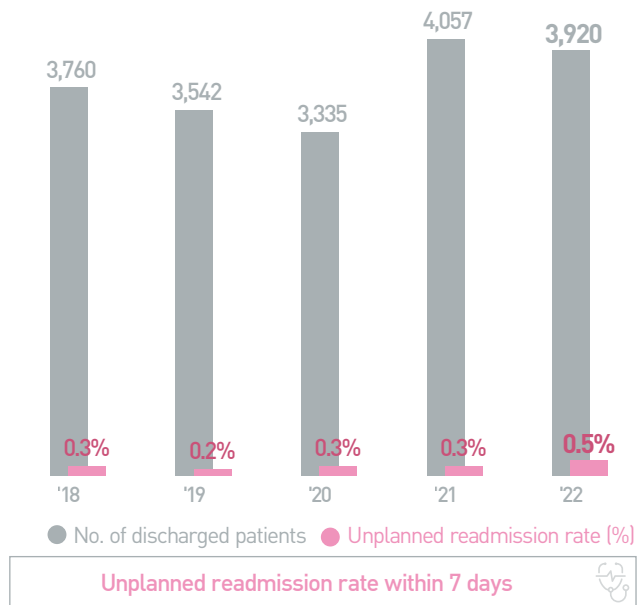
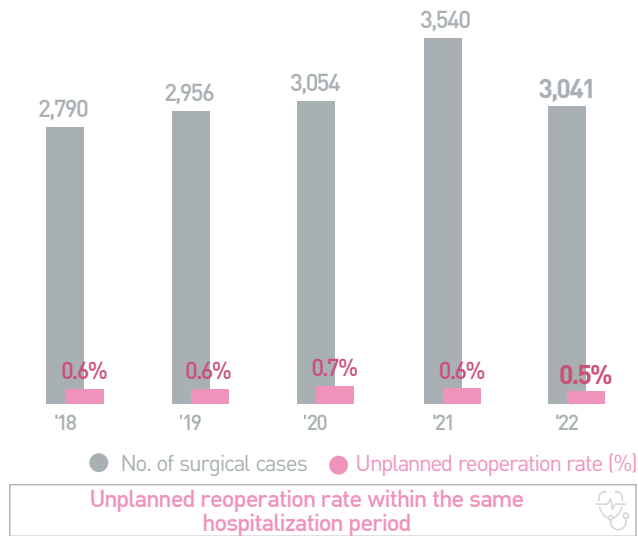


* The number of cases requested and referred through SMC Partners Center due to breast cancer disease (C50, D05 (including subordinates))

03 Quality Management

Quality Management

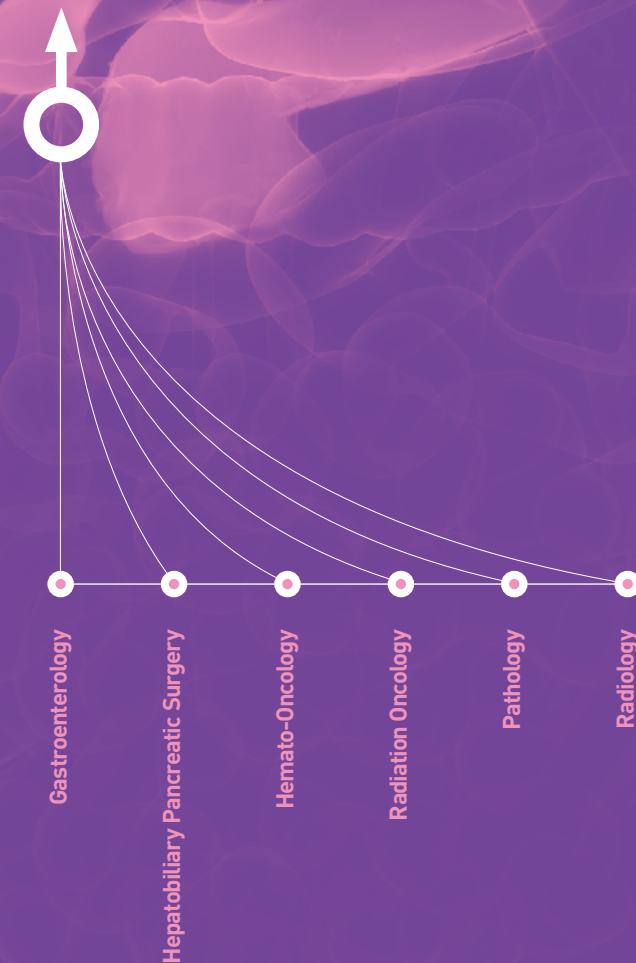
Each year, the Breast Cancer Center evaluates and improves the quality of clinical services to ensure a safe clinical environment and to provide the best treatment.



PANCREATOBILIARY CANCER CENTER

The Pancreatobiliary Cancer Center has been taking the pioneering role in treatment of pancreatic and biliary tract cancer. With endless research endeavors, we develop the best diagnostic and therapeutic methods.

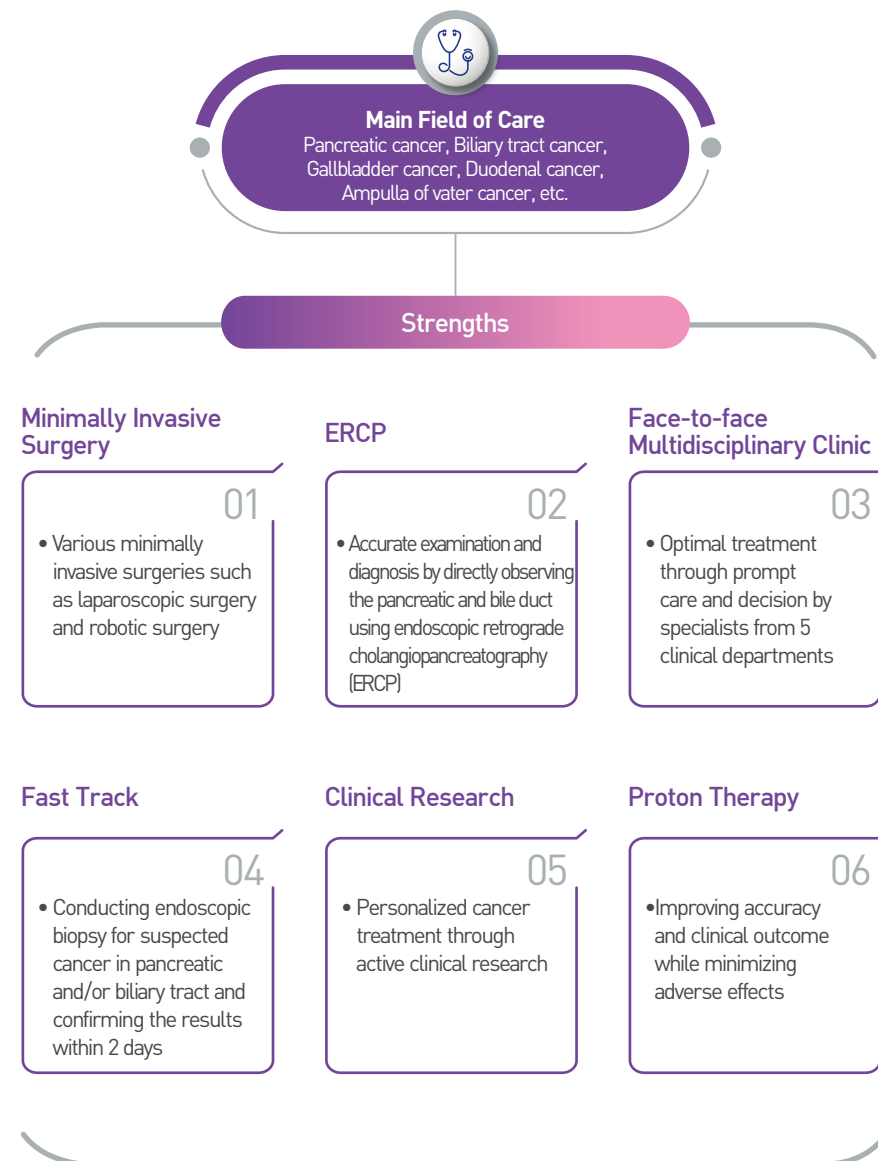
- We are proud to present the world-class treatment outcomes with the best diagnosis and best care.



01 Introduction

General Information

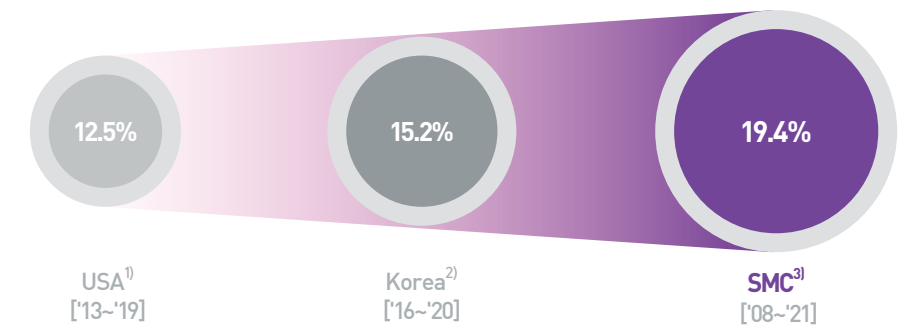
The Pancreatobiliary Cancer Center established a patient-centered care system from diagnosis to treatment through collaborative treatment by specialists with abundant clinical experience and knowledge. Through endoscopic treatment of early stage disease, wide resection for advanced disease, and diagnosis and treatment based on a multidisciplinary approach, we put forward our best effort for early diagnosis and best treatment.



02 Treatment result

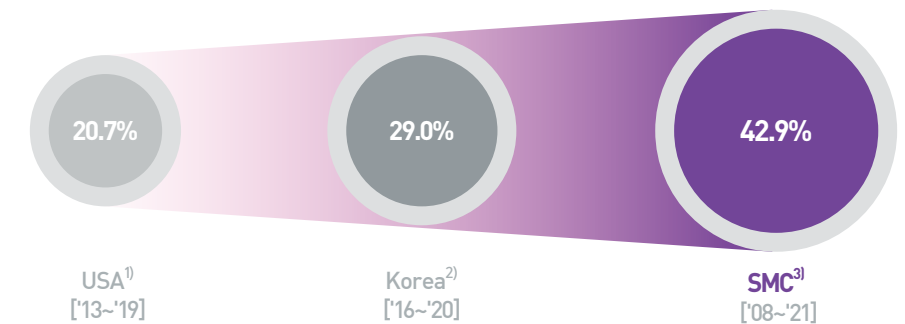
5-year Survival rate, Pancreatic Cancer

Pancreatic cancer is considered as the most tenacious form of malignancy, because it is often discovered at advanced stage. The 5-year relative survival rate of pancreatic cancer patients treated in the Pancreatobiliary Cancer Center is 19.4%, which is an excellent outcome worldwide. Based on the high success rate of surgery, we strive to improve the survival rate by actively combining surgical intervention with chemoradiotherapy.



5-year Survival rate, Gallbladder and Biliary Tract Cancer

The 5-year relative survival rate of gallbladder and biliary tract cancer patients treated in the Pancreatobiliary Cancer Center is 42.9%, which far outperforms the national average.

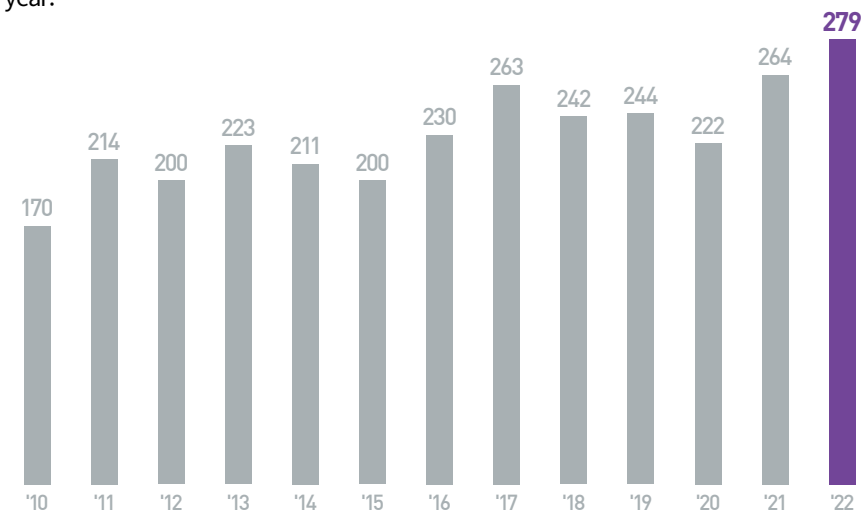


※ ¹⁾ Surveillance Epidemiology and End Results (SEER) (2022), ²⁾ Cancer registration statistics (2023), ³⁾ Samsung Medical Center Cancer patient statistics (2023)

02 Treatment Result

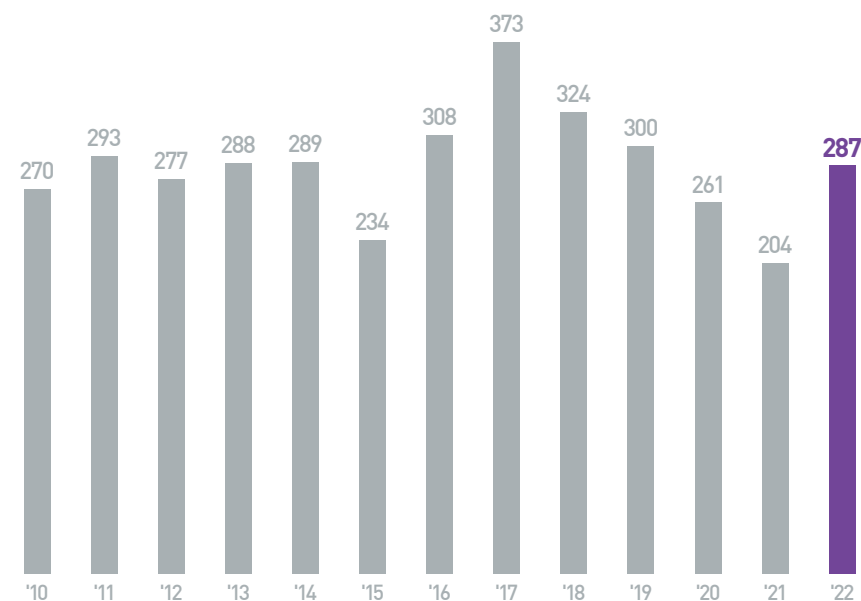
Pancreatic Cancer Surgery

Pancreatic cancer surgery has a large surgical scope and requires extensive operation time. Because the organ produces digestive juice, surgery is rather difficult to perform. We carry out more than 200 cases of pancreatic surgery per year.



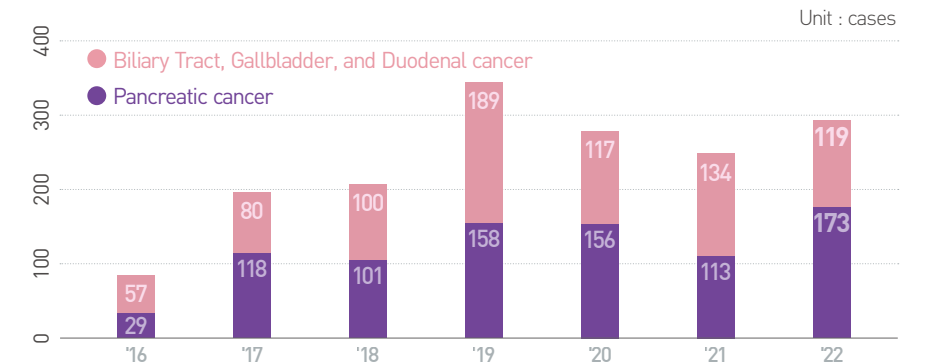
Biliary Tract, Gallbladder, and Duodenum Surgery (including benign)

We perform about 300 cases of gallbladder and biliary tract cancer surgery per year.



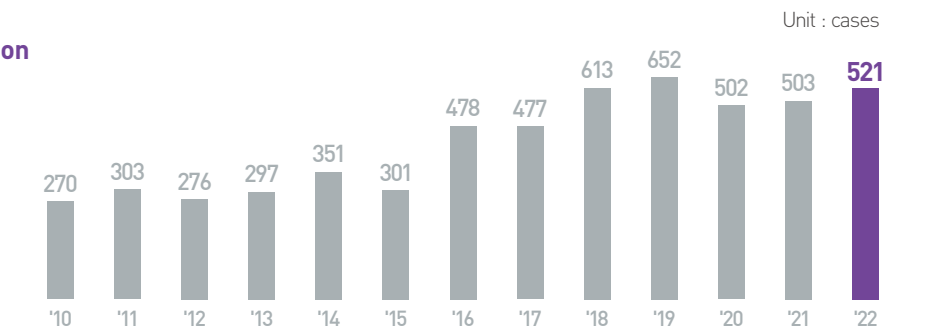
Proton Therapy

Proton therapy started in 2016, and the number of proton therapy patients is increasing every year.



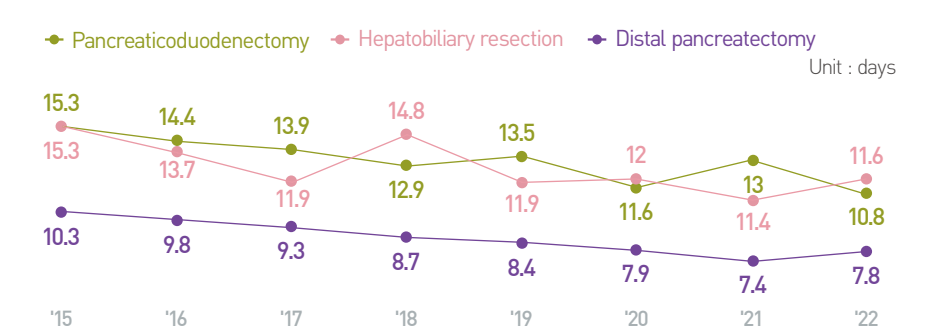
Ultrasound Endoscopic Guided Fine Needle Aspiration (EUS-FNA)

More than 500 EUS-FNA procedures are performed annually, showing a steady increase.



Hospitalization Days after Complicated Surgery

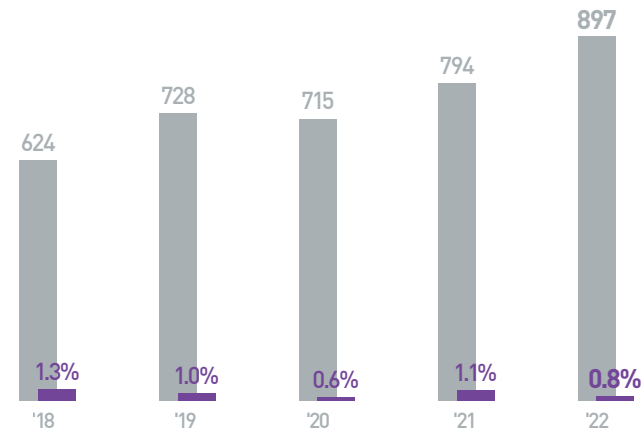
Although pancreatobiliary cancer surgery is complicated, the hospitalization days post-surgery are gradually decreasing due to development of surgical technique, increase in minimally invasive surgery, and complication management. It helps patients return to their daily lives quickly.



03 Quality Management

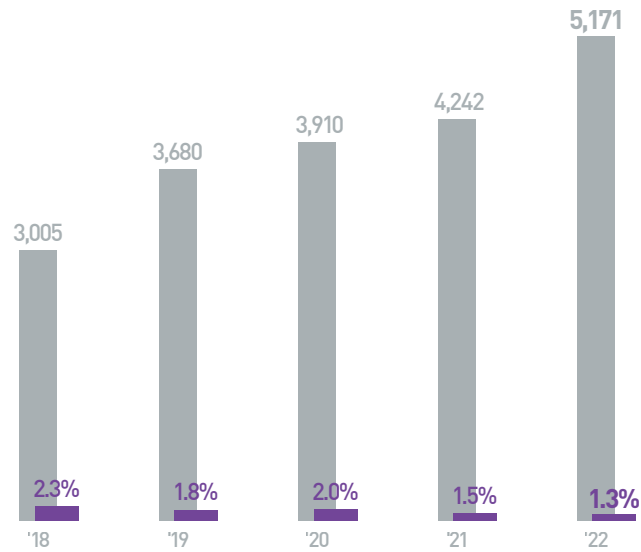
Quality Management

Each year, the Pancreatobiliary Cancer Center evaluates and improves the quality of clinical services to ensure a safe clinical environment and provide best treatment.



● Surgery (cases) ● Unplanned reoperation rate (%)

Unplanned reoperation rate within the same hospitalization period

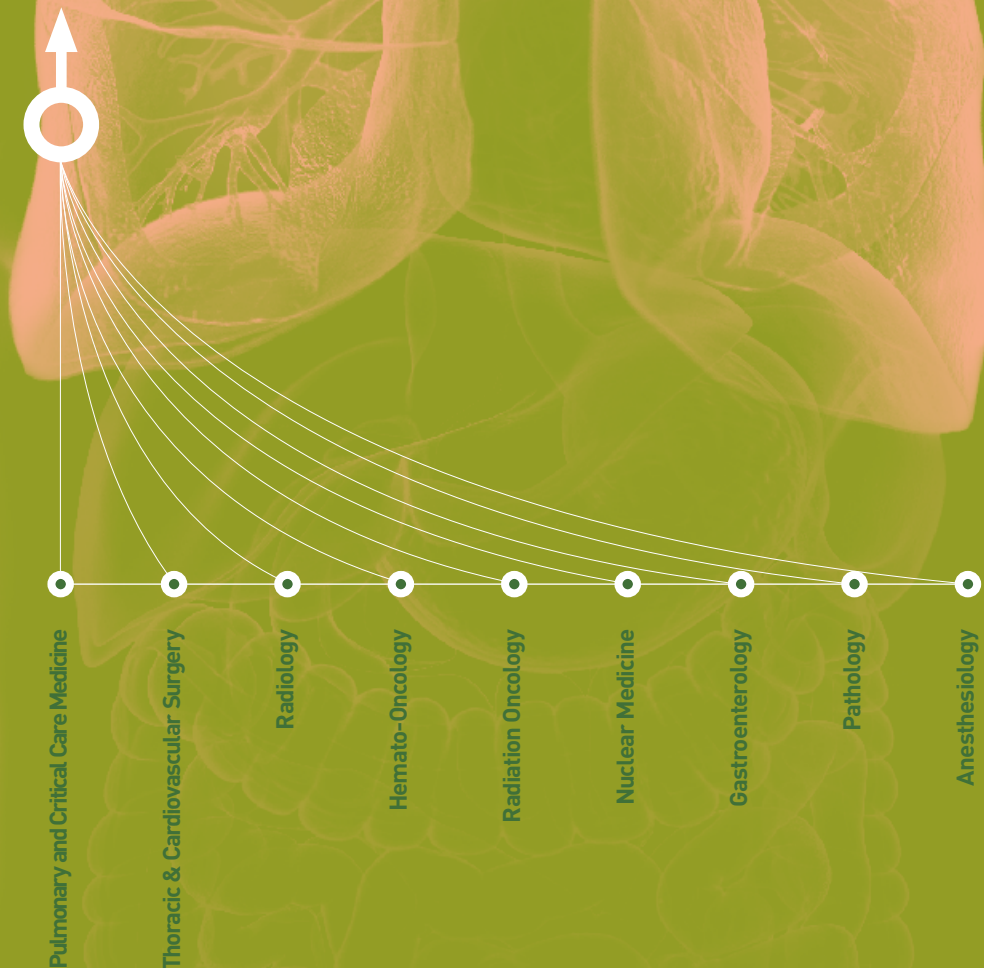


● No. of discharged patients ● Unplanned readmission rate (%)

Unplanned readmission rate within 7 days

LUNG AND ESOPHAGEAL CANCER CENTER

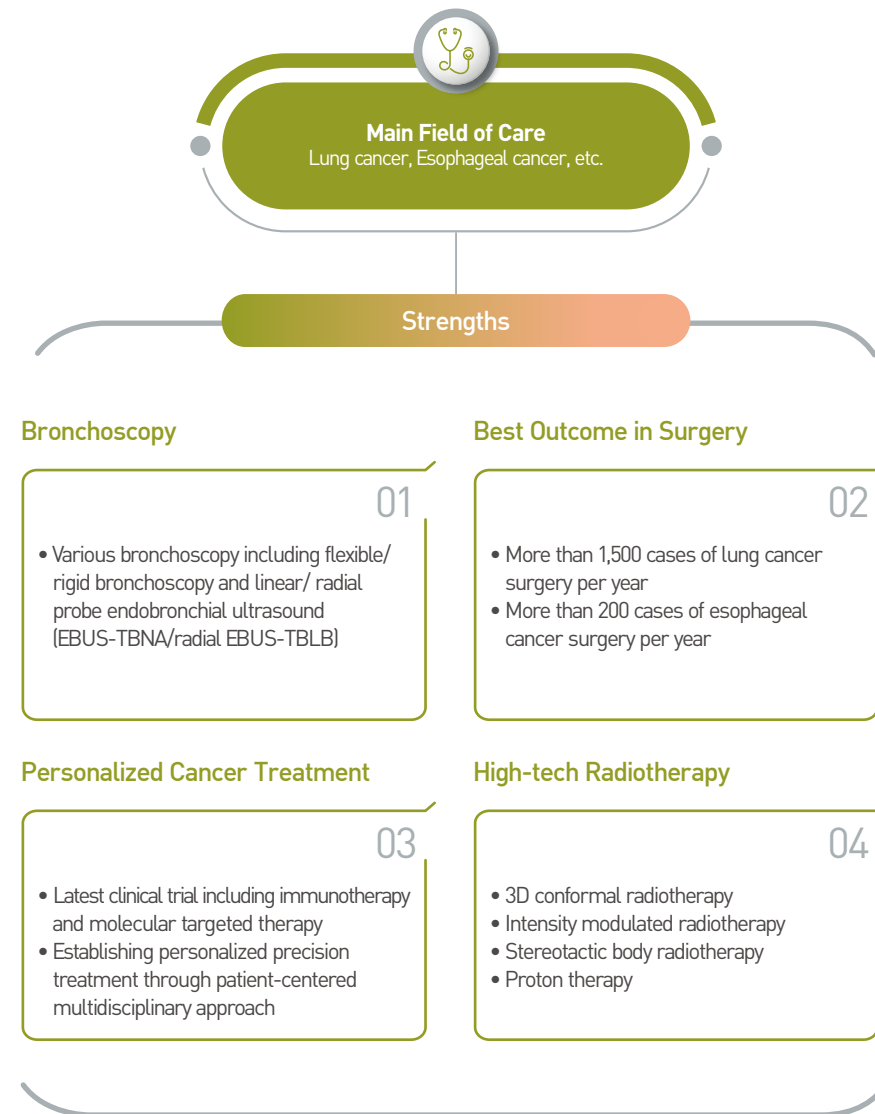
The Lung and Esophageal Cancer Center provides a new paradigm for lung and esophageal cancer management to lead the accurate diagnosis and optimal treatment. We boast the best surgery results in all areas of thoracic surgery, including high-level wide resection of locally advanced tumor and minimally invasive surgery using a thoracoscopy.



01 Introduction

General Information

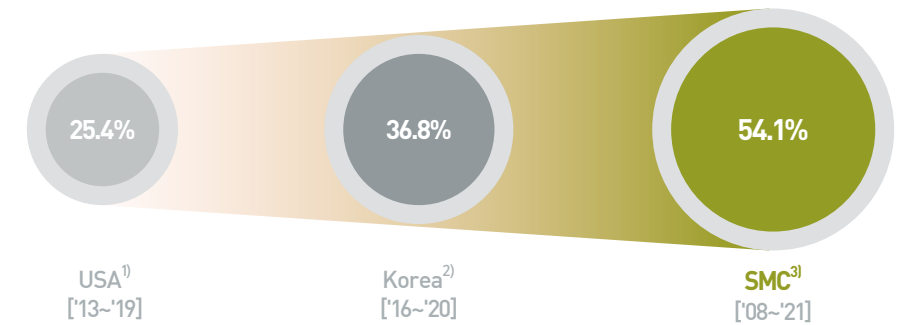
The Lung and Esophageal Cancer Center performs various and comprehensive surgery, including a high-level wide resection of the locally advanced tumor and minimally invasive surgery using a thoracoscopy or robotic thoracoscopy. Recently, “molecular targeted therapy” and “immunotherapy” that manifest anti-cancer effects by blocking certain molecular pathways and unleashing the immune system against cancer have been developed and their applications are being expanded. We lead the latest research and application in this area.



02 Treatment Result

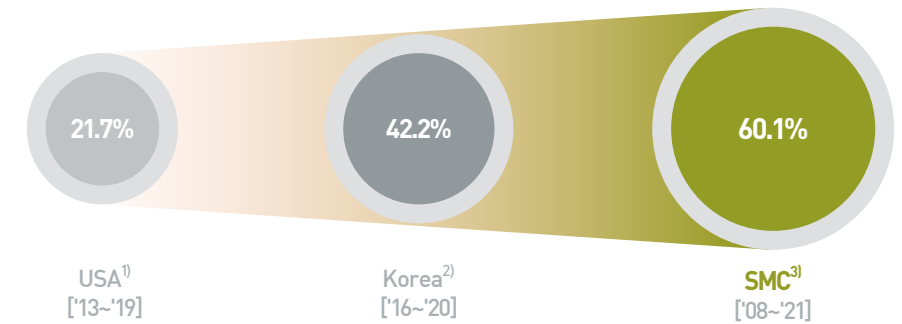
5-year Survival rate, Lung Cancer

The 5-year relative survival rate of patients with lung cancer in SMC is 54.1%, which is the best outcome in the world. We maintain our top position in various metrics such as minimal post-surgery morbidity and mortality rates, short hospitalization periods, and reduced surgical costs.



5-year Survival rate, Esophageal Cancer

The 5-year relative survival rate of patients with esophageal cancer in SMC is 60.1%, which is superior than other cancer hospital.

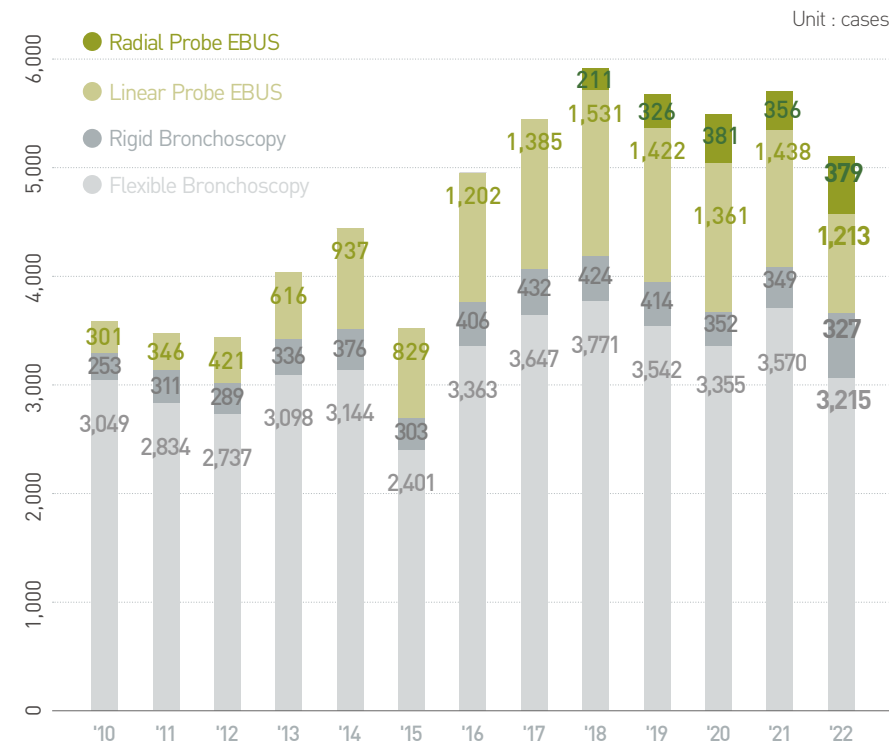


※ ¹⁾ Surveillance Epidemiology and End Results (SEER) (2022), ²⁾ Cancer registration statistics (2023), ³⁾ Samsung Medical Center Cancer patient statistics (2023)

02 Treatment Result

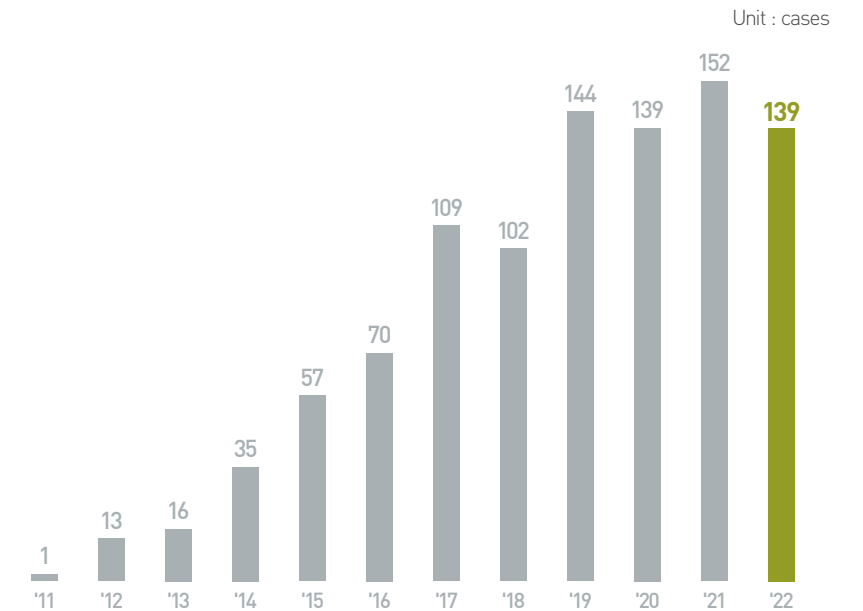
No. of Bronchoscopic Procedures

More than 3,000 cases of flexible bronchoscopy and 370 cases of rigid bronchoscopy are performed annually. Over 1,700 cases of endobronchial ultrasound are performed every year.



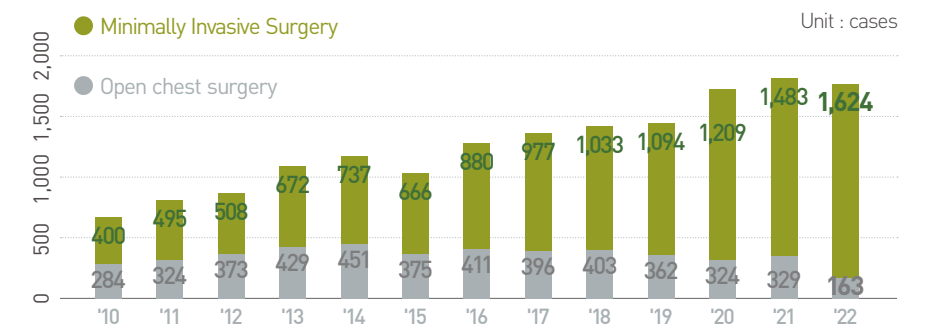
No. of Endoscopic Dissection for Early Esophageal cancer

More than 130 cases of endoscopic submucosal dissection (ESD) are performed annually for patients with early stage esophageal cancer.



No. of Radical Surgery for Lung cancer

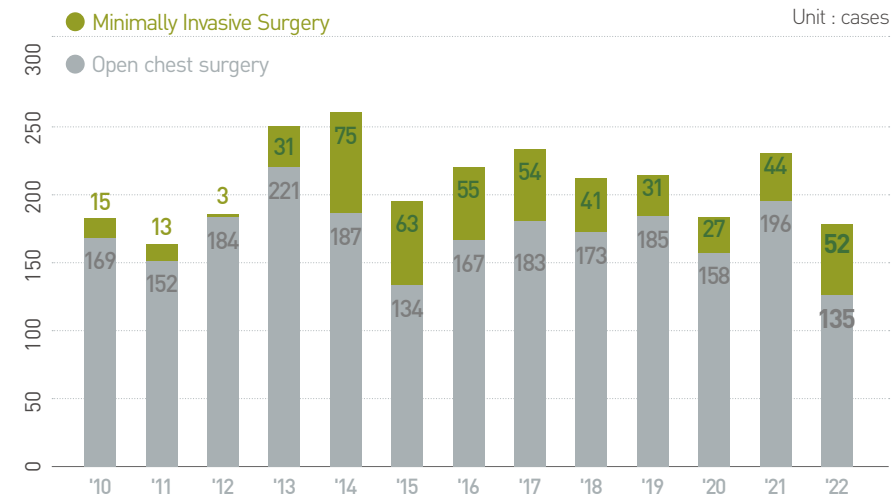
The Lung and Esophageal Cancer Center performs approximately 1,600 cases of radical surgery per year. The proportion of minimally invasive surgery (video-assisted thoracic surgery) is greater than 80%.



02 Treatment Result

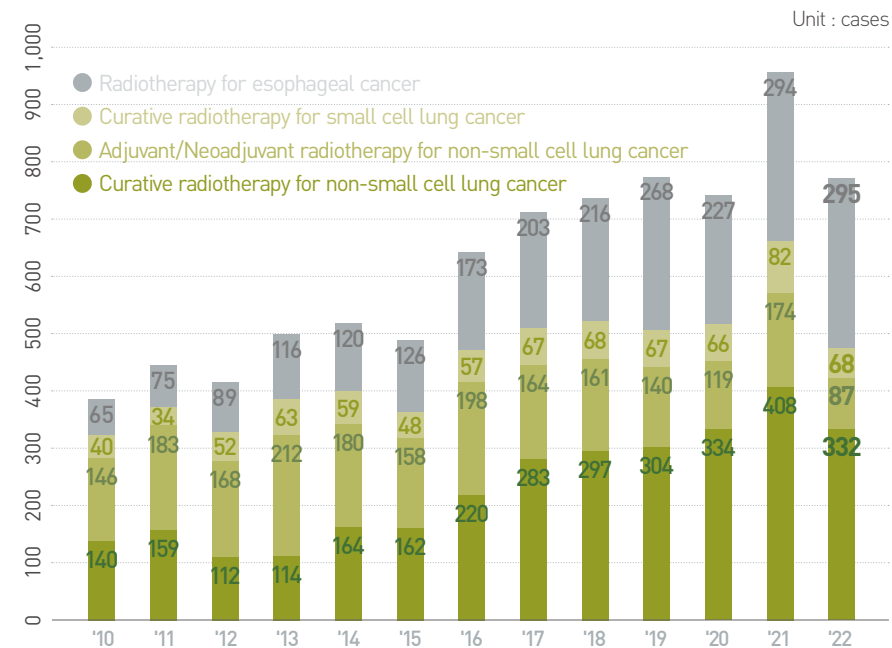
No. of Radical Surgery for Esophageal cancer

We perform more than 200 cases of radical resection and reconstruction surgery per year.



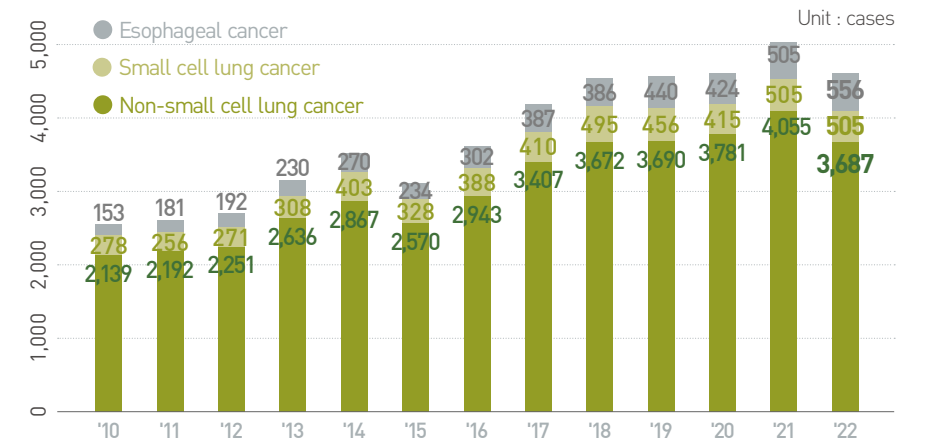
No. of Radiotherapy

About 330 cases of non-small cell lung cancer and more than 70 cases of small cell lung cancer are being treated with radical radiotherapy annually. For esophageal cancer, more than 260 cases of radiotherapy are performed annually.



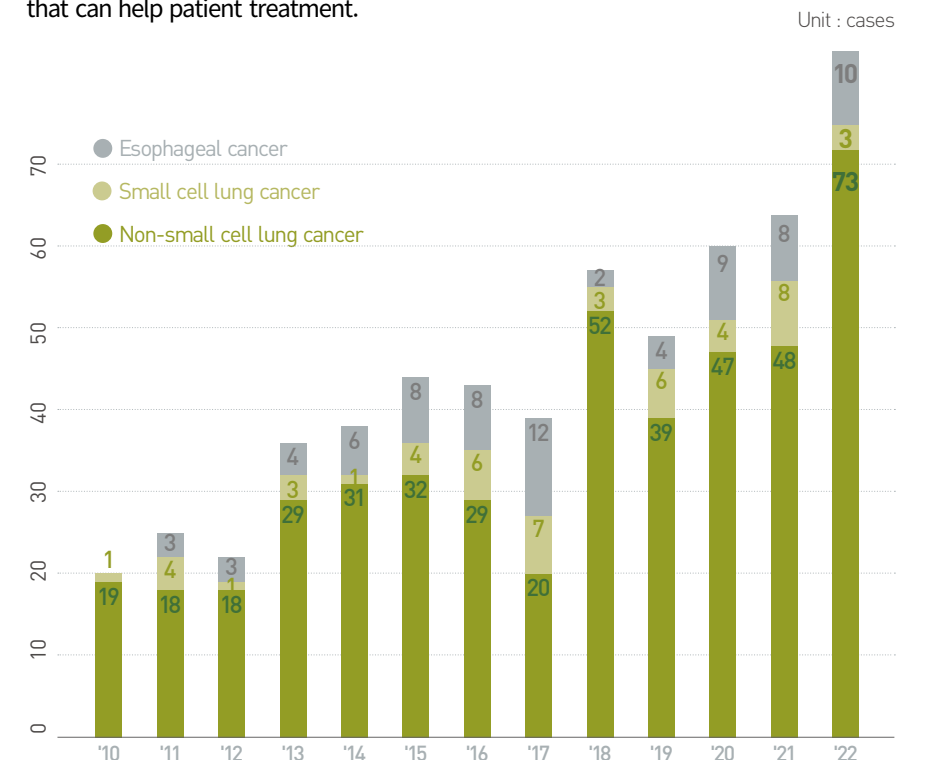
No. of Chemotherapy

About 3,400 cases for non-small cell lung cancer, about 470 cases for small cell lung cancer, and over 460 cases for esophageal cancer are being treated annually.



No. of Clinical Trials

The Lung and Esophageal Cancer Center is actively conducting various research that can help patient treatment.

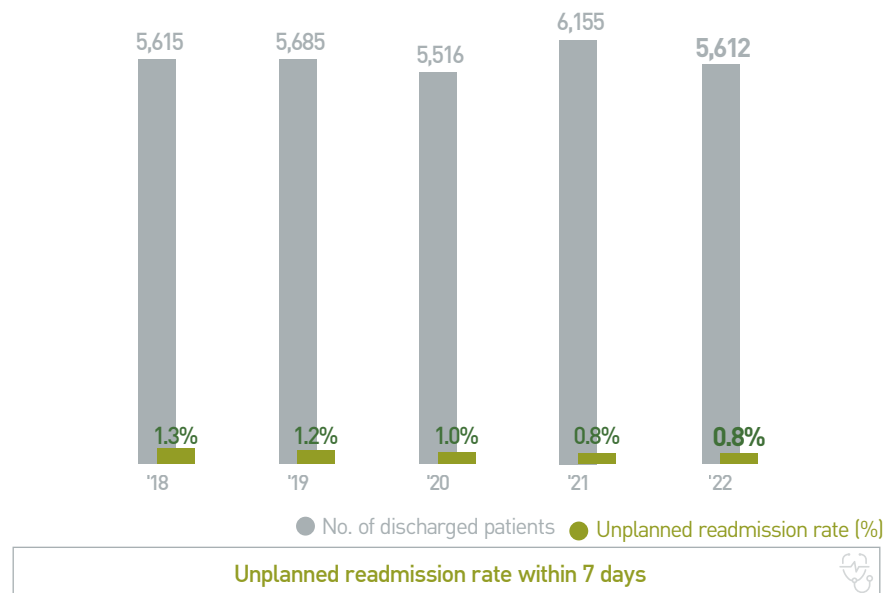


03 Quality Management

Quality Management

Each year, the Lung and Esophageal Cancer Center evaluates and improves the quality of clinical services to ensure a safe clinical environment and provide best treatment.

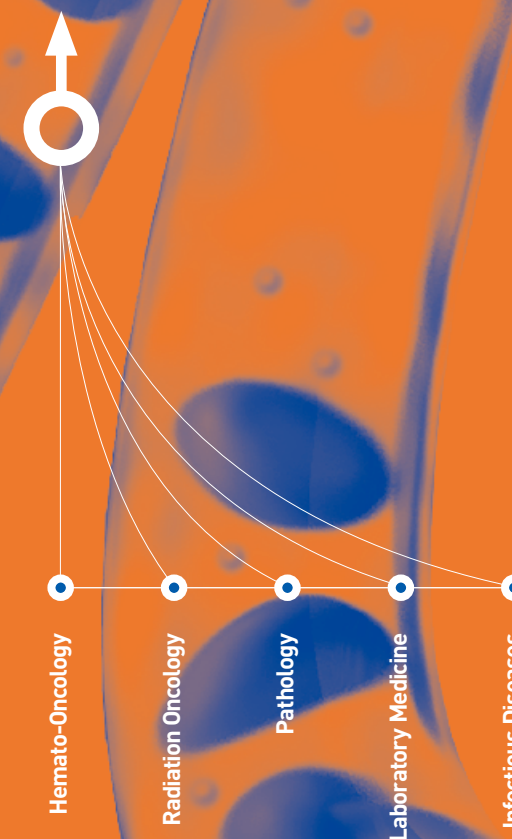
| '08 | '09 | '10 | '11 | '12 | '13 | '14 | '15 | '16 | '17 | '18 | '19 | '20 | '21 | '22 |
|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Mortality within 30 days after radical primary lung cancer surgery (2008-2022) | | | | | | | | | | | | | | |
| 1.6% | 1.2% | 0.4% | 0.7% | 0.3% | 0.5% | 0.4% | 0.6% | 0.3% | 0.7% | 0.0% | 0.3% | 0.2% | 0.1% | 0.0% |
| Mortality within 30 days after radical primary esophageal cancer surgery (2008-2022) | | | | | | | | | | | | | | |
| 0.0% | 0.0% | 0.5% | 0.0% | 0.5% | 0.0% | 0.8% | 1.0% | 0.5% | 0.4% | 0.0% | 0.0% | 0.5% | 0.4% | 0.0% |
| Mortality within 30 days after surgery | | | | | | | | | | | | | | |



HEMATOLOGIC MALIGNANCY CENTER

The Hematologic Malignancy Center aims to maintain its position as the best in Asia by providing the best treatment.

- We deliver the best treatment outcome using our extensive experience in hematopoietic stem cell transplantation.
- We are proud of sustaining the best treatment outcome for lymphoma in Korea.

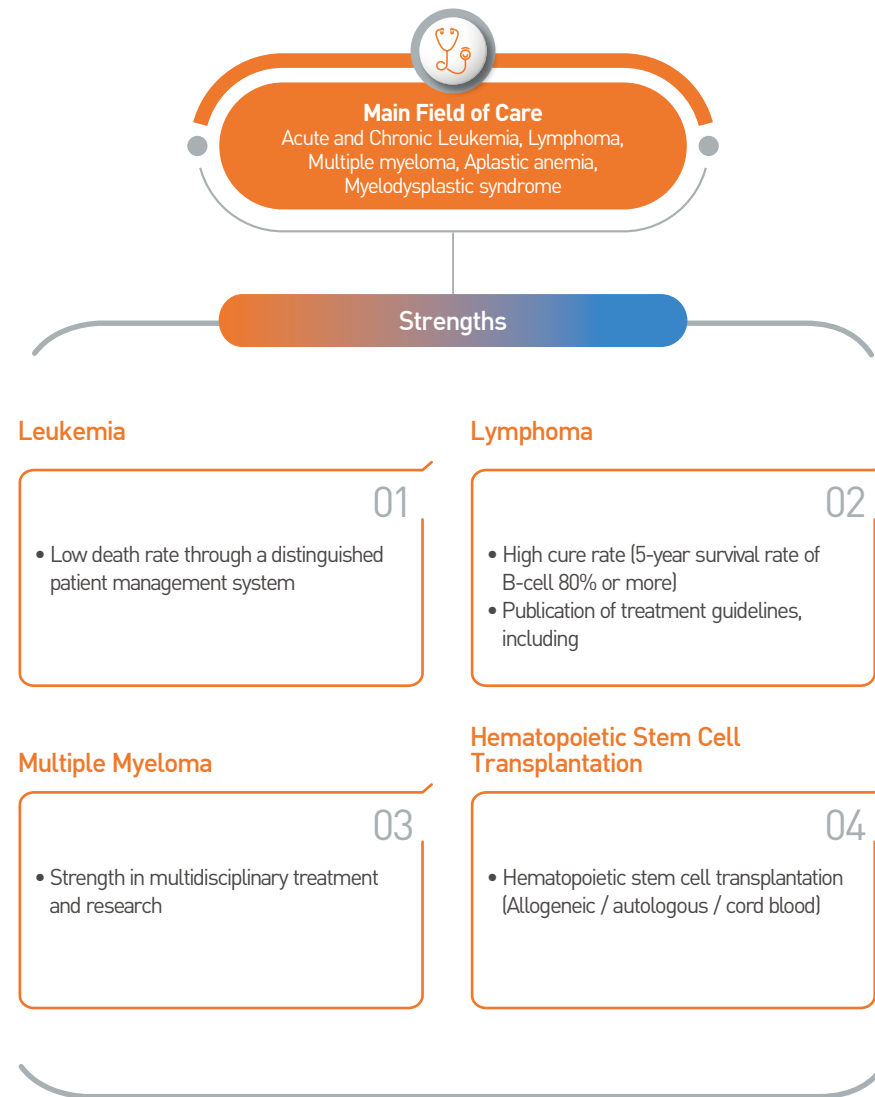


01

Introduction

General Information

Hematologic Malignancy Center provides patients with the highest-level care through multidisciplinary collaboration. In particular, we are actively participating in international clinical researches including early clinical researches, to introduce the latest drugs that are not available yet in Korea.

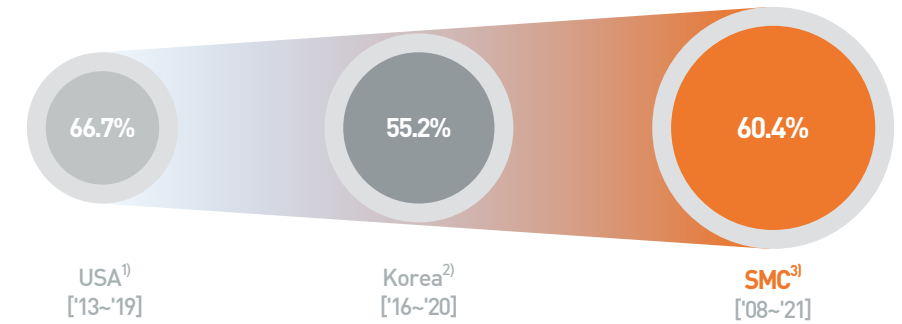


02

Treatment Result

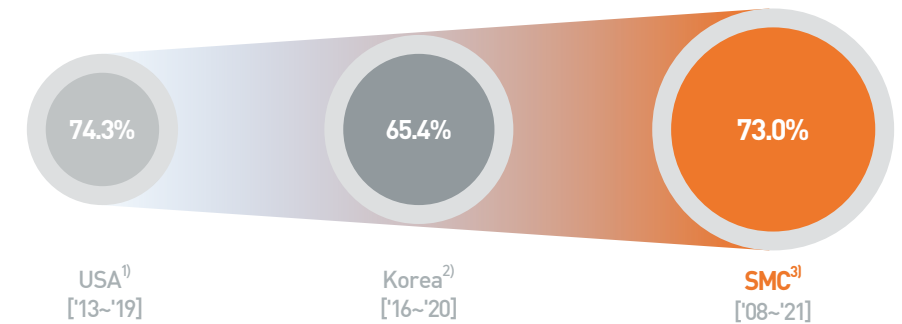
5-year Survival rate, Leukemia

The 5-year relative survival rate of leukemia patients treated at the Hematologic Malignancy Center is 60.4%, which is an excellent outcome.



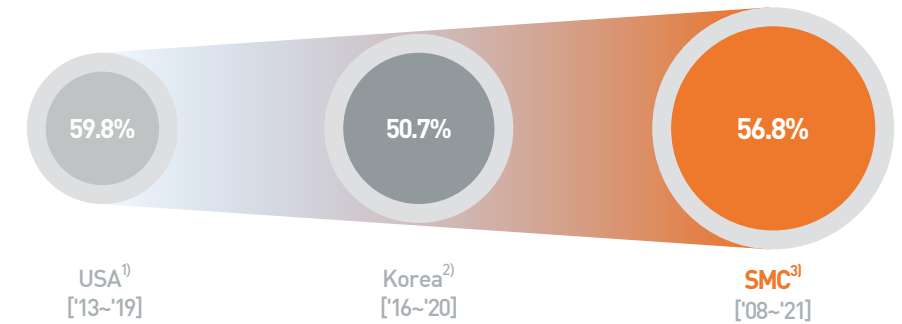
5-year Survival rate, Non-Hodgkin Lymphoma

The 5-year relative survival rate of non-Hodgkin lymphoma is 73.0%, which is comparable to the world standards.



5-year Survival rate, Multiple Myeloma

The 5-year relative survival rate of multiple myeloma patients is 56.8%.

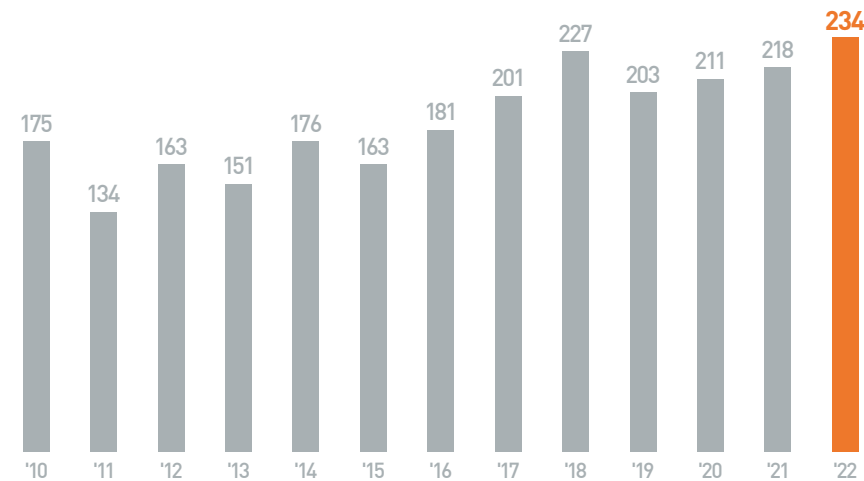


※ ¹⁾ Surveillance Epidemiology and End Results (SEER) (2022), ²⁾ Cancer registration statistics (2023), ³⁾ Samsung Medical Center Cancer patient statistics (2023)

02 Treatment Result

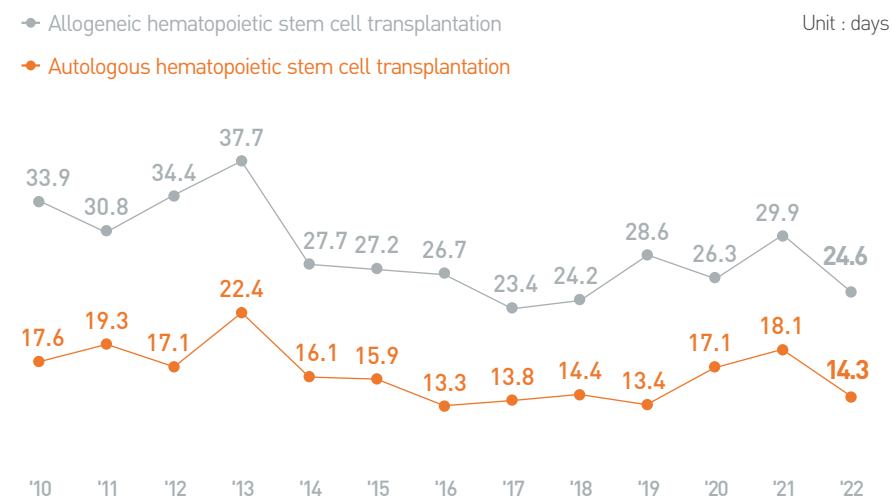
Hematopoietic Stem Cell Transplantation (HSCT)

We have rich experience in HSCT, performing about 200 cases per year. Our nurses who specialized in oncology and who trained as transplantation coordinators, inpatient and outpatient nurses, and research nurses provide the highest level of nursing services.



Hospitalization Days of HSCT Patients

We provide high quality medical care based on the standard guideline. The duration of hospitalization is about 26 days for allogeneic hematopoietic stem cell transplantation, and about 17 days for autologous hematopoietic stem cell transplantation.



PROTON THERAPY CENTER

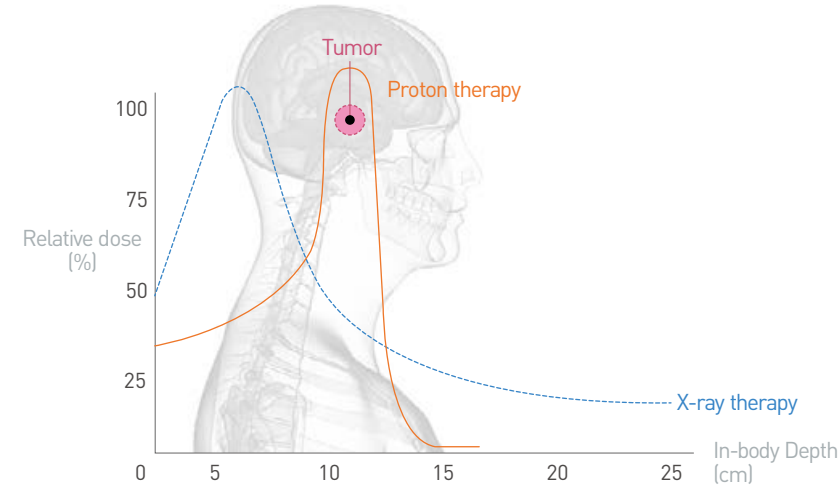
The Proton Therapy Center opens a new horizon for cancer treatment through next-generation radiotherapy that goes beyond the limits of conventional radiotherapy.

- We deliver a new hope with the most advanced proton therapy.

01 Introduction

Features of Proton Therapy

The Proton Therapy Center provides the most advanced, next-generation radiotherapy. By utilizing the unique characteristic of the proton beam, the Bragg peak (a phenomenon that occurs when a proton beam penetrates the human body and reaches the cancer tissues; it deposits the most energy in the target location and immediately stops propagation), we can improve the accuracy and effectiveness of treatments and minimize adverse effects.

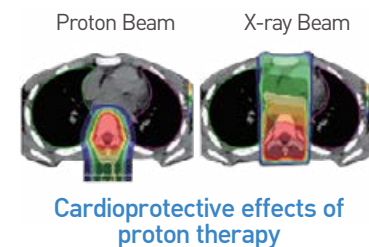


Strengths of Proton Therapy

Higher accuracy and effectiveness with lower side effects.

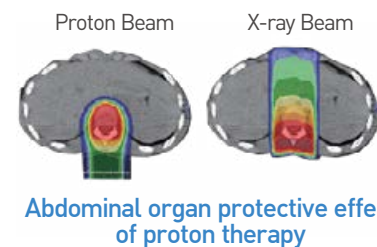
Reducing adverse effects and risks of secondary cancer

- Reducing adverse effects and risks of secondary cancer by minimizing radiation exposure to the surrounding normal tissues



Safe re-irradiation

- Compared to the conventional X-ray therapy, proton therapy enables relatively safe re-irradiation.



Differentiated Treatment

We provide accurate treatment through innovative technology and personalized treatment based on the patient's characteristics.

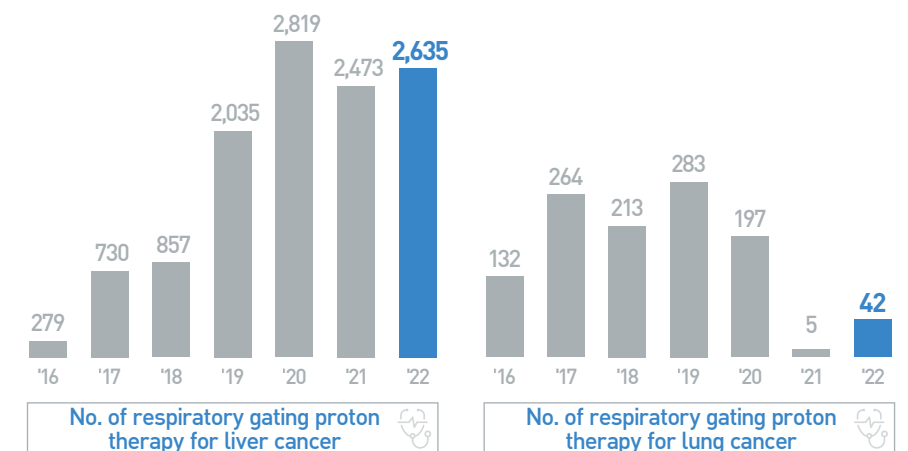
- 1) We provide the optimal proton beam module based on the patient's condition.

| Wobbling | Scanning |
|---|--|
| Suitable for treatment of organs that move a lot due to respiration or treatment of large areas | Suitable for patients who require precise treatment due to the complexity of the tumor shape and its close proximity to critical normal organs |

- 2) By using a 360-degree rotating gantry equipped with a cone-beam CT for the first time in South Korea, the accuracy of dose delivery has been further improved.



- 3) The respiratory gating technique can minimize damage to surrounding tissues during proton therapy of tumors that move during respiration, such as liver cancer and lung cancer. Many patients with liver cancer or lung cancer are receiving precise proton therapy through respiratory gating proton therapy.

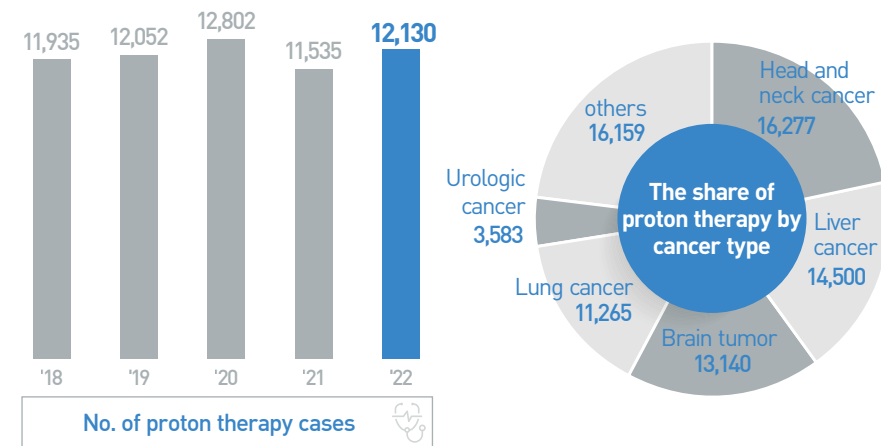


02

Treatment Result

Patients Treated by Cancer type

The number of patients treated with proton therapy is steadily increasing, with nearly 50 patients receiving proton therapy performed every day. By cancer type, head and neck cancer (21.9%) accounts for the highest proportion of cases, followed by liver cancer (18.1%), brain tumors (17.8%), and lung cancer (14.7%).



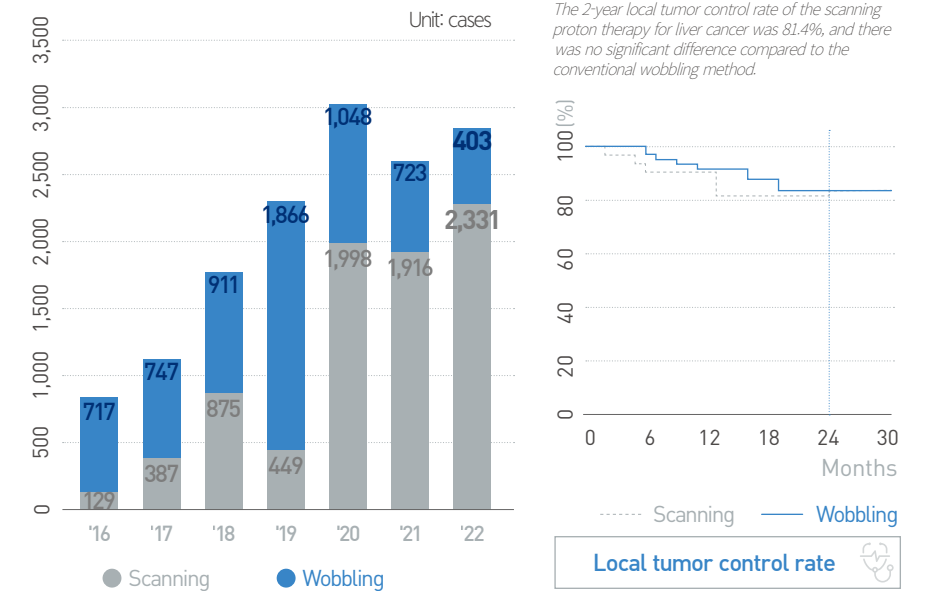
Proton Therapy Quality Assurance status

Prior to starting proton therapy, pre-treatment beam delivery quality assurance is conducted for each patient, ensuring device quality by measuring the error between the calculated and measured doses.



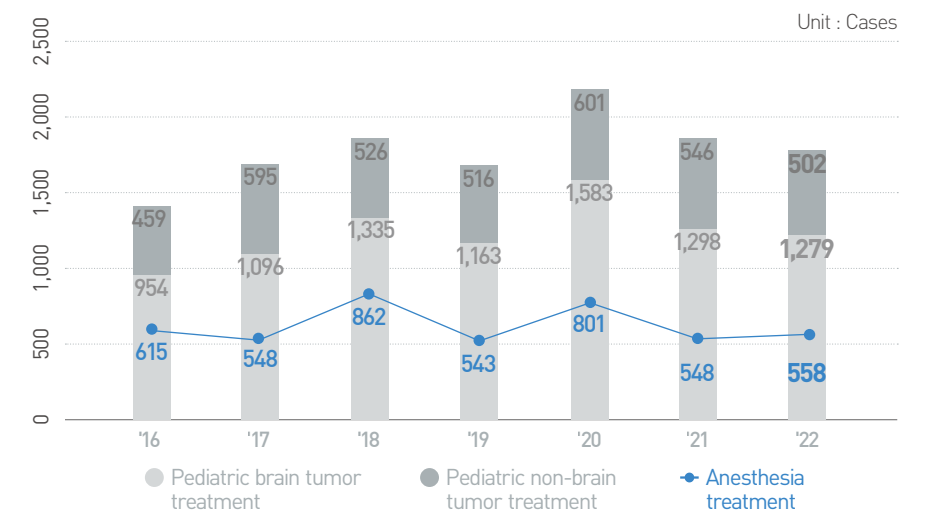
Proton Therapy for Liver Cancer

We are the world's first institution to have achieved excellent treatment outcomes for scanning proton therapy in moving liver cancer. Currently, we have expanded and widely applied the respiratory gating proton therapy with scanning modules to treat liver cancer with complex shapes.



Proton Therapy for Pediatric Cancer

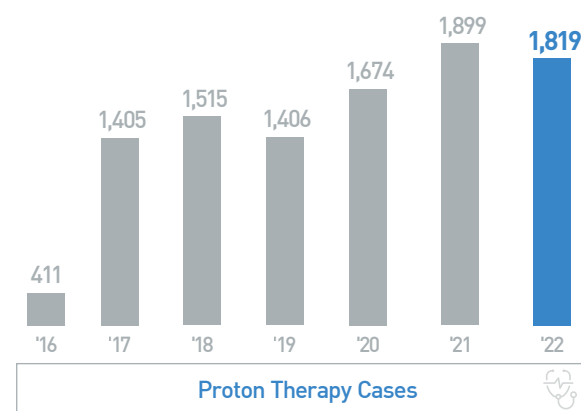
The application of proton therapy for pediatric cancer patients is increasing steadily. In addition, annually, more than 500–800 cases of children who have difficulty cooperating during the procedure receive proton therapy under anesthesia.



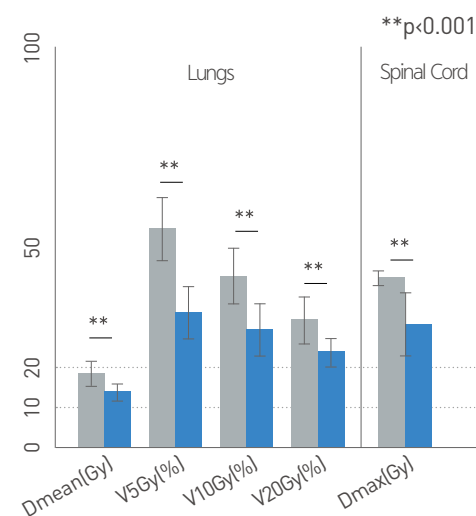
02 Treatment Result

Proton Therapy for Lung Cancer

Proton therapy in advanced lung cancer results in similar local control rates to intensity-modulated radiation therapy and a significant reduction in radiation dose to the lungs.



● Intensity-Modulated Radiation Therapy (IMRT) ● Proton Therapy

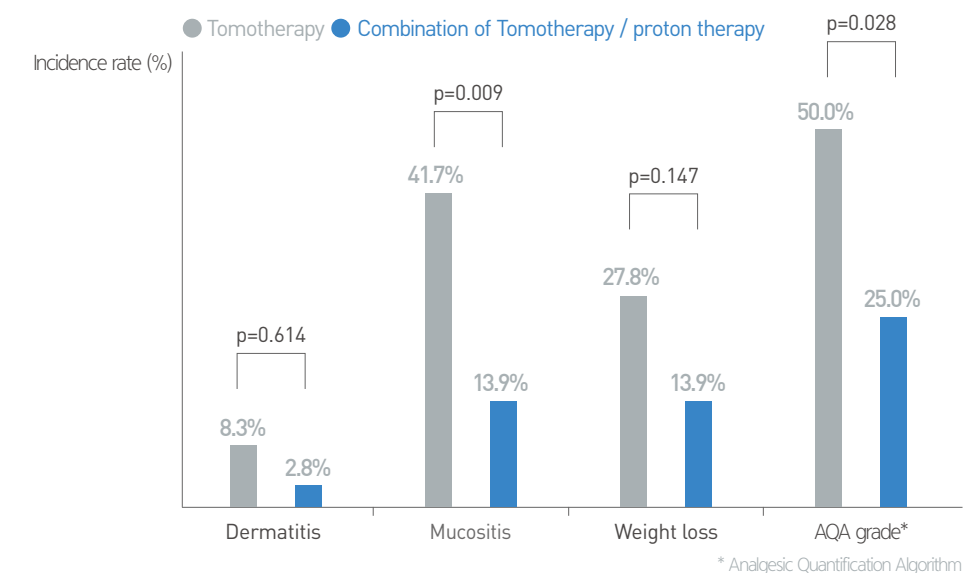
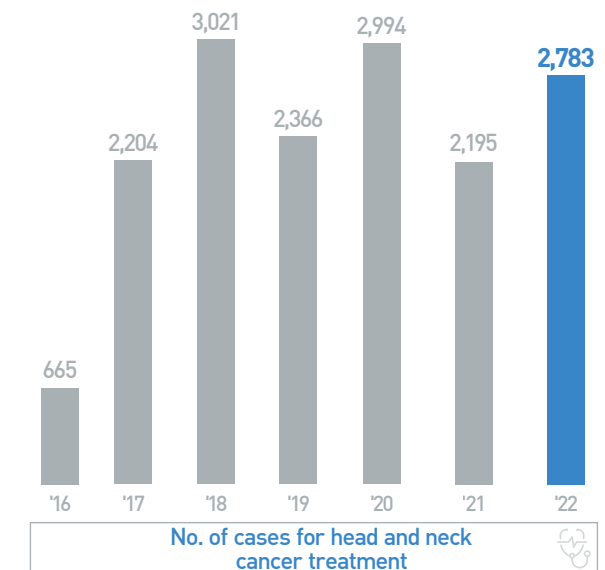


Comparison of radiation doses to the lungs and spinal cord in the planning of IMRT and proton therapy

Kim et al, Cancers 2021

Proton Therapy for Head and Neck Cancer

In oropharyngeal cancer, the rate of adverse events for Tomotherapy combined with proton therapy was significantly reduced compared to that for Tomotherapy alone.



Comparison of treatment side effects between Tomotherapy alone and Tomotherapy combined with proton therapy

Yoon et al, Cancers 2021

RARE CANCER CENTER

The Rare Cancer Center leads the integrated solution for rare cancer treatment. We will continue to provide our best research and treatment at the forefront of rare cancer care in Korea.

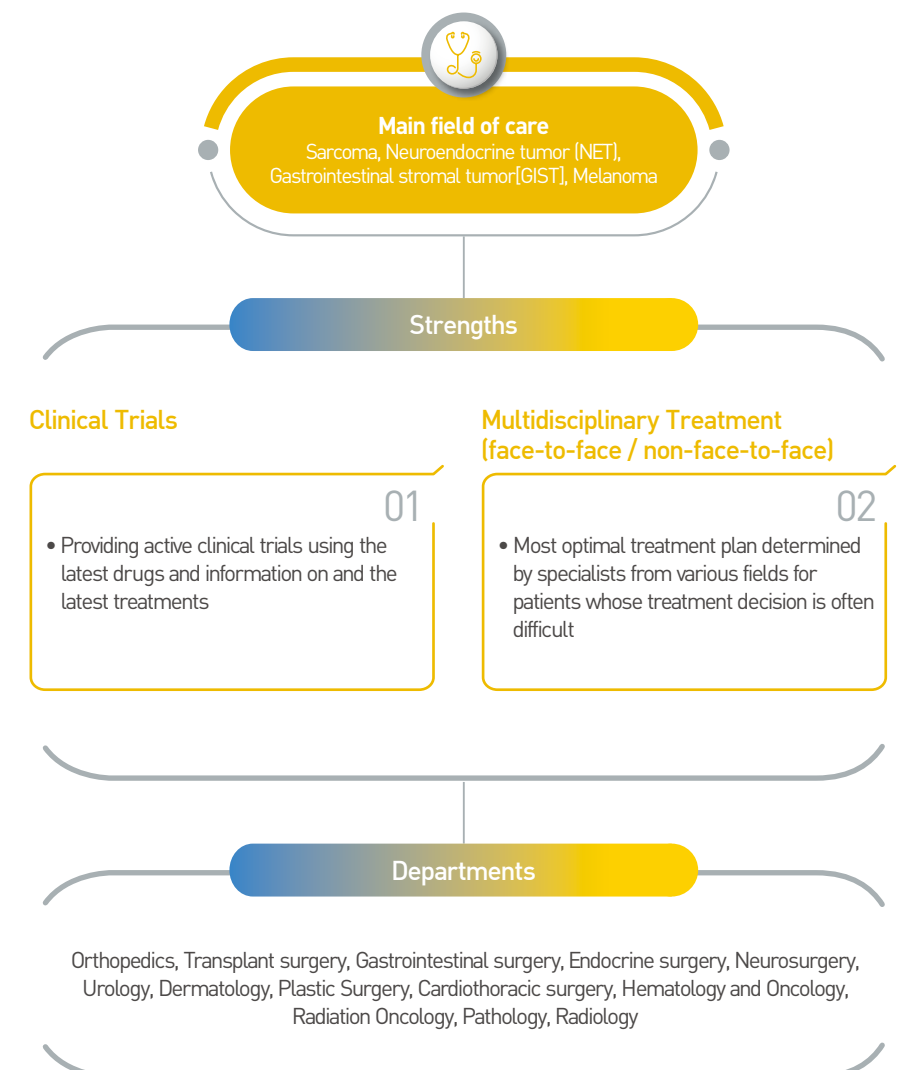
- We treat various types of cancer.
- We provide optimal care to patients through a multidisciplinary approach.

01

Introduction

General Information

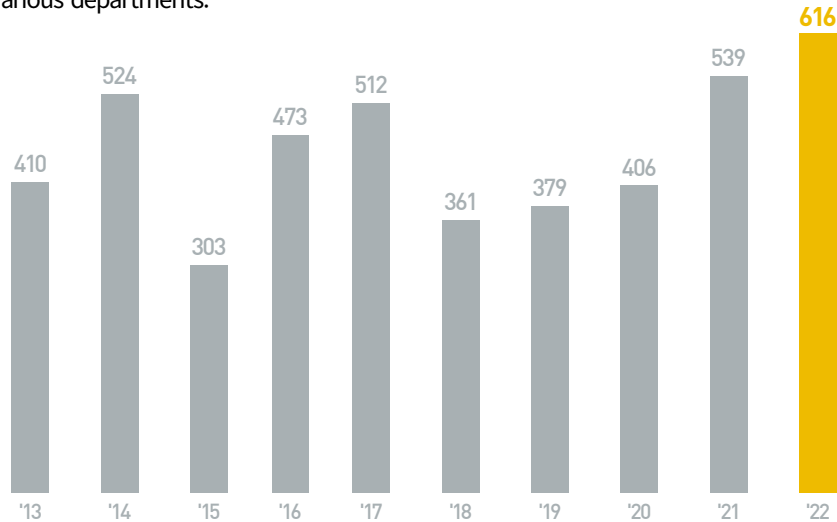
The Rare Cancer Center is striving to treat rare cancers, which have a low incidence rate but are wide variety and have diverse natures that make accurate diagnosis difficult, with most being intractable diseases. We will continue to do our best to treat rare cancers through the systematic multidisciplinary treatment by professional medical faculties and the leading treatment through clinical trials.



01 Introduction

Multidisciplinary Treatment

The Rare Cancer Center takes the lead in accurate diagnosis and prompt, systematic treatment through multidisciplinary treatment by specialists from various departments.



Clinics



Sarcoma Clinic

| | |
|----------------|---|
| Target | Confirmed or suspicious sarcoma patients |
| Schedule | Monday |
| Treatment type | Outpatients/multidisciplinary treatment |
| Features | Discussing diagnosis, treatment plan, and prognosis of disease through weekly multidisciplinary discussions for patients whose treatment decision is clinically difficult |



Neuroendocrine Tumor Clinic

| | |
|----------------|--|
| Target | Confirmed neuroendocrine tumor patients |
| Schedule | Frequently |
| Treatment type | Outpatient treatment |
| Features | Managing the quality of life by combining accurate and prompt diagnosis and treatment, and management of diet, stress, and pain for symptom relief |



Melanoma Clinic

| | |
|----------------|--|
| Target | Suspected/confirmed melanoma patient |
| Schedule | Wednesday |
| Treatment type | Outpatient treatment |
| Features | Simultaneous opening of outpatient treatment for melanoma diagnosis. A same-day consultation system between departments is in place. |



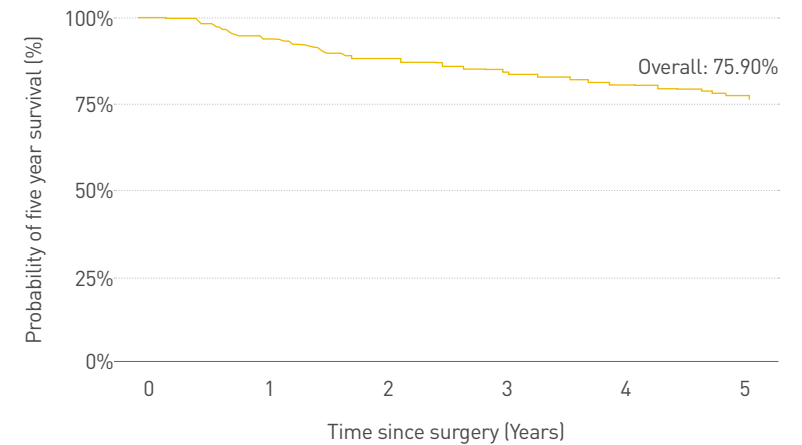
Gastrointestinal Stromal Tumor Clinic

| | |
|----------------|---|
| Target | Gastrointestinal stromal tumor patient who requires multifaceted treatment depending on lesion site and its progress status |
| Schedule | Whenever necessary |
| Treatment type | Outpatients/ multidisciplinary treatment |
| Features | Reduced number of patient visits. Accurate diagnosis and timely treatment |

02 Treatment Result

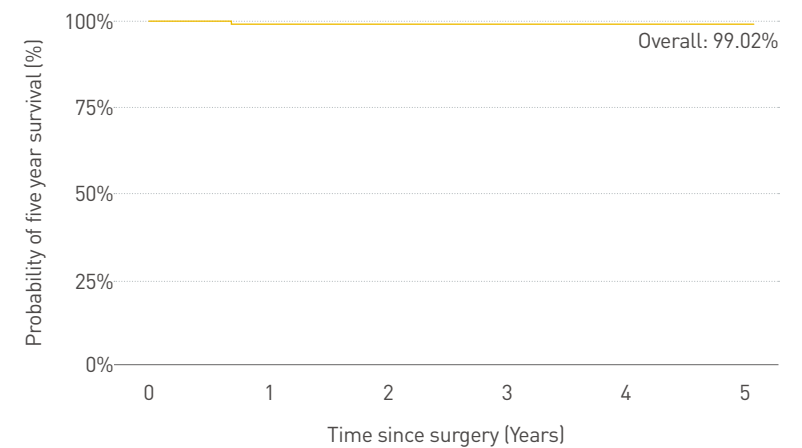
5-Year Observed Survival rate for Bone and Soft tissue Sarcoma

The 5-year observed survival rate for bone and soft tissue sarcoma from 2008 to 2021, among patients who underwent surgery for bone and soft tissue sarcoma at the Rare Cancer Center, is 75.9%.



5-Year Observed Survival rate* for Borderline Tumors

The 5-year observed survival rate for borderline tumors from 2008 to 2021, among patients who underwent surgery for borderline tumors at the Rare Cancer Center, is 99.0%.

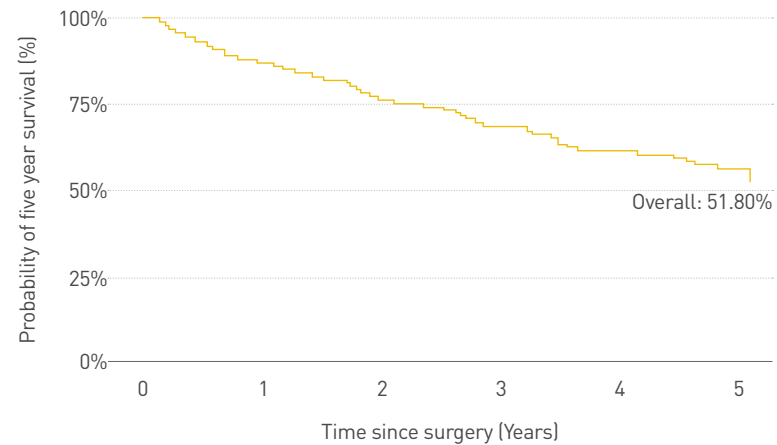


* Observed survival rate is the calculated value representing the probability of a patient's survival when tracked for up to 5 years after diagnosis using the Kaplan-Meier method in survival analysis

02 Treatment Result

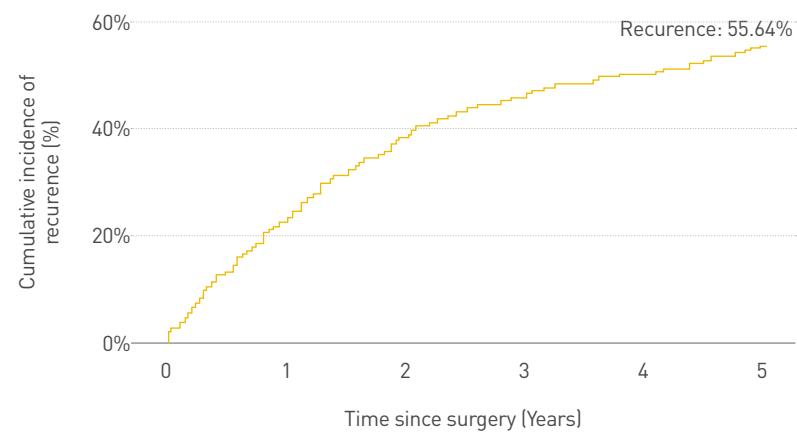
5-Year Observed Survival rate for Retroperitoneal Sarcoma

The 5-year observed survival rate for retroperitoneal sarcoma from 2008 to 2021, among patients who underwent surgery for retroperitoneal sarcoma at the Rare Cancer Center, is 51.8%.



5-Year Recurrence rate for Retroperitoneal Sarcoma

The 5-year recurrence rate for retroperitoneal sarcoma from 2008 to 2021, among patients who underwent surgery for retroperitoneal sarcoma at the Rare Cancer Center, is 55.6%.



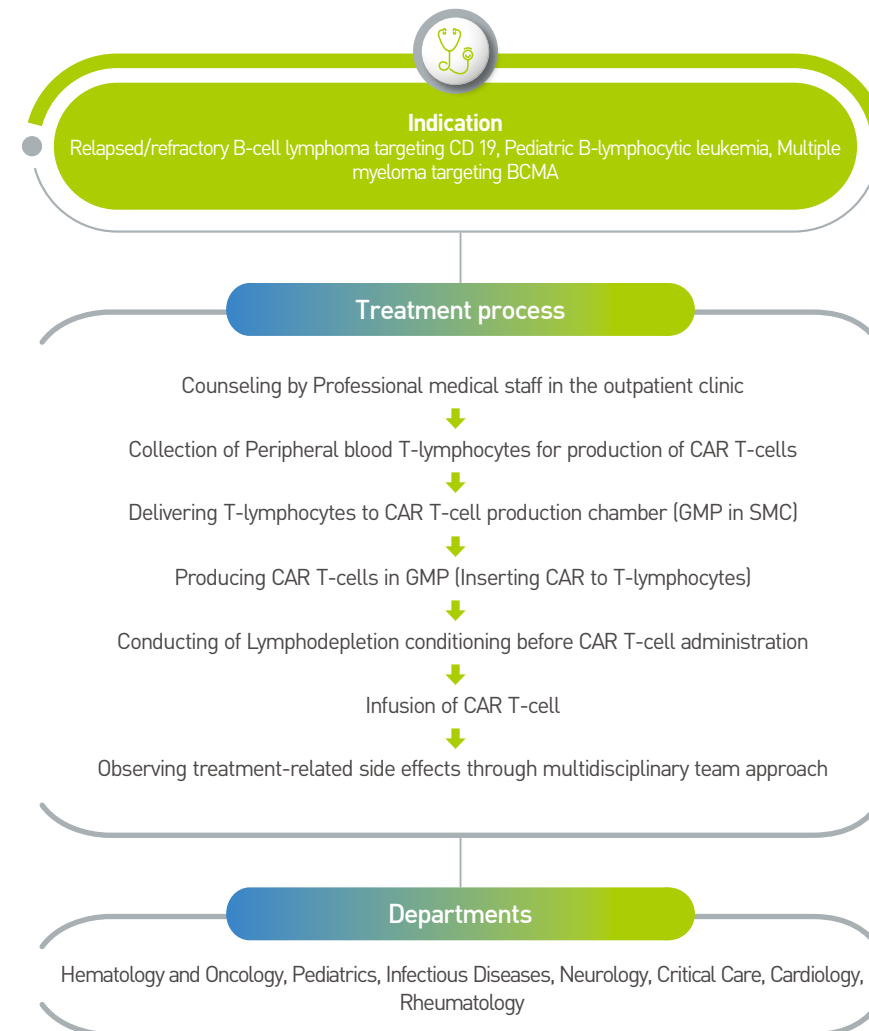
CAR T-CELL THERAPY CENTER

As the first personalized treatment in Korea, Samsung Comprehensive Cancer Center's CAR T-Cell Therapy proposes a new treatment paradigm for patients with relapsed or refractory hematologic malignancies.

01 Introduction

Features of CAR T-Cell Therapy

CAR T-cell therapy is frontier immunotherapy. However, before developing and introducing CAR T-cell therapy, cytotoxic chemotherapy or target agents was the prominent backbone treatment for patients with relapsed or refractory hematologic malignancies. Immunotherapy, an entirely different treatment from the previous treatment strategies, encourages activating the patient's immune system and helps fight cancer cells. Among immunotherapies, CAR T-cell therapy has been getting attention through superior efficacies and low toxicities. CAR T-cell manufacturing process generally consists of 5 steps: extracting T-lymphocytes from the patient's blood, inserting Chimeric antigen receptor (CAR) into the T-lymphocytes, and amplifying processed lymphocytes (CAR T-cells), selecting final CAR T-cell products, and administrating these cells into the patient's body.



Therapeutic Effects of CAR T-cell Therapy

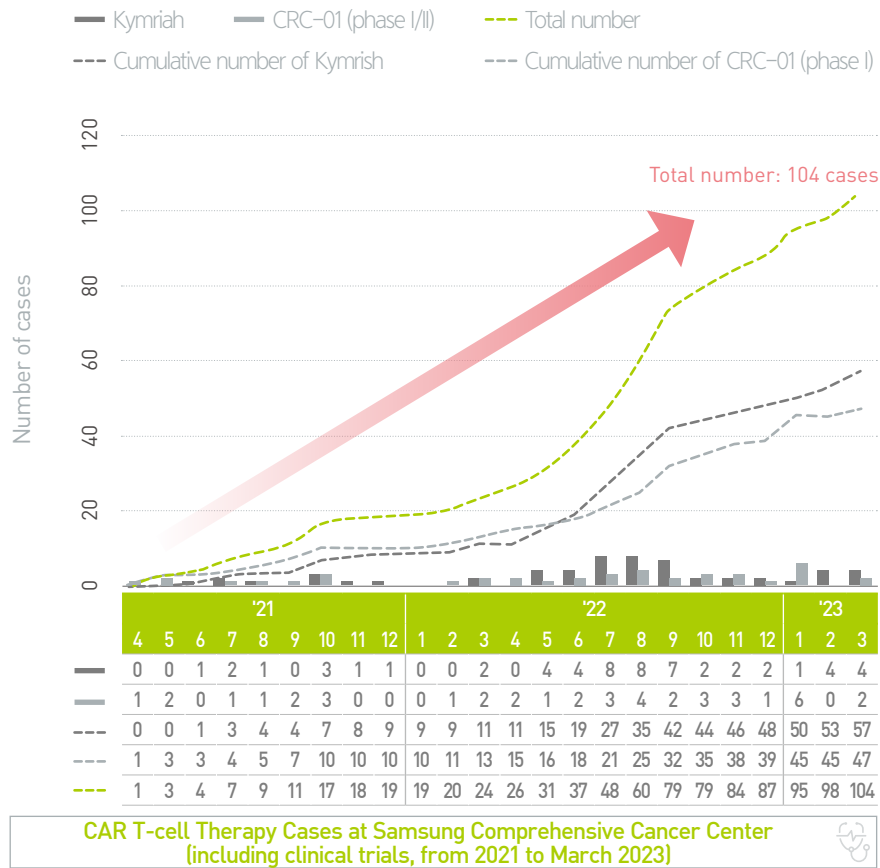
CAR T-cell therapy has proven excellent therapeutic efficacy and extended survival outcome in patients with relapsed and refractory hematologic malignancies who have painful experiences with the previous multiple treatments. Thus, all CAR T-Cell Therapy Center team members promise to do our best to manage the patient's disease and continue to deliver hope to patients and their families.



02 Treatment Result

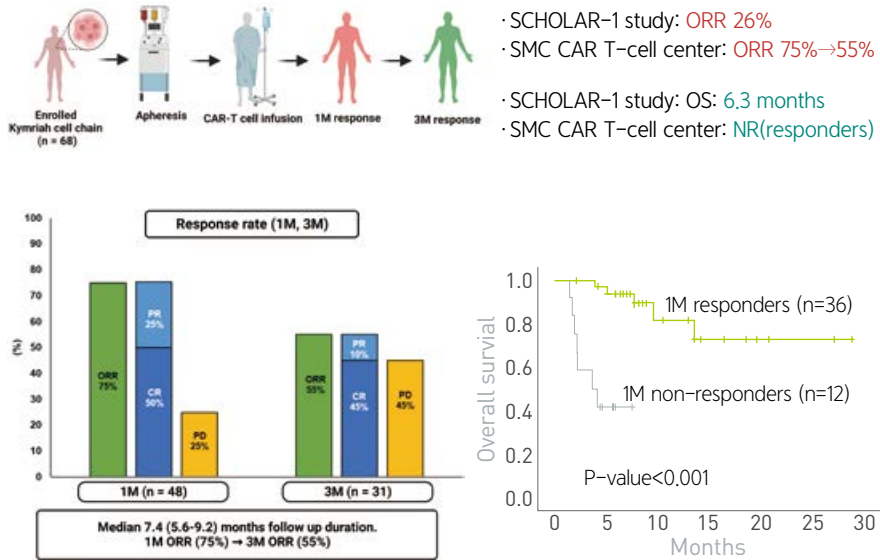
CAR T-cell Therapy Cases

In the field of CAR T-cell therapy, we have treated more than 100 patients since 2021. Efforts to improve the survival rate of patients with relapsed, refractory, or non-responsive large B-cell lymphoma continue.



CAR T-Cell Therapy Results

The results of CAR T-cell therapy at Samsung Comprehensive Cancer Center from 2021 to February 2023, are as follows.



CAR T-Cell Therapy Contributions

- 2022.04.28 Benchmarking of CAR T-Cell Therapy Center with Asan Medical Center in Seoul
- 2022.09.27 Benchmarking of CAR T-Cell Therapy Center with Korea University Anam Hospital
- 2022.09.22 Visit by the Uzbekistan Ambassador (Benchmarking for CAR T-Cell Therapy System Establishment)
- 2023.05.24 Benchmarking of CAR T-Cell Therapy Center with Chungbuk National University Hospital
- 2023.08.03 Benchmarking of CAR T-Cell Therapy Center with Gachon University Gil Hospital

PRECISION ONCOLOGY THERAPEUTIC CENTER

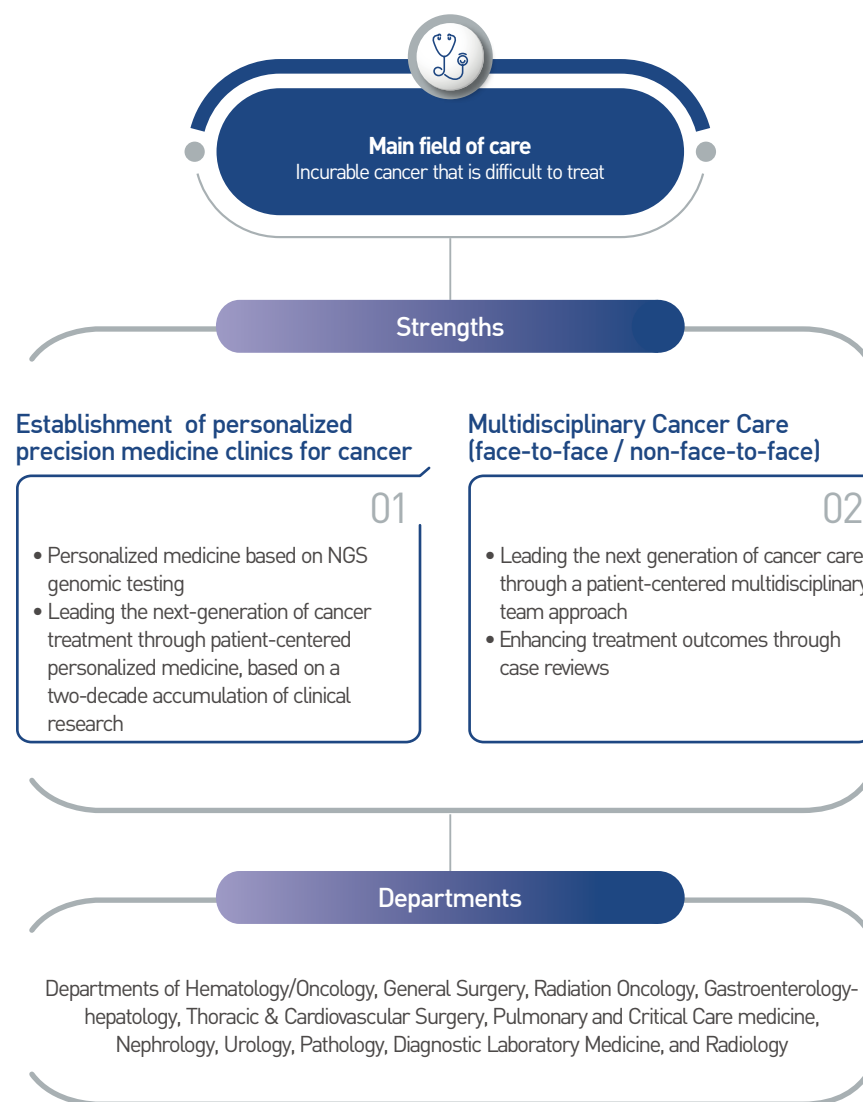
The Precision Oncology Therapeutic Center at the SMC provides the best treatment for patients with difficult-to-treat cancers by analyzing each patient's characteristics from multiple angles and discussing the direction of treatment through multidisciplinary care.

01

Precision Oncology Therapeutic Center

Introduction

In March 2022, the treatment-oriented Precision Oncology Therapeutic Center was established; it applies genomic analysis, biomarker analysis, and immunotherapy to cancer research and clinical trials to increase the survival rate of patients with incurable cancer and provides differentiated cancer treatment. Through personalized genomic analysis (NGS, next-generation sequencing), we are ensuring that the most appropriate treatment is delivered to the individual, ultimately contributing to improved patient outcomes.



02 Treatment Result

Establishment of clinics at the Precision Oncology Therapeutic Center

- 1. Outpatient-based personalized clinics
- 2. Enabling multidisciplinary tumor boards (MTBs)
- 3. Opening of a genomics-specific early cancer clinic
- 4. Running the SMC CureCancer program

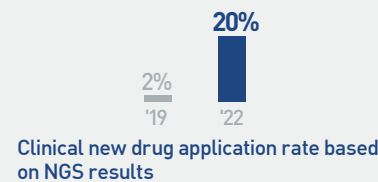
- 1. Comprehensive cancer immune mapping
- 2. Early cancer detection program
- 3. Applying the imaging endpoint care
- 4. Predicting treatment outcomes and applying AI to the point of care
- 5. Immunogenomic mapping to predict specific complications
- 6. Bringing proton-immunotherapy to the point of care

Running the SMC CureCancer Program



Development of a computerized system specialized for the Precision Oncology Therapeutic Center

- NGS genomic testing: Approximately 300 cases per month and 3,000 cases per year
- Most experience in genomic testing worldwide



Use of CT INFLAMMATION INDEX

- Monitoring and managing specific adverse events in immunotherapy patients
- Ease in imaging and follow-up for specific genes



Developing registries and dashboards within CDW

- Creating genomic databases
- Building genomic databases for drug development and conducting research
- Applying to the rapidly evolving field of genomic immunotherapy technology



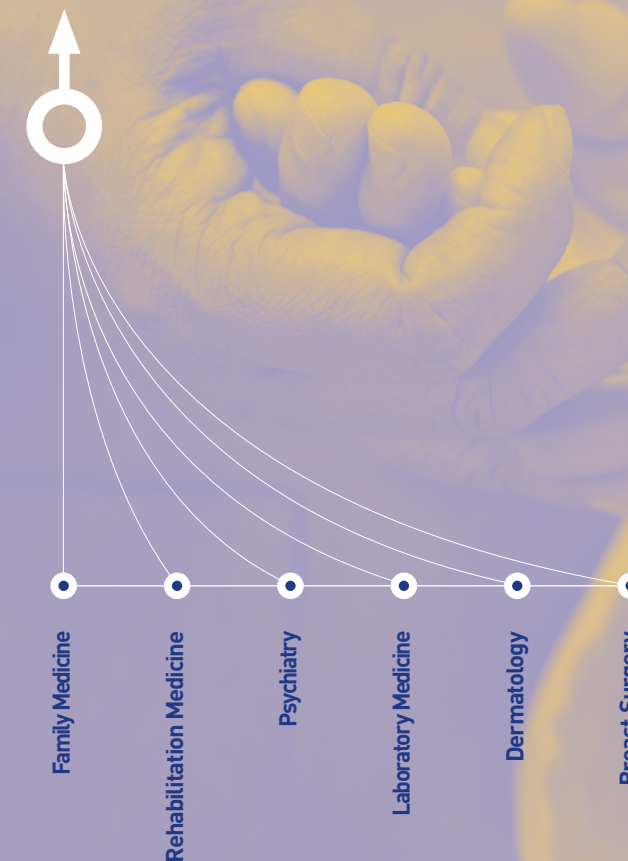
Hosting the Precision Oncology Forum at the SMC

- Providing a forum where clinicians and industry stakeholders can meet
- Creating a platform for companies to connect with clinicians, paving the way for clinicians to incorporate the rapid advances in the field of genomic immunotherapy into their practice

SUPPORTIVE CARE CENTER

The Supportive Care Center provides comprehensive care to improve cancer patients' quality of life.

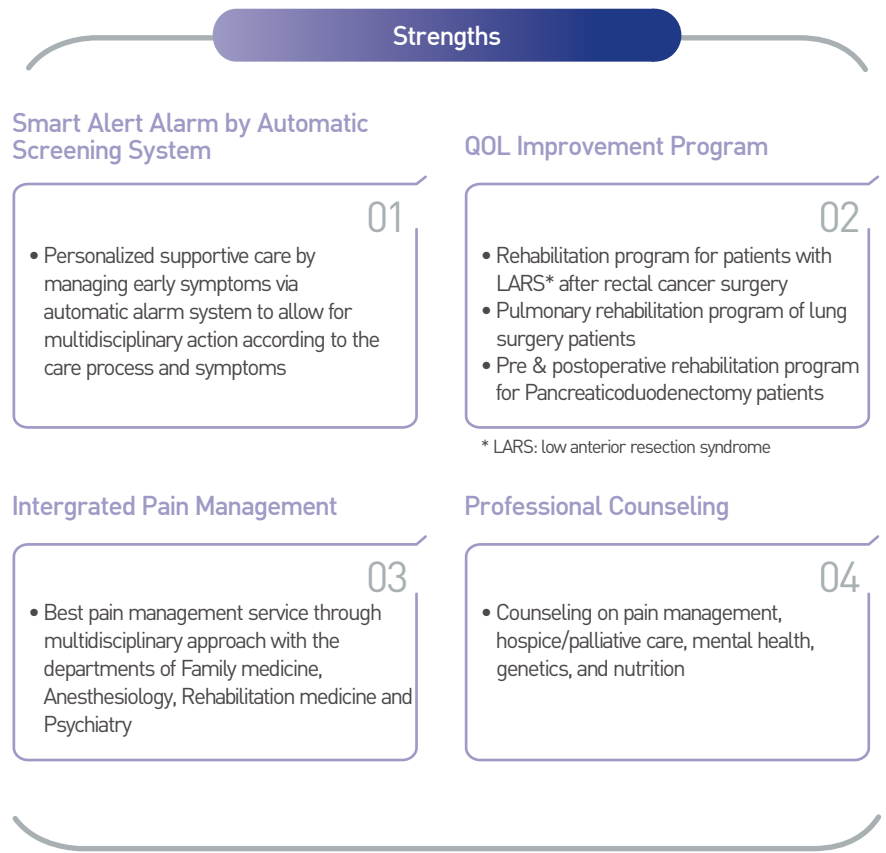
- We cover the whole cancer journey from cancer prevention to treatment and rehabilitation.
- We help patients and family members to overcome cancer and to improve quality of life.



01 Introduction

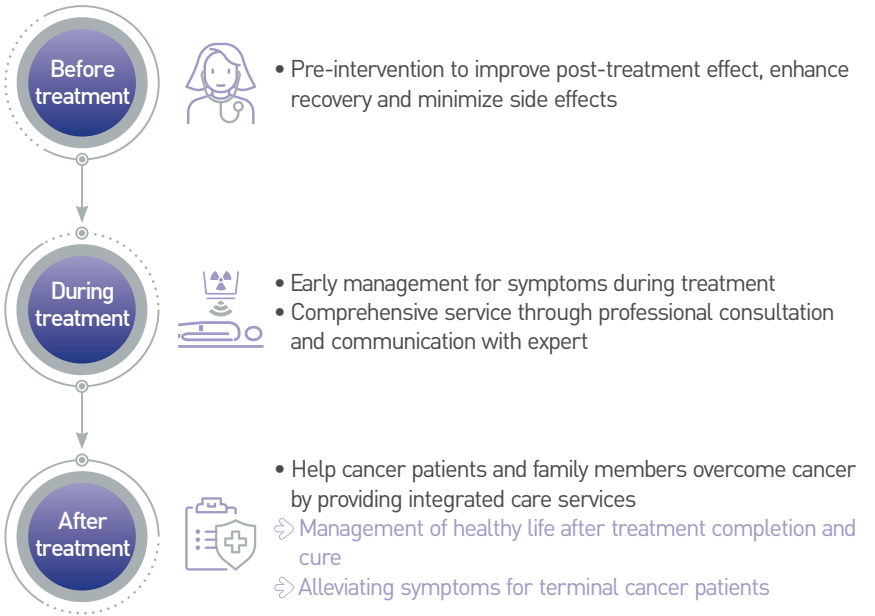
General Information

The Supportive Care Center strives to assist cancer patients and their family overcome cancer and improve their quality of life. We provide personalized care to prevent and relieve the physical and psychological symptoms and adverse effects of the patients and family members during cancer treatment journey. We will lead the innovation of medical services and the implementation of comprehensive cancer treatment.



Clinics

The Supportive Care Center provides what patients needs through organic cooperation among various clinics throughout the entire treatment journey.



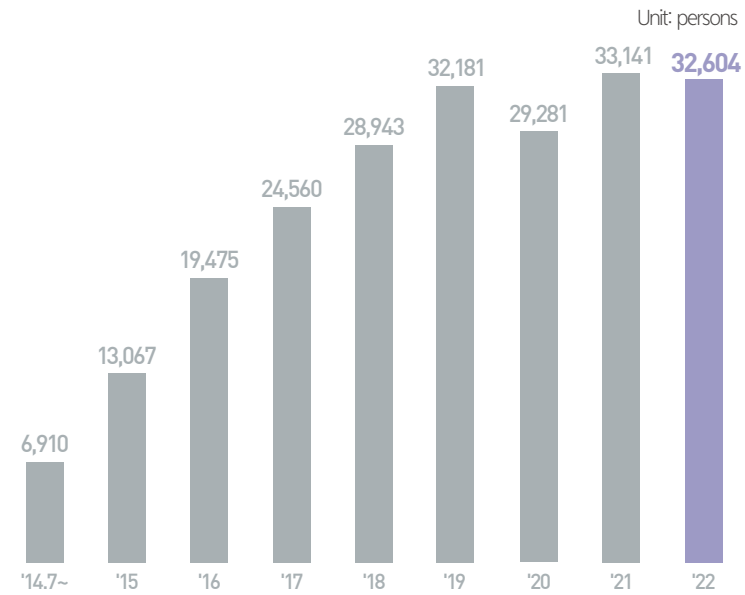
| Clinic | Treatment details |
|------------------------------|--|
| Cancer Rehabilitation Clinic | Prehabilitation, diagnosis and treatment of physical symptoms and dysfunction |
| Cancer Survivorship Clinic | Secondary cancer screening, and regular follow-ups, vaccination, smoking cessation, chronic disease management, treatment of long-term complications |
| Cancer Pain Clinic | Management of cancer pain and cancer treatment-related pain |
| Palliative Care Clinic | Relief of the physical symptoms and psychological/social pain for terminal cancer patients |
| Psycho-oncology Clinic | Alleviation of psychological symptoms such as insomnia, stress, anxiety, and depression |
| Genetic Clinic | Genetic counseling and diagnosis, including family members |
| Dermatology Clinic | Management of cancer treatment-related skin problems |
| Scar Clinic | Prevention and treatment of scars after cancer surgery |



02 Treatment Result

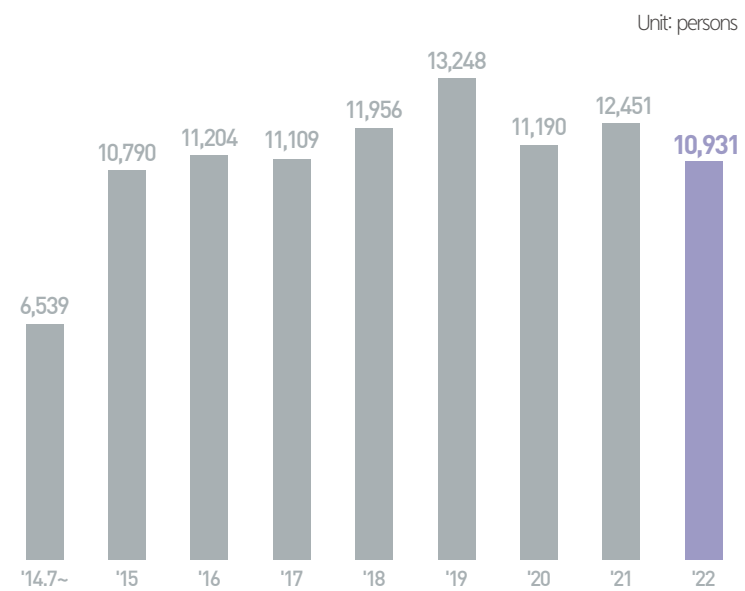
No. of Outpatients

The number of patients is steadily increasing every year.



No. of Patients Counseled

The Supportive Care Center provides specialized counseling on nutrition, hospice, pain management, symptom relief and improving quality of life.



**Samsung
Comprehensive Cancer Center
Outcomes Book
Vol.03**

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SAMSUNG MEDICAL CENTER
Comprehensive Cancer Center