

"The Heart of Healthcare &  
Hope for Tomorrow"

Giving hope and healing  
Through professional and holistic treatment

# Comprehensive Cancer Center



계명대학교 동산병원  
KEIMYUNG UNIVERSITY DONGSAN HOSPITAL



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## Introduction

Keimyung University Dongsan Hospital Comprehensive Cancer Center strives to improve the survival rate and quality of life for cancer patients by providing differentiated medical services with cutting-edge medical equipment.

Being the first center in the area to introduce multidisciplinary treatment, the Comprehensive Cancer Center is a leading cancer center in the Daegu-Gyeongbuk area. Professional services such as one-stop care(same-day diagnosis), customized patient training and education, management of treatment schedule, and the latest information on cancer treatment are the key strengths. In addition, its comprehensive supportive care program also offers psychological stability and emotional healing for cancer patients.

### Objectives

Differentiated treatment system  
Professional nursing support  
R&D of new technology

Patient-Centered  
Research-Oriented  
Education-Centered

ENHANCE Patient Satisfaction  
IMPROVE Survival Rate  
Quality of Life

## Differentiated Services

### Same-day Consultation (One Stop Service) and Rapid Treatment System

Same-day consultation and testing for surgery can be carried out within 1 to 2 weeks for new cancer patients.

### Multidisciplinary Integrated Treatment

3 to 6 specialists related to the diagnosis and treatment of cancer work together to decide upon an optimal treatment plan. Integrated Multidisciplinary Treatment is available for 9 major types of cancers.

### In-depth Consultation(15 mins)

In-depth consultation over a period of 15 minutes where our doctors listen to the patient's medical history, review medical records, and formulate a treatment plan.

### Custom Management of Cancer Patient by Specialized Nursing Staff

A system of disease-specific coordinators and nurses specializing in providing information and consultation on cancer on stand-by to provide specialized and customized services for each patient.

### Chemotherapy Center

One-day chemotherapy from arrival to returning home. Provision of education on self-management and consultation.

### Various Comprehensive Healing and Patient Support Programs for Holistic Treatment

A variety of health-related lectures on topics such as mental stability, rehabilitation, symptom control, and nutrition management in addition to healing programs such as self-help group activities.



## How to Make an Appointment

### On-site Appointment

Fill out an application form at the General Information Center on the 1st floor and submit it at the Outpatient Reception Desk (Make sure to have your health insurance card (medical benefit certificate), medical referral or health certificate when visiting the hospital.)

### Appointment by Phone

Cancer Consultation Office: 053-258-6374~5 / Hotline : 010-6770-8177  
(Office hours : weekdays 08:30 ~ 17:30 (closed on weekends and holidays))

### Appointment by FAX Number : 053-258-6376

(Make sure to provide the patient's name, address, phone number, symptoms, and desired department (professor))

## Contact Information for Specialized Nursing Support

Division		Phone Number
Coordinators by Type of Disease	Blood cancer	053-258-6382
	Liver cancer	053-258-6383
	Breast cancer	053-258-6384
	Gynecological cancer	053-258-6387
	Colon cancer	053-258-6388
	Stomach cancer	053-258-6389
Comprehensive Cancer Center Consultation Office		053-258-6374, 6375
Specialized Cancer Education Center		053-258-6377, 6378
Chemotherapy Center		053-258-6397, 6398



## Advanced Medical Equipment

### da Vinci XI Surgical System : Robotic Surgical Equipment

As the most advanced and state-of-the-art 4th generation robotic surgical device, it allows the surgeon to sit in on a console (robot control seat) to remotely operate robotic arms and a 3D camera inserted into a small entry port on the patient's body.

The robotic surgery devices used at Dongsan Hospital provide the best 3D HD images among the da Vinci series which provides surgeons with high resolution view of the surgery area and allows for precise surgical performance with 540 degree rotating joints making it the prime solution for intricate surgeries on cancers such as gynecological, prostate and colorectal cancers.





## Key Features of da Vinci Robot Surgery

- Minimal incision (minimum scar)
- Minimal bleeding
- Quick recovery (speedy return to daily life)
- Intricate surgical operations (minimal complications)
- Reduction of post-surgery pain
- Effective in cancer surgery

## What is single-port robotic surgery?

- A surgery method carried out by inserting a camera and surgical instruments through a 1-inch incision inside the navel
- It is a method which minimizes scarring and can be considered to be closest to 'a scarless surgery'
- Significantly reduced time for recovery and return to daily life
- Technique actively used by the Department of Obstetrics and Gynecology, Colorectal Surgery, Hepatobiliary-Pancreatic Surgery, and Breast and Endocrine Surgery

## Global Leader in Single-port Robotic Surgery

- "World's First " single-port robotic surgery on rectal cancer and single-port aortic lymph node resection in a endometrial cancer patient.
- "Asia's first, world's second" single-port robotic surgery on cervical cancer
- "Korea's first" single-port robotic surgery on colorectal cancer
- "Korea's second" single-port robotic surgery on endometrial cancer
- "The world's third, Korea's second, and the region's first" transoral robotic surgery on thyroid cancer
- "Korea's third" simultaneous breast cancer resection and reconstructive surgery





## 1. Korea's First Digital PET-CT (positron emission tomography + computed tomography)

- A cutting-edge equipment for diagnosis, staging and metastases detection in cancer patients
- Provides crucial functional information for effective and personalized treatment planning



## 2. CT (Computed Tomography) : Cutting-edge 4D technology with whole body imaging

- Radiation exposure reduced by 50%
- High-speed scanning with 4D images
- Hi-resolution imaging even with movement
- Effective for obese, elderly, children and unconscious patients(Breath control, posture fixation not required)
- Dual-energy quantitative analysis for precise diagnosis of tumors and cardiovascular diseases





### 3. High-resolution MRI (Magnetic Resonance Imaging Device)

- Reduced noise and radiation
- Enhanced speed and space
- 4D high quality imaging
- Whole-body scanning including including blood vessels with a single scan



### 4. Radiation Therapy Device - Vital Beam

Vital Beam is the latest radiation cancer treatment device which is capable of tracking cancer cells in the body through 3D images while rotating 360 degrees and irradiates high-energy radiation to remove cancer.

- Treats complex cancers located in the head, neck, lungs, chest, abdomen and liver
- Equipped with a CT scan to enable real-time imaging to evaluate the changes in the tumor for customized treatment

## Treatment Fields and Major Achievements

At Keimyung University Dongsan Hospital, treatment teams for each type of cancer have been organized to find the best way to treat patients. In particular, the center is recognized with its world-class achievement in robotic surgery. Surgery on four major cancers consistently received 'first grade' evaluation making us the leader of cancer treatment in the Daegu and Gyeongbuk area. In addition, our Comprehensive Cancer Center provides treatment and testing for the 9 major cancers (stomach cancer, colon cancer, lung cancer, breast cancer, thyroid cancer, liver cancer, gynecological cancer, urinary cancer, head and neck cancer) while also providing diverse and comprehensive professional support such as surgery and treatment scheduling, chemotherapy and symptom management and rehabilitation through consultation, education, and nursing services.

### The 9 Major Cancers



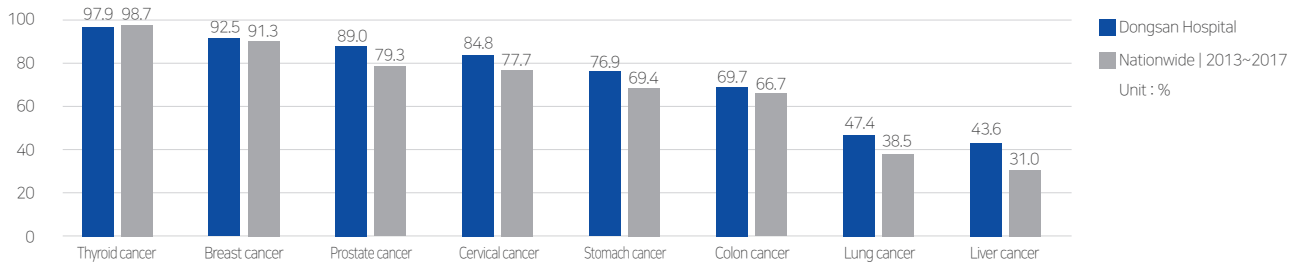
### Major Cancer-related Achievement of Keimyung University Dongsan Hospital

- ✔ More than 3,500 robotic surgeries (since 2011)  
Our robotic surgery equipment is currently the most advanced 4th generation robotic surgery system and is the only one in Daegu and Gyeongbuk area. Especially, our single-port robotic surgery on gynecological and colon cancer has the title of being the world's first and we have been transferring knowledge to overseas markets such as Taiwan, Hong Kong, and Singapore.
- ✔ Successful implementation of world-class, high-level robotic surgery
- ✔ The world's first single-port robotic surgery for endometrial and rectal cancer
- ✔ The first successful single-port robotic surgery for cervical cancer in Asia
- ✔ Korea's first successful single-port surgery for colon cancer
- ✔ First in the region and the third in Korea to perform successful breast cancer resection and reconstructive surgery using Da Vinci robotic surgical system
- ✔ The first in the region and the third in the world to succeed in transoral robotic thyroidectomy
- ✔ Grade-1 evaluation for 4 major cancers (colorectal cancer, breast cancer, lung cancer, stomach cancer) from the Health Insurance Review and Assessment Service: 2020, 2019, 2018
- ✔ 0% mortality rate in the past two years in the adequacy evaluation for liver cancer the highest level in the country (2020)

# Cancer Related Statistics

## 1. Observed Survival Rate

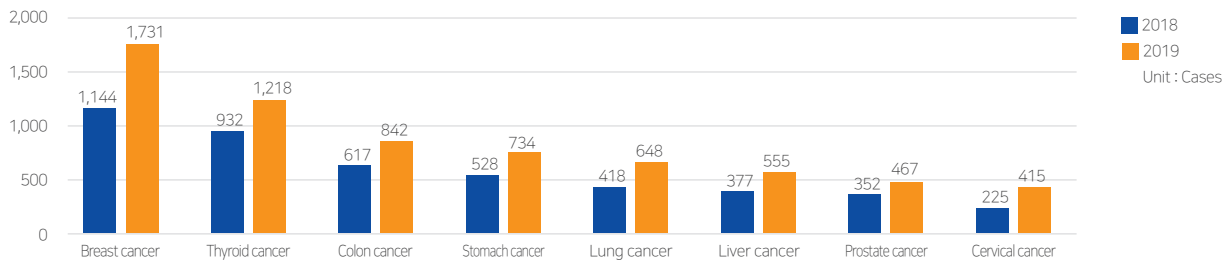
(Source: Annual Report of National Cancer Registration Project, 2017 Cancer Registration Statistics)



The survival rate of thyroid cancer was found to be highest in the country. The **cancer survival rate at Keimyung University Dongsan Hospital was higher than the national average** in the order of breast cancer, prostate cancer, cervical cancer, stomach cancer, colon cancer, lung cancer, and liver cancer.

## 2. Status of Cancer Cases Overseas

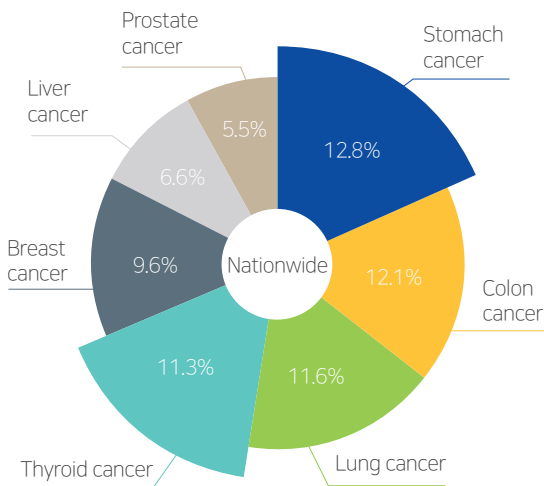
(Source: The Global Cancer Observatory, Globocan 2018)



Cancer cases among foreigners was found to be most prevalent in the order of breast cancer, thyroid cancer, colorectal cancer, gastric cancer, lung cancer, liver cancer, prostate cancer, and cervical cancer while the incidence rate further increased in 2019 compared to 2018.

## 3. Incidence Rate

(Source: Annual Report of National Cancer Registration Project, 2017 Cancer Registration Statistics)



As for the incidence rate of each cancer type, stomach cancer was found to be the most common followed by colon cancer, lung cancer, thyroid cancer, breast cancer, liver cancer, and prostate cancer.



## Stomach Cancer

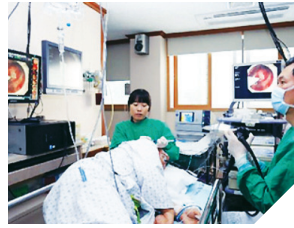
In order to provide optimum treatment according to the type and progression of the cancer, our Stomach Cancer Interdisciplinary Team comprised of specialists from the Department of Gastroenterology, Gastrointestinal Surgery, Hematology & Oncology, Nuclear Medicine, Radiology, Pathology and Laboratory Medicine provide comprehensive treatment services while coordinators specialized in stomach cancer provide custom services ranging from pre/post-management of gastrectomy to counseling and education.



## Stomach Cancer

### 1) Overview

Stomach cancer is a malignant tumor that occurs in the stomach. Most stomach cancers are malignant tumors which occur in the gastric mucosal cells. As the cancer progresses, it can metastasize to various parts of the liver, lungs, and bones through lymph glands or blood flow around the stomach.



### 2) Main Symptoms

Although patients may experience symptoms such as pain or discomfort in the upper stomach, indigestion, bloating and loss of appetite, there are no specific symptoms during the early phases and more than 80% of cases are asymptomatic. Therefore, regular gastroscopy is recommended even though there may be no symptoms in order to ensure early detection.



## Diagnosis Method

- Diagnosis through gastroscopy and biopsy > Confirmation through biopsy > Treatment plan established after conducting tests to estimate the progress of the cancer
- Abdominal CT
- Ultrasound endoscopy
- PET-CT
- Basic tests for surgery patients (chest x-ray, EKG, lung function test, blood tests)

## Treatment

Early diagnosis and treatment are crucial since more than 90% are fully curable if detected early. Treatments include endoscopic resection, surgical resection, chemotherapy, and radiation therapy. Treatment method is determined based on the size, location, metastasis and condition of the patient.

### 1) Endoscopic Resection (Endoscopic Submucosal Dissection)

This is a method of endoscopically removing early gastric cancer without surgery. It is a method of removing early stomach cancer only in the gastric mucosa with a snare by putting a solution into the submucosa.

Our stomach cancer treatment team has been performing endoscopic mucosal resection since 2002 and have been playing a leading role in the area of gastric cancer endoscopy in Korea through its extensive experience and successful track record.

### 2) Surgical Resection (Laparoscopic Surgery)

Laparoscopic surgery has advantages over conventional open surgery resulting in a smaller surgical wound and causing less pain leading to less complications such as infection and faster recovery after surgery. However, it is a more difficult method than open surgery; therefore, the degree of cancer progression and the possibility of complications of the patient must be assessed by highly skilled and experienced surgeons before proceeding with the surgery.

Our stomach cancer surgery team began conducting laparoscopic surgery in 2004 and has been playing a leading role in the domestic laparoscopic surgeries on stomach cancers in addition to attaining good results.

## Colon Cancer

Our Colon Cancer Interdisciplinary Team is comprised of faculty members from the Department of Colorectal Surgery, Gastroenterology, Hemato-Oncology, Radiation Oncology, Radiology, Nuclear Medicine, Pathology and Laboratory Medicine and also includes a specialized ostomy nurse, two nurse specialists, and a colon cancer coordinator.

In the case of robotic surgery, our team was the seventh in Korea to achieve 300 surgeries in May 2020 and was the first in the world to successfully perform single-port robotic surgery in May 2017. The team also obtained 'Grade 1' evaluations from the Health Insurance Review and Assessment Service for a number of consecutive years.



## Colon Cancer

### 1) Overview

It refers to malignant tumors in the rectum and colon. Depending on the location, it is either referred to as colon or rectal cancer and it is collectively referred to as colon or colorectal cancer.

### 2) Main Symptoms

- Bloody stool (bright red or dark red) or mucous stool
- Thinner stool than before
- Loss of weight or muscle strength, fatigue
- Changes in bowel habits
- Abdominal discomfort (abdominal pain, abdominal distention)
- Loss of appetite, indigestion, nausea, and vomiting
- Diarrhea, constipation, or tenesmus (feeling of lingering bowel movement)

## Diagnosis Method

- Digital rectal exam: It is an exam which involves a physician directly inserting a finger into the rectum to search for abnormal lumps. 35% of all colon cancers can be diagnosed using this method.
- Colonoscopy
- Magnetic resonance imaging (MRI)
- Abdominal CT
- PET-CT scan

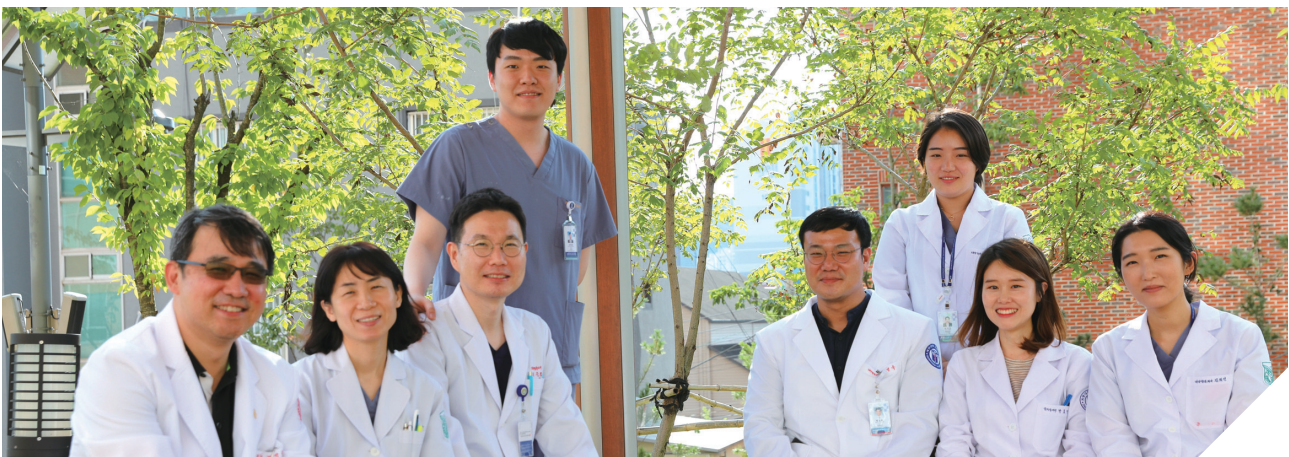
## Treatment

### 1) Endoscopic resection (endoscopic submucosal dissection)

It is a method of removing the cancerous tissue with forceps at the end of the endoscope. It is performed on early colon cancer cases (when the cancer is small, and the root is not deep).

### 2) Surgery

(1) Laparoscopic Surgery	- Applicable to all colon cancer except in patients with severe intestinal adhesion or intestinal perforation - Small incisions, less pain, speedy recovery leading to quick return to daily routine
(2) Robotic Surgery	- Advantageous in sigmoid colon or rectum cancer - Increased field of vision, 3D images, reduced complications leading to a more precise surgical performance
(3) Open Surgery	- Mainly for advanced stages of cancer or in case of severe intestinal adhesion or intestinal perforation - Surgeons have a wider view of the surgical field during the surgery



## Gynecological Cancer

Our Gynecological Cancer Interdisciplinary Team consists of faculty members from the Department of Gynecology, Hematology and Oncology, Nuclear Medicine, Pathology, Radiation Oncology and Radiology as well as dedicated nursing staff and coordinators.

Through a multidisciplinary collaboration system, we are able to provide custom, integrated treatment solutions and the best treatment options with state-of-the-art research and surgical techniques. We are striving to maximize treatment results in order to increase the quality of life and to provide patients with the best treatment methods.





## Gynecological Cancer

### 1) Cervical Cancer

- Overview: It is a type of cancer that occurs in the cervix which is the entrance to the uterus. It goes through a precancerous stage in the form of cervical intraepithelial neoplasia ultimately progressing into an infiltrating cancer over a period of months or years.
- Main Symptoms: Abnormal vaginal bleeding, increased vaginal discharge and odor, pain, weight loss, etc.

### 2) Ovarian Cancer

- Overview: It is a type of cancer that occurs in the ovaries. Epithelial ovarian cancers account for over 90% of all ovarian cancers and can be classified as squamous cell carcinoma, germ cell tumors, or stromal tumors according to the tissue in which it occurs.
- Main Symptoms: Non-specific symptoms in the digestive system due to lumps or ascites, abdominal discomfort, or vaginal bleeding in a small number of cases but most of early cases are often asymptomatic

### 3) Endometrial Cancer

- Overview: It refers to cancer that occurs in the uterine endometrium which makes up the inner walls of the uterus. This form of cancer accounts for most cancers which occur in the uterus.
- Main Symptoms: Abnormal vaginal bleeding is present in more than 90% of all cases. Therefore, it is relatively easy to diagnose.

## Diagnosis Method

- Pap smear
- Human papilloma virus test (HPV test)
- Tissue biopsy
- Pelvic examination and vaginal ultrasound
- Tumor marker (CEA, SCC, CA 125) test, gene (BRCA 1, BRCA 2) test
- CT, MRI, PET-CT

## Treatment

<b>1) Cervical Cancer</b>	<ul style="list-style-type: none"> <li>- Conization can be used for cervical intraepithelial neoplasia.</li> <li>- For invasive cancers, patients may receive a radical hysterectomy, chemotherapy, or radiation therapy. Depending on the condition, two methods may be used at the same time.</li> </ul>
<b>2) Ovarian Cancer</b>	<ul style="list-style-type: none"> <li>- The uterus, both ovaries and fallopian tubes are surgically removed. Lymph nodes around the pelvis and artery, the greater omentum and appendix are also removed.</li> <li>- Since most diagnoses take place in later stages of the cancer, most patients require chemotherapy after the initial surgery.</li> </ul>
<b>3) Endometrial Cancer</b>	<ul style="list-style-type: none"> <li>- Surgery is the primary treatment method and involves the removal of both ovaries and fallopian tubes. In some cases, lymph nodes around the pelvis and artery are removed simultaneously.</li> <li>- Considering the progression stage and prognostic factors, chemotherapy and radiation therapy can be performed as an adjunct to prevent recurrence and to treat lymph node metastasis.</li> </ul>



# Liver Cancer

Our Gynecological Cancer Interdisciplinary Team consists of specialists from the Department of Gastroenterology, Hepatobiliary-Pancreatic Surgery, Radiology, Hemato-Oncology, Nuclear Medicine and Radiation Oncology as well as coordinators specialized in hepatobiliary pancreatic cancers. We are also equipped with human resources and equipment to carry out surgery, radiofrequency therapy, transcatheter arterial chemoembolization, hepatic arterial infusion chemotherapy, target therapy and radiation therapy. Using the PET-CT in our Department of Nuclear Medicine and state-of-the-art radiation therapy devices in our Department of Radiation Oncology, we are not only capable of making excellent diagnosis but also able to perform active treatment for patients who do not show much progress using existing methods.

Liver Cancer



## Liver Cancer

### 1) Overview

Liver cancer is caused by hepatitis B virus, hepatitis C virus, alcohol consumption, non-alcoholic fatty liver, etc. Hepatocellular carcinoma occurring in liver cells accounts for 80%-90% of all liver cancers.

### 2) Main Symptoms

There are almost no symptoms in the early stages. Symptoms develop slowly and appear in the later stages. When symptoms do appear, most cases are already in advanced stages of progression.

- Right upper abdominal pain
- Abnormal mass or lump in the right upper abdomen
- Weight loss, fatigue, weakness
- Symptoms caused by liver associated diseases (ascites, jaundice, hepatic encephalopathy, variceal bleeding, etc.)

## Diagnosis Method

- Blood test (including AFP and PIVKA-II tumor markers)
- Abdominal ultrasound
- Abdominal CT
- Magnetic resonance imaging (MRI)
- Angiography
- Biopsy

## Treatment

### 1) Surgical Treatment

Surgery is determined by considering the location and size of the lesion, the extent of liver resection, as well as the patient's condition, such as the history of the previous operation and the presence of comorbid diseases.

Classification by surgical method: laparoscopic surgery, open surgery

Classification according to the scope of surgery: segmentectomy, hemihepatectomy, liver transplant

	Advantages	Disadvantages
(1) Laparoscopic Surgery	Due to the small size of the surgical wound, there is less pain related to the surgery and there is less risk of complications such as infections. Recovery from the surgery is relatively short.	It is not possible to directly verify the location or boundary of the tumor and it may be technically difficult to access the tumor depending on its location. It may take longer to respond to unexpected problems during surgery.
(2) Open Surgery	The area of the tumor can be directly manipulated by the surgeon. The surgeon may also respond immediately to unexpected problems such as bleeding during surgery.	The size of the surgical wound is large; therefore, patients experience relatively more pain compared to other methods. It also takes longer to fully recover from the surgery.
(3) Liver Transplant	It is a method typically used for stage 1 to 2 liver cancer. It involves the complete removal of the patient's liver and transplantation of a partial or whole liver from a donor.	

### 2) Non-surgical Treatment

- Transcatheter Arterial Chemoembolization (TACE): A treatment where the hepatic artery is blocked after administration of anticancer drugs to the liver tumors
- Radiofrequency Ablation (RFA): A treatment that removes liver tumors through heat generated by high frequency
- Hepatic Arterial Infusion Chemotherapy (HAIC): Chemotherapy which is performed through a transplant port typically used in advanced cases
- Target Therapy : A treatment where anticancer drugs that respond to liver tumor signaling is administered to interfere with the tumor's growth
- Radiation Therapy: A treatment that destroys and suppresses the proliferation of cancer cells using high-energy radiation



## Lung Cancer

Through medical techniques and knowledge accumulated over many years, our Lung Cancer Interdisciplinary Team comprised of a faculty from the Department of Pulmonology, Thoracic and Cardiovascular Surgery, Hemato-Oncology, Radiation Oncology, Radiology, Nuclear Medicine and Pathology is doing its best to provide lung cancer patients with quick diagnosis and appropriate treatment solutions.



## Lung Cancer

### 1) Overview

It refers to malignant tumors in the respiratory tract and lungs. It can be divided into primary lung cancer that occurs in the lung itself and metastatic lung cancer that occurs by metastasis to the lungs from other organs (colorectal cancer, kidney cancer, liver cancer, etc.)

Non-Small Cell Lung Cancer(NSCLC)	Small Cell Lung Cancer (SCLC)
It accounts for 80~85% of all lung cancers. It typically spreads to the surrounding tissues and then metastasizes throughout the entire body. Therefore, patients can be cured if the cancer is detected early. Different types include squamous cell carcinoma, adenocarcinoma, and large cell carcinoma.	It accounts for 15~25% of all lung cancers. It is a type of cancer where small cells form clusters and tend to spread to other areas in the early stages. However, it responds well to treatments such as chemotherapy and radiation therapy.

### 2) Main Symptoms

Initially, there are often no symptoms at all, and even with symptoms, early diagnosis is difficult due to the presence of non-specific symptoms such as cough and sputum similar to a cold.

## Diagnosis Method

- Chest X-ray
- Sputum smear test: Cells obtained from sputum released from bronchi or lung tissue are examined under a microscope to check for cancer cells.

- Chest CT
- Biopsy
- PET-CT

## Treatment

### 1) Surgery

It involves the removal of cancerous tissue and lymph nodes around the tissue surrounding the lungs. The size of the lung removed is determined by the location and size of the cancer.

Treatment of non-small cell lung cancer	Non-small cell lung cancer has a relatively slow growth rate and spreads to surrounding tissues and then metastasizes throughout the body. Therefore, it can be cured by surgically removing the cancer during the early stages of progression. If the cancer has progressed to a stage where surgery is not possible, chemotherapy, radiation therapy, and combination therapy may be attempted but the prognosis may differ according to the stage.			
	Stage 2, 3A(Partially)	Stage 3A(Partially)	Stage 3B	Stage 4
	Combination of surgery and chemotherapy after surgery	Combination of surgery, radiation therapy, and chemotherapy	Combination of radiation therapy and chemotherapy	Chemotherapy and symptomatic treatment
Treatment of small cell lung cancer	Small cell lung cancer is a type of cancer which grows very quickly and tends to spread throughout the body. In most cases, surgery is not possible. A combination of chemotherapy and radiation therapy is used to treat cancers in the limited stage while chemotherapy is mainly used during extensive stages.			

### 2) Chemotherapy

It is a method of treating cancer by administering anticancer drugs directly to cancer cells and can be used in conjunction with radiation therapy.

### 3) Radiation Therapy

It is a treatment method which uses high energy radiation to kill cancer cells. It is used when surgery is not possible or when the risk of surgery is too high even though the size of the cancer is small.

Stage 3B	Stage 4
Combination of radiation therapy and chemotherapy	Chemotherapy and symptom treatment

## Blood Cancer

Our Blood Cancer Interdisciplinary Team consists of faculty members from the Department of Hemato-Oncology, Laboratory Medicine, Pathology, Radiation Oncology, Infectious Diseases. It also includes a team of organ transplantation coordinators, clean room nurses, social workers, nutritionists, and medical laboratory technologists. The team is composed of the best staff who collaborate closely throughout the transplantation process to ensure that the transplant is carried out as smoothly as possible.



## Blood Cancer

### 1) Leukemia

- Acute Myeloid Leukemia: It is a type of cancer where white blood cells turn into malignant cells and spreads in the bone marrow. It is carried by the peripheral blood throughout the body. It is caused when the cellular differentiation of bone marrow cells causes cancerous mutations and leads to an excessive and abnormal cell division which gets accumulated in the bone marrow.
- Acute Lymphocytic Leukemia: It occurs when lymphocyte white blood cells continuously divide in an immature state
- Chronic Myelogenous Leukemia: An abnormal appearance of a characteristic gene causes excessive proliferation of blood cells resulting in an increase in white blood cells and platelets.

### 2) Lymphoma

A malignant blood disease caused by lymphoid cells which comprise the immune system. It can occur anywhere where lymphatic tissue is present; therefore, it is observed in a variety of lesions. This type of cancer can be categorized into Hodgkin lymphoma and non-Hodgkin's lymphoma types.

### 3) Multiple Myeloma (MM)

It is caused by the cancerous proliferation of abnormal immunoglobulins or malignant plasma cells which form tumors. The abnormal formation of normal immunoglobulins causes immune disorders, hypogammaglobulinemia, hematopoietic disorders, osteolysis and kidney disorders.

## Diagnosis Method

- Blood test (CBC & Diff)
- Peripheral blood smear (PB smear)
- Bone marrow examination

## Treatment

### 1) Treatment of acute leukemia (acute myeloid leukemia, acute lymphocytic leukemia)

Induction Therapy: Induction therapy is performed to remove leukemia cells present in blood and bone marrow. If remission is achieved, bone marrow examination results in less than 5% of myeloblasts (normal) and symptoms of leukemia disappear. When complete remission is confirmed, additional treatment is implemented for the prevention of recurrence and long-term survival.

### 2) Treatment of chronic myelogenous leukemia:

It is a treatment that uses a tyrosine kinase inhibitor to target the Philadelphia chromosome causing the disease. For progressed cancers, allogeneic hematopoietic stem cell transplant may be used.

**3) Treatment of lymphoma :** After diagnosis, complex chemotherapy is performed 6-8 times every 3-4 weeks.

### 4) Treatment of multiple myeloma

One or two or more anticancer agents are used in combination, and myeloma cells are removed by repeating the process at intervals of 3-4 weeks.

### 5) Hematopoietic stem cell transplantation(HSCT)

It refers to a treatment method for various blood disorders which occur due to the abnormal differentiation and growth of hematopoietic stem cells. It involves the removal of diseased hematopoietic stem cells and transplanting healthy cells to aid the recovery of hematopoiesis.

Allogeneic Transplantation	Transplantation by Relatives	Donor of the hematopoietic stem cells is a sibling or family member
	Transplant by Non-Relatives	Donor of the hematopoietic stem cells is an anonymous person
Autologous transplantation		A method of treatment which involves the use of a patient's own hematopoietic stem cells which had been previously collected and kept frozen.

## Thyroid Cancer

Our Thyroid Cancer Interdisciplinary Team is composed of specialists from the Department of Endocrinology, Breast-Endocrine Surgery, Otorhinolaryngology, Radiology, Nuclear Medicine and Pathology. In addition to our team of physicians, the team also includes coordinators with specialized training in thyroid cancer. The team does its best to maintain the best level of care through a close cooperation system. After being the first in the region to perform an endoscopic thyroidectomy in 2008, the team became the first in the region and third in the world to successfully carry out a robotic transoral thyroidectomy. The team is striving to maximize the aesthetic results and the quality of life for patients by actively utilizing robotic surgery into its treatment plans.

Thyroid Cancer





## Thyroid Cancer

### 1) Overview

The term collectively refers to cancers which occur in the thyroid. According to the shape, origin cell of the cancer and differentiation level, such cancers can be further classified as papillary carcinoma, follicular carcinoma, medullary carcinoma, anaplastic thyroid cancer, undifferentiated thyroid cancer, and metastatic thyroid cancer.

### 2) Symptoms

There are no special symptoms associated with this type of cancer. However, symptoms like **increase in size, pain, hoarseness, and difficulty with swallowing** may be a good indication to consult with a physician.

## Diagnosis Method

- Thyroid ultrasound examination    - Fine-needle aspiration cytology(FNA)    - CT    - Thyroid function test

## Treatment

### 1) Surgical Treatment

Surgery is largely divided into total thyroidectomy and lobectomy. According to the surgical method, it can be further divided into conventional thyroidectomy, endoscopic thyroidectomy, and robotic thyroidectomy.

(1) Conventional thyroidectomy	It is a traditional method for performing surgery on the thyroid. Depending on the condition of the patient's skin, a scar may be present after the surgery.
(2) Endoscopic thyroidectomy	Although this method has the cosmetic advantage of not leaving a scar on the neck due to the use of an endoscope inserted through unnoticeable parts (chest, armpit, etc.), it can only be used if the cancer is small and there is no metastasis to the surrounding tissue or lymph nodes.
(3) da Vinci Robotic Surgery	This is a surgical method that uses the same approach as endoscopic surgery. However, it uses the robotic surgical system instead of an endoscope. Although post-surgery results are aesthetically outstanding, it is generally not recommended for advanced cases.

### 2) Radioiodine Treatment

Radioactive iodine treatment is performed on patients who have received thyroidectomies but have a high risk of recurrence.

### 3) Administration of Thyroid Hormones

- Patients must take thyroid hormones for the rest of their lives to maintain normal body functions  
- Hormones are given to patients after surgery to inhibit the growth of differentiated thyroid cancer (papillary cancer or follicular cancer) and to prevent recurrence.

### 4) External Radiation Therapy

The use of this method is considered for patients with a high possibility of small residual lesions, patients with difficulties in receiving additional surgery or patients not responding to radioactive iodine treatment.

### 5) Chemotherapy

This method may be considered if surgery and radioiodine therapy are not sufficiently effective.

### 6) Target Therapy

This method minimizes damage to normal cells by using drugs that selectively attack and inhibit only specific mutant genes involved in the occurrence, growth, and progression of a specific cancer.

# Breast Cancer

Our Breast Cancer Interdisciplinary Team is composed of specialists from the Department of Breast- Endocrine Surgery, Hemato-Oncology, Radiation Oncology, Radiology, Nuclear Medicine And Pathology as well as breast cancer coordinators to maintain the best level of care through close cooperation. The team was the first in the region and the third in Korea to successfully perform breast cancer resection and reconstructive surgery using da Vinci robotic surgical system in 2019.



Third in the nation to successfully perform simultaneous mastectomy and breast reconstruction surgery using robotic surgery

Multidisciplinary breast cancer treatment

## Breast Cancer

### 1) Overview

Unlike benign tumors which stay in the breast, breast cancers are malignant tumors which spread outside the breast and may threaten a patient's life. There are many different types of cells in the breast and any one of those cells can mutate into cancer cells; therefore, there are many types of breast cancers that may occur.

### 2) Symptoms

Initially, most patients do not have obvious symptoms which causes discomfort. The most common symptom is the formation of lumps in the breast. Most are painless, hard, bumpy and do not move around. Breast cancer may be suspected if such symptoms are detected.

## Diagnosis Method

- |                                    |                         |   |
|------------------------------------|-------------------------|---|
| - Mammography                      | - CT                    | - Fine-needle aspiration cytology, total biopsy, mammotome biopsy |
| - Breast ultrasound                | - PET-CT                |   |
| - Magnetic resonance imaging (MRI) | - Imaging-guided biopsy |   |

## Treatment

In most cases, treatment is conducted in the following procedure : 'surgery → postoperative adjuvant therapy (adjuvant chemotherapy → radiation therapy / anti-hormonal therapy)'

### 1) Surgery : Determined by tumor to breast ratio

(1) Total breast resection	Removal of the entire breast; performed when the cancer is widely distributed or multiple clusters are present.
(2) Partial breast resection	Method used on relatively small sized tumors detected at an early stage. Only a part of the cancerous tissue and surrounding normal tissues are removed.

### 2) Hormone Therapy

Among the various hormone receptors, estrogen (vesicle hormone) and progesterone (luteinizing hormone) play an important role in breast cancer. If either of the two hormones are detected, anti-hormonal therapy is applied after the surgery or in case of a recurring tumor.

### 3) Chemotherapy

There are three types of chemotherapy. Adjuvant chemotherapy is administered to prevent recurrence after surgery while preoperative chemotherapy is used to decrease the size of the tumor before surgery to preserve the breast and palliative chemotherapy to slow the progress of recurring tumors.

### 4) Target Therapy

It is a treatment method which causes less damage to normal cells by selectively blocking factors (receptors, proteins, mutant genes, etc.) which only occur in breast cancer cells. Target therapy is performed if the HER 2 receptor is positive.

### 5) Immuno-chemotherapy

It is a treatment method in which the signaling mechanisms which prevent immune cells from attacking cancer cells are blocked causing the body's immune system to attack the cancer cells.

### 6) Radiation Therapy

This method of treatment is used to prevent the recurrence of cancer in the remaining breast tissue after surgery, prevent the recurrence of cancer after resection, treat localized recurrences or alleviate pain and other symptoms associated with metastasis.

# Prostate Cancer

Our Urologic Cancer Interdisciplinary Team is composed of highly skilled physicians who provide comprehensive, patient-focused treatment for each type of urologic cancer (prostate, kidney, bladder, ureter and penile cancer). The team not only is capable of diagnosing, treating, and monitoring patients but also determines the best treatment option for each patient to maximize the quality of life and treatment results in addition to actively conducting a broad range of clinical research to seek new treatment methods.

Prostate Cancer



## Prostate Cancer

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### 1) Overview

It is a type of cancer where some prostate cells lose their normal function and grow/spread uncontrollably. It is the number one type of cancer among men in the West. Currently, it is ranked as the 4th major cancer in Korea and the number of cases is on the rise.

### 2) Symptoms

Prostate cancer is indistinguishable from prostatic hyperplasia, which is associated with difficulties in urinating, because in most cases, there are no specific symptoms. However, the following symptoms may appear as the cancer progresses.

- Presence of blood in the semen or urine
- Symptoms such as a frequent urge to urinate or urinary incontinence
- Bone pain due to bone metastasis, and low back pain due to spinal metastasis

## Diagnosis Method

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- Prostate specific antigen (PSA) test is performed to screen for prostate cancer.  
If result is 3ng/ml or higher, active testing should be performed.
- Digital rectal exam: It is an exam which involves a physician directly inserting a finger into the rectum to check the prostate's size, hardness, and relationship to other tissue.
- Transrectal ultrasound and biopsy: Examination method to confirm the cancer.
- Magnetic resonance imaging (MRI) & CT: Performed to check for metastasis to other organs.

## Treatment

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### 1) Active observation therapy

Due to the slow growth of the cancer in older patients if it is detected at an early stage in an elderly patient, treatment for prostate cancers is not conducted immediately. Instead, the cancer's progress is monitored through regular tests. Treatment begins when it is deemed appropriate according to test results.

### 2) Prostatectomy

As the standard treatment method, the cancerous prostate, seminal vesicles, vas deferens, and pelvic lymph nodes are removed through open or robotic surgery.

### 3) Radiation Therapy

It is performed when surgery is not possible. It is a method of destroying cancer cells by exposing the prostate to radiation.

- Performed as an alternative to surgery.
- Performed if the patient does not want to undergo surgery

### 4) Hormone Therapy

This method is performed when the cancer has spread to other organs other than the prostate.

### 5) Chemotherapy and Secondary Hormone Therapy

Performed when the patient no longer responds to hormone therapy

## Chemotherapy

It refers to the use of drugs in the treatment of cancer. It is prescribed differently for each individual in consideration of the type and distribution of the cancer, the degree of progression and side effects. One or two drugs may be used at the same time. The drugs used can be classified into cytotoxic anticancer agents, target anticancer agents, or immunotherapy.



### Types

<b>Cytotoxic anticancer agent</b>	<ul style="list-style-type: none"> <li>• Acts on rapidly growing and dividing cancer cells</li> <li>• May cause side effects due to its adverse impact on rapidly dividing normal cells</li> </ul>
<b>Target anticancer agent</b>	<ul style="list-style-type: none"> <li>• Targets cancer cells that cause mutations in specific proteins or genes</li> <li>• Minimizes damage to normal cells and reduces side effects</li> </ul>
<b>Immunotherapy</b>	<ul style="list-style-type: none"> <li>• Immune cells are not able to destroy cancer cells when the protein excreted by the cancer cells combine with the immune cells which protect our body</li> <li>• Immunotherapy drugs inhibit immune cells from combining with the protein of the cancer cells which enables the immune cells to attack the cancer cells</li> </ul>

## The Purpose and Methods of Chemotherapy

### 1) Cure

Chemotherapy is aimed at curing cancer by destroying cancer cells in order to prevent recurrence.

Lymphoma, acute lymphocytic leukemia, testicular cancer, etc. are representative examples of cancers where chemotherapy is used for the purpose of curing the cancer. Chemotherapy can be administered on its own (lymphoma, leukemia, testicular cancer, etc.) or in combination with surgery or radiation therapy.

(1) Adjuvant chemotherapy	Chemotherapy is performed on patients after surgery or radiation therapy to prevent the recurrence of cancer cells that may be remaining in the body and to increase cure rate. Ex : Breast cancer, colon cancer, etc.
(2) Neoadjuvant chemotherapy	It is performed for the purpose of reducing the size of large tumors before surgery or radiation treatment to make surgery or radiation treatment easier. Ex : Laryngeal cancer, osteosarcoma, anal cancer, bladder cancer, breast cancer, etc
(3) Concomitant chemotherapy	It refers to the simultaneous use of radiation therapy and chemotherapy for local tumors Ex : Esophageal cancer, lung cancer, anal cancer, etc

### 2) Cancer Control and Symptom Relief

If it is not possible to completely cure a patient due to metastasis, palliative chemotherapy is used to suppress and control the growth or metastasis of cancer in order to relieve symptoms associated with it. The purpose of this treatment is to extend the life of patients as well as to enhance their quality of life. This means that cancer can also be a disease that can be controlled and managed as a chronic disease such as high blood pressure or diabetes.

## Symptoms Requiring Medical Attention During the Treatment



High fever above 38°C (100°F)



If diarrhea persists for more than 5-6 times a day



In case of severe constipation, abdominal pain, abdominal distention



Severe nausea or vomiting which prevents you from consuming water or food.



Sudden weight loss or weight gain



Bleeding that does not stop well



Severe pain such as a headache



Abnormal shortness of breath

# Radiation therapy

Radiation therapy is a treatment that uses high-energy radiation to kill cancer cells. Currently, radiation therapy mainly uses a linear accelerator called Linac. X-rays from this device are used to treat deep areas of the body due to their high penetrability while its electron beams are used to treat epidermal areas such as breast cancer, skin cancer or cervical lymph nodes affected with cancer.



## Radiation Treatment Procedure



### Clinical evaluation

a comprehensive review of a patient's overall health condition, progression of the disease through the body, purpose of treatment, the presence of side effects due to treatment and treatment results



### Treatment simulation

A personalized device is constructed to secure the body which will be treated with radiation and the part of the body is marked with ink after undergoing a CT scan.



### Treatment planning

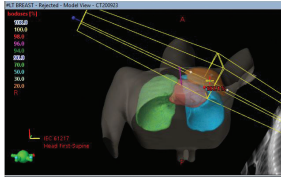
Treatment plan is made so that the optimum amount of radiation is irradiated on the target area and exposure of nearby organs or healthy tissue is minimized in order to maximize treatment results and minimize side effects (3 to 4 days).



## Applicable Diseases

- Most carcinomas except for tumors that do not respond well to radiation therapy (melanoma, some sarcomas, etc.)
- Breast cancer · gastrointestinal cancer (esophageal cancer, rectal cancer, liver cancer etc.), lung cancer, head and neck cancer, cervical cancer, prostate cancer, nervous system tumors, etc.
- Radiation therapy may be used on its own or in combination with surgery and anticancer agents

## Treatment

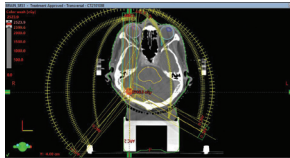
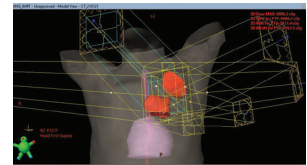


### 3D Conformal Radiotherapy

Using advanced computerized software from diagnostic images such as CT and MRI, the tumor area and normal organs are accurately reconstructed in three dimensions. The position and direction of radiation are also adjusted in three dimensions to ensure that only the tumor is exposed to the radiation in order to protect normal tissues in the surrounding area as much as possible.

### IMRT (Intensity-Modulated Radiation Therapy)

It is one of the most advanced forms of treatments created through the integration of electronic engineering and precision control engineering by applying advanced basic scientific theories. IMRT is very effective in minimizing the side effects of radiation therapy by focusing the radiation only on the tumor while also having the ability to control the shape of the irradiation surface and the irradiation time in dozens of ways. It is possible to increase the cure rate of cancer while minimizing side effects and complications for cancers found in the head, neck and prostate. Recently, IMRT is being applied to almost all cancers such as brain tumor, cervical cancer, liver cancer, lung cancer, and breast cancer.



### SRS & SBRT, Stereotactic Radiosurgery and Stereotactic Body Radiotherapy

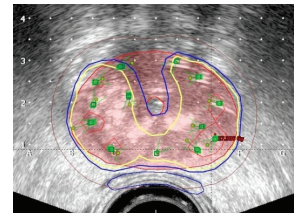
It is a safe and noninvasive treatment method which uses radiation produced by a state-of-the-art linear accelerator to destroy tumor cells in all parts of the body including the head and neck without the need for surgical incisions.

It minimizes the risks or side effects which were unavoidable using existing surgical techniques while yielding equivalent or even better results to that of surgery. It is a method where a tumor is accurately located three-dimensionally and exposed to high doses of radiation from all directions.

### Brachytherapy

Unlike external radiation therapy, a radioactive isotope is inserted directly into the tumor or the nearby area to focus high-dose radiation on the tumor. This method can be used alone or in combination with external radiation therapy to deliver high-dose radiation which improves local control of tumors.

Especially, our hospital is able to perform this treatment method on cervical cancer, prostate cancer, biliary tract cancer, esophageal cancer, lung cancer, and brain tumor based on the latest MRI-guided radiotherapy.



#### Start of treatment

The time of each treatment sessions takes between 15 to 30 minutes according to the method used. The total treatment period may take up to two months depending on the cancer type and condition of the patient.

※ Although the patient is alone in the treatment room, he or she will be monitored via a TV monitor in the control room and will be able to speak with the medical staff through a microphone and speaker.



#### Post-treatment Evaluation

After completing the entire radiation treatment process, the patient's general condition, the presence or absence of side effects from the radiation treatment, and treatment results are evaluated. Explanations on the treatment progress, post-treatment precautions, and periodic checkup plans are provided through direct consultation with the patients.

# Nutrition Management for Cancer Patients

## Cancer Prevention Tips



Do not smoke.  
Avoid second-hand smoking as well.



Eat sufficient amounts of vegetables and fruits. Eat a well-balanced diet.



Avoid eating salty or burnt foods.



Avoid drinking even a few alcoholic drinks in order to prevent cancer.



Walk or exercise for more than 30 minutes, 5 times a week.



Maintain a healthy body weight which is appropriate for your body size.



Make sure to be vaccinated for hepatitis B and HPV.



Make sure to engage in safe sexual intercourse to prevent STDs.



Make sure to observe safety regulations in the workplace to prevent exposure to carcinogens.



Make sure to get screened for cancer according to relevant policies.

## Meal Management for Cancer Patients

### 1) Tips for a Healthy Diet

- Eat regular meals for breakfast, lunch, and dinner.
- Be sure to eat protein such as meat, fish, eggs, tofu, beans, and cheese for each meal.
- Eat 2 or more side dishes made of vegetables.
- If you have difficulty chewing or swallowing, finely mince or grind the food before eating.
- It is beneficial to eat more than one type of fruit 1-2 times a day.
- Drink at least one cup (200mL) of milk or other dairy products per day.



- If you are unable to drink milk, eat yogurt, soy milk, or cheese instead.
- Eat about 1/2~1 bowl of rice with each meal. You can also eat noodles as an alternative to rice.
- In the case of porridge, eat it often, about 4-5 times a day.
- Eat small amounts of bread, cookies, or rice cake as snacks in between meals.
- Fats such as cooking oil, sesame oil, butter can be used for stir frying.
- Make sure to avoid food that is too spicy or salty.

## 2) Nutrient Requirement for our Body

Nutrient	Role	Deficiency	Foods that Contain High Levels of the Nutrient
Carbohydrates	Energy source	Weight loss	Rice, porridge, noodles, bread, rice cakes, potatoes, sweet potatoes, corn, crackers, etc
Proteins	Components of muscle, blood, hormone and antibodies	Deterioration or weakening of immune functions	Meat (beef, pork and chicken), fish, shellfish, eggs, tofu, beans, milk and dairy products, etc.
Fats	Energy source	Weight loss	Cooking oil, sesame oil, perilla oil, butter, margarine, mayonnaise, peanuts, pine nuts, etc.
Vitamins and minerals	Acts as lubrication for the body	Deterioration of control functions	vegetables, fruits

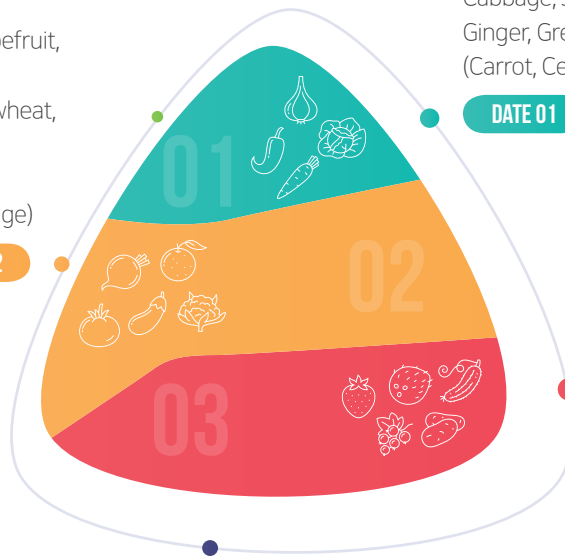
## 3) Cooking Tips to Reduce Carcinogens

- It is recommended to cook at low temperatures such as boiling and steaming, and avoid cooking at high temperatures such as frying.
- Keep the cooking time as short as possible.
- Pre-cook meats before grilling.
- Avoid direct grilling over charcoal.

## 4) Anti-cancer Food Design Program

- Anti-cancer Food Pyramid Recommended by the U.S. National Cancer Institute

Onion, Tea (black tea, green tea),  
Tomato, Eggplant,  
Citrus (orange, lemon, grapefruit,  
tangerine, yuzu)  
Whole grain (whole-grain wheat,  
brown rice),  
Cruciferous vegetables  
(broccoli, cauliflower, cabbage)



Garlic  
Cabbage, Jujube  
Ginger, Green and Yellow vegetables  
(Carrot, Celery, Chives, Green pepper)

DATE 01

DATE 02

DATE 03

Oatmeal, Mint, Oregano,  
Rosemary, Cucumber,  
Potato, Sweet potato,  
Nuts, Red grape, Barley,  
Strawberry

# Directions



## Transportation Guide



### Bus

1. Purchase ticket to Dongdaegu(East Daegu) at the ticket booth next to Exit 10
2. Board the bus at designated bus station(10B)

※ Bus station may change depending on the airport operation.

※ Travel time: 4 hours



### KTX

Visit the Information Center at the airport



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