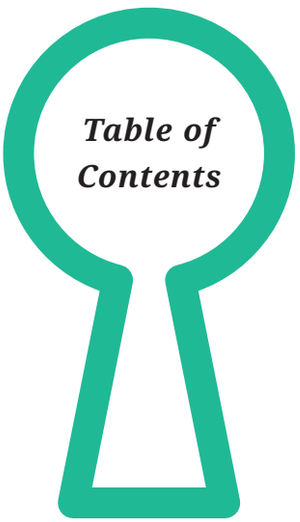
# *SMART CARE*

# CANCER

***Excellence in Cancer Treatment***

*MEDICAL KOREA IS*
***KEY TO HEALTH***




*"Medical Korea is the national brand that represents Korea's excellence in medical service."*

## Chapter 01.



## Chapter 02.

## *Chapter 03.*

## *Chapter 04.*

# WORLD-CLASS CANCER TREATMENT

*Turning a weakness into a strength*
*Remarkable outcomes of cancer treatment*
*World-class infrastructure for patients*
*Cutting edge equipments for patients*
*Pioneering cancer treatment through steady research*
*Global service for international patients*

Chapter

**01**

# TURNING A WEAKNESS INTO A STRENGTH

12

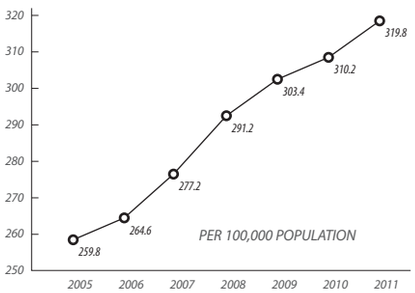
### *Highest cancer incidence in Asia*

*According to international age-standardized cancer incidence rates, the incidence rate of Korea is 262.4, higher than the average of OECD, 260.9 and much higher than the other Asian countries.*

*Cancer incidence of Asian countries*

| Country | Rate |
|---|---|
| India | 98.5 |
| Indonesia | 143.5 |
| Turkey | 144.8 |
| China | 181.0 |
| Russia | 200.5 |
| Japan | 201.1 |
| **Korea** | **262.4** |

*International Agency for Research on Cancer, 2008*




***AGE-STANDARDIZED CANCER INCIDENCE RATES***
*Korean National Cancer Information Center, 2013*

### *Increasing incidence rate*

*Korea is running central and local cancer register centers to calculate cancer incidence rates and build systemic cancer incidence database. Age-standardized cancer incidence rates are calculated in those centers. According to the investigation, the cancer incidence rate of Korea is annually increasing.*

### *Why Korea especially has the highest cancer incidence rates?*

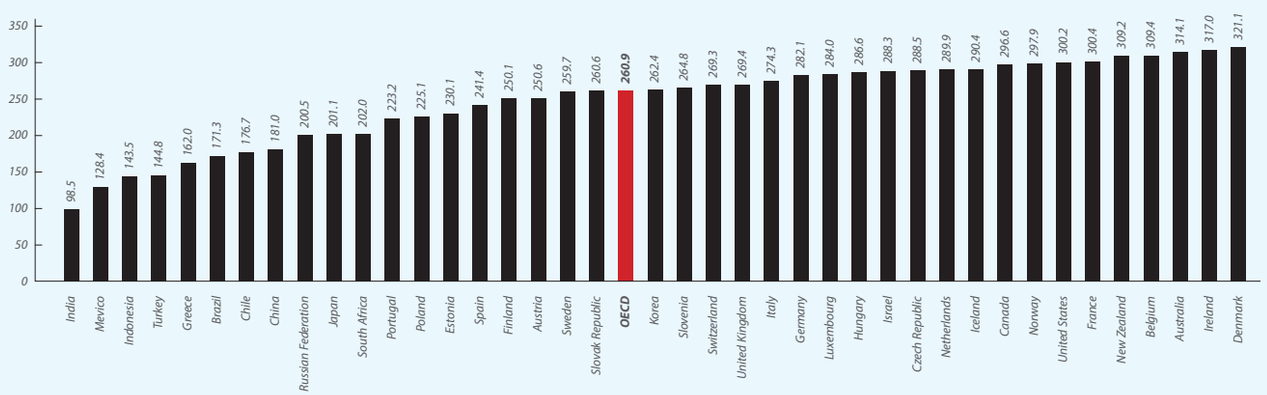
*High cancer incidence rate in Korea is caused by dietary habits, smoking, drinking, exercise and stress.*

*Cause of high cancer incidence rates in Korea*

| Category | Reason |
|---|---|
| Diet | Westernized diet |
| Smoking | 2nd smoking rates among OECD countries |
| Drinking | Binge, mixed drinking |
| Exercise | Lack of exercise |
| Stress | 1st labor hour among OECD countries |
| | 1st suicide rate among OECD countries |

*In order to improve the situation, Korea has invested in cutting edge facilities and equipments and performed research and achieved outstanding performance. Treatment of some cancer types such as stomach cancer is now known as world-class.*

***AGE-STANDARDISED RATES PER 100,000 POPULATION***



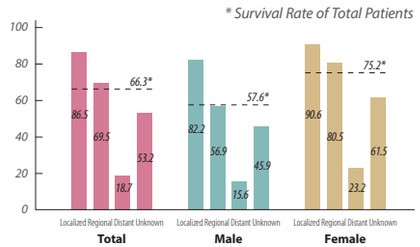

***INTERNATIONAL COMPARISON OF CANCER INCIDENCE***
*International Agency for Research on Cancer, 2008*

### *5-year survival rate of major cancer*

*High 5-year survival suggests good treatment outcomes. Over the past 18 years, survival rate of cancer patients were continuously increasing and recently reached 66.3%. Especially, survival rate of breast cancer and thyroid cancer, two most common cancer, is 91.3% and 100.0% respectively.*

### *5-year relative survival rate by progress of cancer*

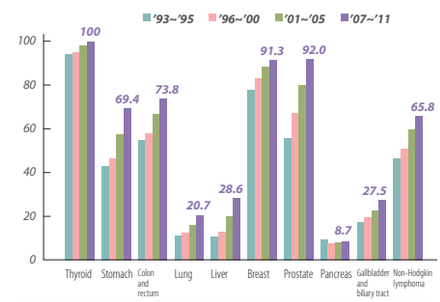
*In the case of localized cancer without metastasis, the 5-year relative survival rate by progress of cancer is 86.5%. Especially, the rate of prostate, thyroid, breast, colon and stomach is 90 to 100%.*




***5-YEAR RELATIVE SURVIVAL RATE OF CANCER TYPES by Progress of cancer****(2007-2011)*
*Korean National Cancer Information Center, 2013*

### *International comparison of 5-year survival rate*

*What if it is compared to other leading nations in the world? Korea has higher survival rate than U.S., Canada, Europe, and Japan in most of the cancer types. U.S. possesses high survival rate also, but it is achieved by high incidence of prostate cancer, a cancer with high survival rate(99.2%), which elevated the average.*




| | Thyroid | Stomach | Colon and rectum | Lung | Liver | Breast | Prostate | Pancreas | Gallbladder and biliary tract | Non-Hodgkin lymphoma |
|---|---|---|---|---|---|---|---|---|---|---|
| '93~'95 | 94.2 | 42.8 | 54.8 | 11.3 | 10.7 | 77.9 | 55.9 | 9.4 | 17.3 | 46.6 |
| '96~'00 | 94.9 | 46.6 | 58.0 | 12.7 | 13.2 | 83.2 | 67.2 | 7.6 | 19.7 | 50.8 |
| '01~'05 | 98.3 | 57.7 | 66.6 | 16.2 | 20.2 | 88.5 | 80.1 | 8.0 | 22.8 | 59.9 |
| '07~'11 | 100.0 | 69.4 | 73.8 | 20.7 | 28.6 | 91.3 | 92.0 | 8.7 | 27.5 | 65.8 |
| | 5.8 | 26.6 | 19.0 | 9.4 | 17.9 | 13.4 | 36.1 | -0.7 | 10.2 | 19.2 |

***5-YEAR SURVIVAL RATE OF MAJOR CANCER***
*Korean National Cancer Information Center, 2013*

### *Korea is the best in Stomach cancer treatment*

*5-year survival rates of stomach cancer shows prominent difference. Compared to 27.7% of U.S., 25.0% of Canada and 63.3% of Japan, Korea shows survival rate of 69.4%. Stomach cancer is highly prevalent in Korea and there has been steady efforts to enhance stomach cancer treatment outcome. It is also confirmed in center-specific comparison as well as country-specific comparison.*

*While one of top cancer centers in the world, Memorial Sloan-Kettering Cancer Center estimated to account for about 2% of post-operative mortality, Severance Cancer Hospital accounted for 0.5% and Seoul National University Hospital had only 0.6%. 900 stomach cancer surgeries are performed every year in Seoul National University Hospital, which is the most in operation number worldwide. In the case of mortality rate, direct comparisons between Seoul St.Mary's Hospital stomach cancer and Memorial Sloan-Kettering Cancer Center show 81% and 58% respectively, which suggests the former is far more superior.*

*Electrocautery surgery technique was developed in Korea, and it is the therapeutic standard of the world. Evolution of laparoscopic stomach cancer surgery has made intracorporeal anastomosis (every step of surgery done inside the body) possible and it was made by Korean medical teams. So far, 4,300 patients received the surgery(95% recovery rate). It is internationally accepted that Korean medical institutes practice the best surgical technique.*

*(Unit : %)*

| Site | Korea ('96-'00) | Korea ('01-'05) | **Korea ('07-'11)** | USA ('03-'09) | Canada ('06-'08) | Japan ('03-'05) |
|---|---|---|---|---|---|---|
| All cancers | 44.0 | 53.8 | **66.3** | 65.8 | 63 | 58.6 |
| Stomach | 46.6 | 57.5 | **69.4** | 27.7 | 25 | 63.3 |
| Liver | 13.2 | 20.2 | **28.6** | 16.1 | 20 | 27.9 |
| Cervix uteri | 80.0 | 81.3 | **80.1** | 67.9 | 74 | 72.2 |
| Colon and rectum | 58.0 | 66.6 | **73.8** | 64.9 | 65 | 69.2 |
| Thyroid | 94.9 | 98.3 | **100.0** | 97.7 | 98 | 92.2 |
| Breast | 83.2 | 88.5 | **91.3** | 89.2 | 88 | 89.1 |
| Lung | 12.7 | 16.2 | **20.7** | 16.6 | 17 | 29.7 |
| Pancreas | 7.6 | 8.0 | **8.7** | 6.0 | 8 | 7.0 |
| Prostate | 67.2 | 80.1 | **92.0** | 99.2 | 96 | 93.8 |

***INTERNATIONAL COMPARISON OF 5-YEAR SURVIVAL RATE OF CANCER TYPES***
*Korean National Cancer Information Center, 2011*

# WORLD-CLASS INFRASTRUCTURE FOR PATIENTS



***Cancer center : One-stop care system for cancer treatment***

*Cancer center is a large collaborating system for cancer treatment. It covers from patient care to research, different from the traditional system which had medical and surgical department separated. Cancer specific center for stomach cancer or liver cancer were established and it was since then one-stop service was provided to patients.*
*Korea has 12 local government designated cancer centers, and most of the university hospitals and major hospitals own specialized cancer centers. Recently, major hospitals built separated cancer hospitals with accumulated know-how and techniques to provide world-class cancer treatment service.*

***Interdisciplinary cooperation for optimal, personalized treatment***

*Interdisciplinary cooperation became possible with organized discussion between specialists for optimal and personalized treatment. Therefore medical staff could approach patients with various point of view. Recently, fast-track system was applied to interdisciplinary cooperation system, which has shortened waiting hours and enabled faster care.*

***Highly experienced medical staffs performing difficult surgery***

*Korean medical staff have abundant experiences since there are numerous cases. With accumulated experience and ceaseless effort, 5-year survival rate of cancer is now increasing and surgery with high difficulties are showing prominent outcome.*

*Surgical technique of Korea is also proven through robotic surgery with cutting edge equipment. A world standard rectal cancer surgery technique was established by Korea University Anam Hospital, and exported to U.S. surgeons.*

*Recently, the first robotic rectal cancer surgery was performed in Southern England by Professor Gyuseok Choi from Kyungpook National University Hospital. The operation was broadcasted worldwide by BBC, proved that Korean surgeons were experienced enough to perform surgery with various difficulties. The result is due to endless efforts overcome cancer. The government has been building cancer management system while financially supporting selected cancer research investigators. In private sectors, investors often invest in cutting edge equipments for better treatment outcome. Up-to-date medical knowledges are shared throughout medical society by interdisciplinary cooperation.*

*Discussion of optimal therapy by specialists from various departments*

*First rectal cancer robotic surgery U.K.South*

# CUTTING EDGE EQUIPMENTS FOR PATIENTS

***Proton therapy selectively affects cancer cell***

*Previous radiologic therapy damaged normal cells and complications such as hair loss or vomiting were commonl. Proton therapy, however, selectively affects cancer cells by accurate proton radiation and rarely causes complications. It is effective for lung cancer, liver cancer, cervical cancer, breast cancer, rectal cancer and prostate cancer.*
*There are only 29 hospitals which possesses proton therapy equipment, and Korea National Cancer Center is the one. Cost of proton therapy in Korea is 1/5 to 1/3 of U.S.. Therefore, there are numerous American patients who visit Korea to receive proton therapy with lower cost.*

***da Vinci®, using the latest in surgical & robotics technologies***

*Small scar and fast recovery are the advantages of laparoscopic surgery. It is the one of so-called minimally invasive surgeries. da Vinci® robotic surgery combined with laparoscopic surgery is performed several thousand times every year in Korea.*

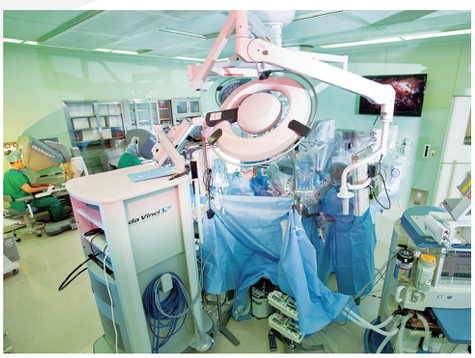
*Applying the da Vinci® robot, Korean hospitals operate with the world-best surgical technique. The know-how has been exported to international surgeons. Severance Hospital, in fact, was designated as robotic surgery training center, training international staffs from overseas since 2009.*

***Tomotherapy, treating widespread cancer***

*Previous treatment was applied multiple times if cancer is widespread or scattered. Tomotherapy applies radiation helically with realtime CT images, thus targeting cancer tissue accurately with high radiation intensity. Normal tissue receive less radiation and side effect caused by radiation is dramatically reduced. Therefore tomotherapy is used when the cancer site has radiosensitive normal tissue.*
*Tomotherapy was introduced in Korea in 2005, and it is utilized for cancer patient treatment. Annually 1,500 cases are performed in respective hospitals.*




*Proton Treatment*



*da Vinci® surgical system*


*Tomotherapy*

# PIONEERING CANCER TREATMENT THROUGH STEADY RESEARCH



### *R&D budget of 182 million dollars per year*

*Korean government has been establishing cancer management and drug development infrastructure under stage II 10-year-project, scheduled to be completed until 2015. Especially for cancer R&D, investment has been gradually increased, now reaching 182 million dollars per year.*

### *Trends of patents in cancer R&D*

*The U.S. possesses most of the world's patents in cancer R&D, taking the lead in the field. Korea has been continuously working on the field, marking a high annual growth rate of 17.59% and ranked 6th in the world in quantity.*

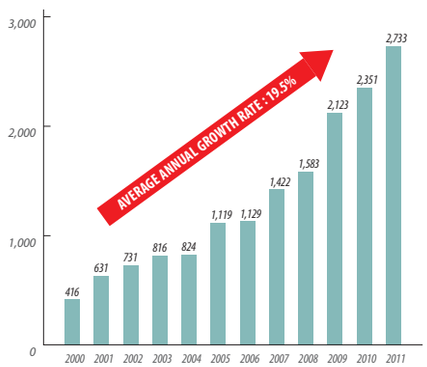
### *Steady growth of the research area*

*Impact factor(IF) is a measure of importance of a journal within its field. The number of high-impact journal(IF > 7) published worldwide has been decreased, showing -0.4% annual growth rate, while the number of Korean high-impact journal is growing on the annual rate of 15.37%.*

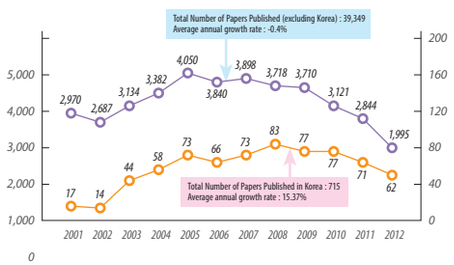
### *Korean clinical trial became the world standard*

*NCCN(National Comprehensive Cancer Network) is an alliance of twenty-five cancer centers in the U. S, most of which are designed by the National Cancer Centers. In June 2012, NCCN included a Korean clinical trial into their guideline which is about the effect of post-operation chemotherapy of 1,035 stage II-III stomach cancer patient in Asia. There was no research proving the effect of post operation chemotherapy before, and there wasn't consensus, which means no specific treatment. It was the first research in Asia with asian data only; therefore, it became a reference of NCCN guideline.*

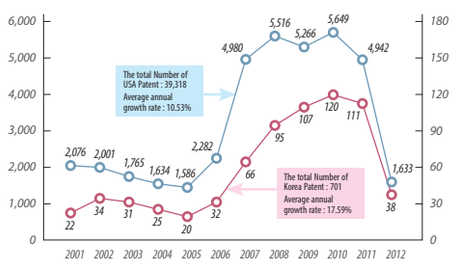
*The success could be achieved through the effort of continuous government investment, passionate physicians, and willing patients participating actively to various clinical trials.*



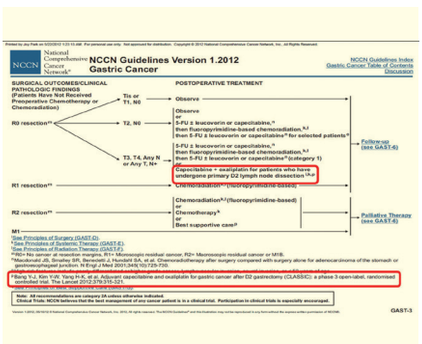

***TRENDS OF GOVERNMENT INVESTMENT IN CANCER R&D***
*Ministry of Health and Welfare, 2013*




***TRENDS OF CANCER RELATED JOURNAL PUBLISHED***
*Ministry of Health and Welfare, 2013*




***TRENDS OF U.S. PATENTS IN CANCER R&D***
*Ministry of Health and Welfare, 2013*




*NCCN guideline of stomach cancer*

# GLOBAL SERVICE FOR INTERNATIONAL PATIENTS



***International healthcare center for international patients***

*211,218 international patients(Excluded number of re-visited/re-admitted patients) have visited Korea in single year of 2013, and the number of patients are increasing year by year. Development of infrastructure is a clear result. International healthcare centers for international patients are growing in size to meet the demand and variety of language services are provided to resolve communication issues.*

*Hospitals are currently developing services in an effort to mitigate discomfort from cultural differences by providing religious facilities and accustomed food to reduce discomfort due to cultural difference, pick-up service in airport, rent-a-phone service. All of these distinguished services are provided to the international patients.*

***One-stop-service through multiple alliances***

*Embassy, local hospitals and universities are connected to Korean hospitals, providing one-stop services for international patients. The services cover VISA issuing, entrance, diagnosis, treatment, all the way down to departure.*

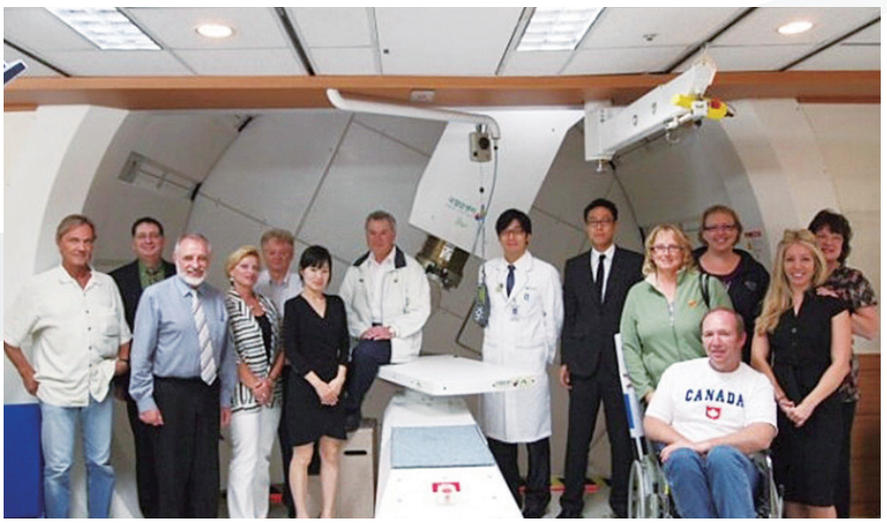
*For international patients, it is essential to make the entire process as short as possible since longer the time it takes, the more cost it becomes. Entire process has been designed in order to shorten the time. Applying leading IT technology of Korea, patients' can send their data from their local clinics. It determines whether they could be treated or not, even before they enter Korea, thus saving more time.*

*With the cooperation from the insurance companies abroad, services for patients without international coverage have been developed.*

***The reasons for cancer patients to choose Korea as a destination for Healthcare***

*The biggest reason why cancer patients choose Korea is because of its world-class medical service. Especially for cancer, Korea has numerous specialized centers with advanced technology and abundant experiences since they have been actively expanded related infrastructure due to large cancer population.*

*Furthermore, it is cost-efficient while world-class service is served, comparing to other countries which has similar level of medical service. Expanding Infra structure properly serves increasing number of international patients, making it possible to concentrate on treatment without suffering language, religional, cultural problems, thus chosen by international patients.*



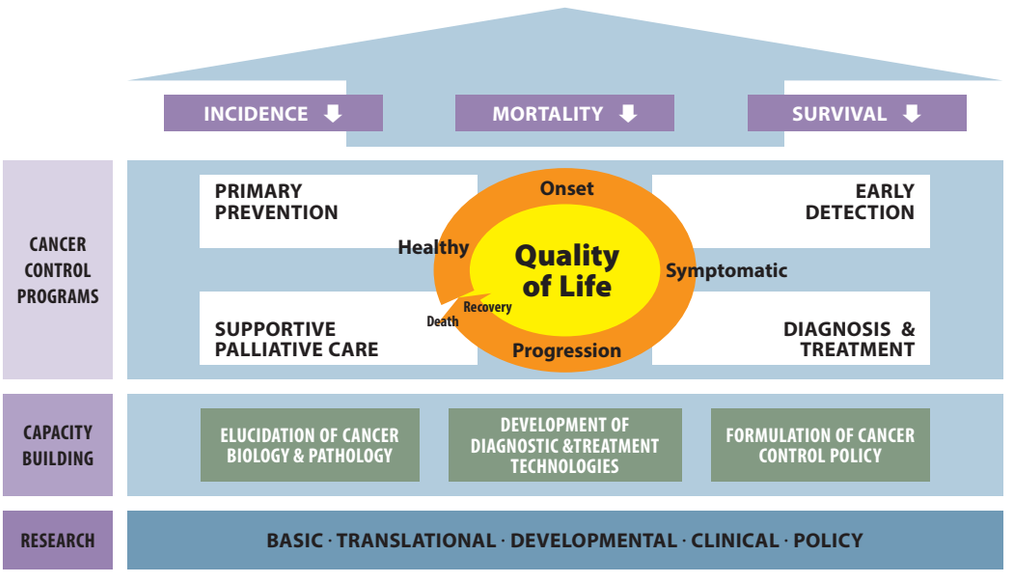

*A commemorative photograph of 13 international patients overcame cancer and their colleagues, voluntarily revisited to cheer patients coping on cancer in Korea*

# *Korea, Increase of cancer survival rate by the Health checkup and the accuracy of screening according to life cycle*

***Cancer can be cured by 90% when it is detected at early stage.***

*To reduce the burden of cancer for citizens, Korea has developed 'Recommendation for cancer screening' in 2002 by strengthening measures against cancer mortality and slowing or stemming the increased incidence rate. This allows all Korean to detect their possibility of having cancer in early stage. Currently cancer screening program for major cancers has been provided to the public. Aged 40 and 60 are eligible for this service.*

## *Significant Reduction of Cancer Burden*




***THE SECOND 10-YEAR PLAN FOR NATIONAL CANCER CONTROL***
*Ministry of Health & Welfare 2011*

*Note)*

*1) UGI: upper gastro-intestinal series*
*2) AFP: serum alpha-feto protein test*
*3) FOBT: fecal occult blood test*
*4) DCBE: double-contrast barium enema*

**High-risk group: HBs Ag positive, anti-HCV Ab positive, or diagnosed with liver cirrhosis*

| Cancer | Target Population | Interval | Test or Procedure |
|---|---|---|---|
| Stomach | Age 40 & Over | 2 years | Endoscopy or UGI |
| Liver | Age 40 & Over<br>High risk group | 1 year | Sonography & AFP |
| Colon & rectum | Age 50 & Over | 1 year | FOBT : in case of an abnormal result, Colonoscopy or DCBE |
| Breast | Age 40 & Over<br>Women | 2 years | Mammography |
| Cervix uteri | Age 40 & Over<br>Women | 2 years | Pap smear |

***GUIDELINES OF THE NATIONAL CANCER SCREENING PROGRAM***
*National cancer center 2013*

## *Customized program according to gender & age*

*Korean hospitals provide the customized health checkup program according to patients' gender, age, health status and their personal concerns.*

### *Medical Checkup Process*

*Korea provides the best medical services for health checkup of patients.*

*Step 1. Reservation counseling (General medical health checkup or Specialized checkup program)*
*Step 2. Reservation confirmation*
*Step 3. Receiving the health check-up form*
*Step 4. Health checkup (approximately 2~8 hours)*
*Step 5. Receiving blood test results on the day of checkup and early notification*
*Step 6. Result consultation after 1~10days*
*Step 7. Follow-up consultation*

### *Medical Checkup Program*

| | |
|---|---|
| ***Basic comprehensive medical check-up*** | *- General tests*<br>*- Blood tests*<br>*- Digestive system check-up*<br>*- Circulatory system check-up*<br>*- Respiratory system check-up*<br>*- Osteoporosis test* |
| ***Specialized medical check-up program*** | *- Precision comprehensive medical check-up*<br>*- MRI comprehensive medical check-up*<br>*- Medical check-up for youth*<br>*- Medical check-up for couples to be married*<br>*- International Express medical check-up*<br>*- Prestige medical check-up program(stay in private VIP room)* |
| ***Additional medical check-up items to be selected*** | *- MRI*<br>*- CT*<br>*- Colorectal test*<br>*- Ultrasound*<br>*- Uterine cancer*<br>*- Tumor markers* |

# CHARACTERISTICS OF TREATMENT BY CANCER TYPES IN KOREA

*Liver cancer, Thyroid cancer, Gall Bladder/Pancreatic cancer*
*Colon cancer, Bladder cancer, Stomach cancer*
*Breast cancer, Cervical cancer, Prostate cancer, Lung cancer*

Chapter

**02**

# LIVER CANCER

***Risk factors for liver cancer***

*The risk factor for liver cancer is mainly hepatitis B and C, accounts for 80%. Also, excessive alcohol intake can lead liver cirrhosis and liver cancer. Regardless of causes, all cirrhotic patients are in the high-risk group and regular checkup is important.*

***General symptoms of liver cancer***

① *Pain in upper abdomen, abdominal distension, weight loss*
② *Fatigue, palpable mass*

*Initially asymptomatic, patients experience symptoms later and if these definite symptoms are seen, most of patients may have progressed liver cancer.*

***Guidelines on screening liver cancer***

① *Liver cirrhosis patient*
② *Positive surface antigen of HBV*
③ *Positive antibody of HCV*
④ *Chronic liver disease by hepatitis B or C*

*If a patient aged more than 40 who is in a highrisk group, the patient should have abdomen ultrasound test and serum alpha fetoprotein test for early detection of liver cancer. Other tests include CT and angiography.*

***Treatment of liver cancer***

***<Completely curable case>***

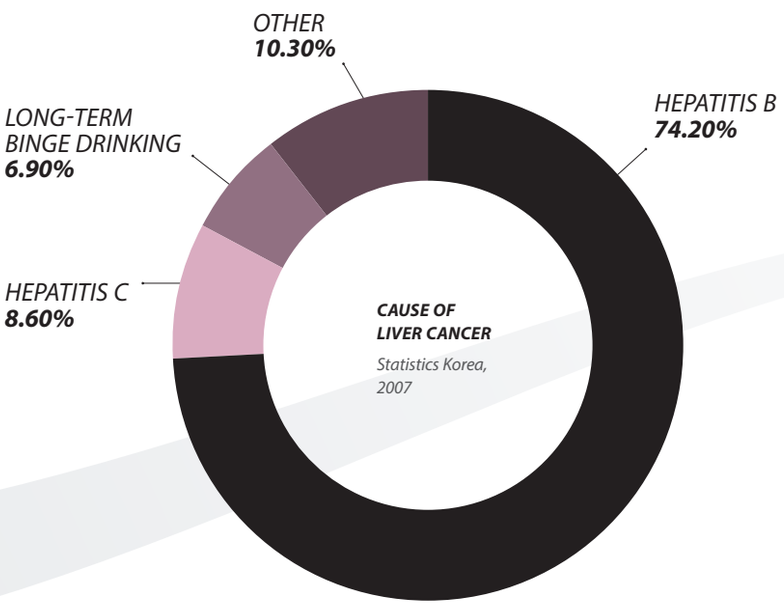
① *Liver resection : removal of tumor from liver*
② *Liver transplantation : transplant of part of liver from a donor*
③ *Radiofrequency ablation, RFA : Necrosis of tumor by heat*
④ *Ethanol injection : Necrosis of tumor by ethanol*

***<When treatments above are not available>***

① *Transarterial Chemo Embolization: anticancer drug injection through blood vessel and blockage of blood supply*
② *Radiotherapy: Removes cancer cell with radiation*
③ *Chemotherapy: Improves survival rate using chemotherapic agent*

*For liver cancer patients, damaged liver may not be able to recover with the best treatment and there are many relapse cases. Moreover, metastasis to lung or bone may occur so that regular checkup is necessary.*





# OUTSTANDING ACHIEVEMENT OF LIVER CANCER TREATMENT



## *Incidence of liver cancer*

***Incidence of liver cancer in Korea***

| | Incidence | per 100,000 | %(Rank) |
|---|---|---|---|
| Male / Female | 32.9 | 16,463 | 7.6%(5th) |
| Male | 48.6 | 12,189 | 11.1%(4th) |
| Female | 17.1 | 4,274 | 4.0%(6th) |

*Korean National Cancer Information Center, 2011*
*(Unit: patients/100,000, patients/year)*

*In Korea, liver cancer shows the 5th highest incidence rate and occurs in men rather than women. (4th in male, 6th in female)*

***International comparison of liver cancer incidence rate***

*< Male >*

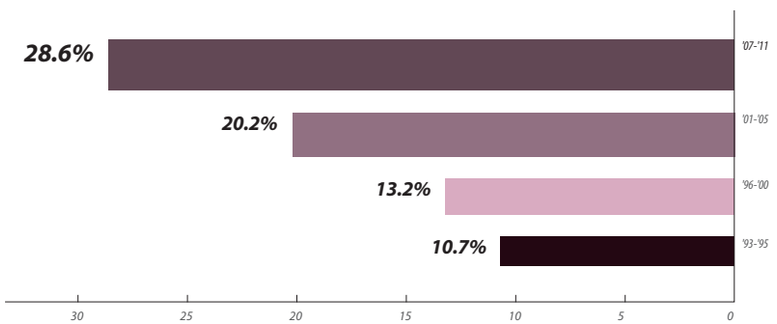
| Korea('11) | Japan('12) | U.S.('12) | U.K.('12) |
|---|---|---|---|
| 35.6 | 14.6 | 9.8 | – |

*< Female >*

| Korea('10) | Japan('08) | U.S.('08) | U.K.('08) |
|---|---|---|---|
| 10.3 | Not listed within 10th place | | |

*International Agency for Research on Cancer 2012, Korean National Cancer Information Center, 2011*
*(Unit: patients/100,000)*

*Although liver cancer is not among the top ten incidence rates in U.S. and UK, it has high incidence rate in Asian countries. Due to the abundance of carriers of hepatitis B and C, which is the main cause(80% of total) of liver cancer, Asia and Africa have a higher incidence than in Europe and America. Incidence of liver cancer is high in Korea since 5-10% of total population carries hepatitis B.*




***5-YEAR SURVIVAL RATE OF LIVER CANCER***

## *Mortality rate of liver cancer*

***Korea liver cancer Mortality rate***

| | Death | Per 100,000 | % (rank) |
|---|---|---|---|
| Male / Female | 22.5 | 11,335 | 15.4% (2nd) |

*Korean National Cancer Information Center, 2011*
*(Unit: patients/100,000, patients/year)*

*The reason why liver cancer can be fatal is that many early liver cancer patients are asymptomatic and symptoms are usually seen in the terminal phase. However, once patients receive treatment in early phase, the outcome can be better.*

## *5-year survival rate of liver cancer*

| '93-'95 | '96-'00 | '01-'05 | '07-'11 |
|---|---|---|---|
| 10.7% | 13.2% | 20.2% | 28.6% |

*Korea National Cancer Information Center, 2011*

*As a result of efforts to lower the mortality rate due to liver cancer, the 5-year survival rate is consistently increasing and reached up to 28.6%.*

***International comparison of 5-year survival rate of liver cancer(male/female)***

| Korea('96-'00) | Korea('01-'05) | Korea('07-'11) |
|---|---|---|
| 13.2% | 20.2% | 28.6% |
| U.S.('03-'09) | Canada('06-'08) | Japan('03-'05) |
| 16.1% | 20.0% | 27.3% |

*International Agency for Research on Cancer 2012, Korea National Cancer Information Center 2011*

*Contrary to other cancer, the 5-year survival rate is low. However, Korea shows the higher survival rate.*

***5-year survival rate of liver cancer according to stage(male/female)***

| Stage I | Stage II | Stage III | Stage IV |
|---|---|---|---|
| 46-78% | 33-77% | 0-71% | 0-66% |

*KHIDI, 2013*

*According to investigations of major hospitals in 2013 by Korea Health Industry Development Institute, the 5-year survival rate after treatment is far higher than 28.6% and it becomes higher when liver cancer is treated early. This results showed patients were actively treated and the outcome of liver cancer in Korea is outstanding.*

### *Many local treatment cases*

① *Single tumor, ≤5cm*
② *Number of tumors ≤3, ≤3cm each*

*Local treatment is an effective treatment for small liver cancer mentioned above. Recently there are many cases of early detection of liver cancer through regular medical checkups. Radiofrequency ablation(Appling electric current to tumor) and ethanol injection (Injecting ethanol to tumor) are therefore widely used. Seoul National University cancer hospital has performed local treatment to 4,073 patient, reaching to 83% of total necrosis rate of tumor and showed 98%/96%/88% of 1/2/3 year survival rate, which was similar to that of liver resection.*

### *Robot operations raise quality of life*

*Liver resection is a treatment of liver cancer, considered as a primary choice when the remaining segment of liver could function properly after partial removement. However, conventional open surgery is followed by slow recovery and large scar. In Korea, not only outcome but quality of life is considered important, laparoscopic surgery has reached great technical advance, which means no large incision is made and procedure is done through tiny holes. Recently, world-class treatment is performed using robot laparoscopy, and it is also applied on liver resection. Data of Seoul St. Mary's Hospital, which had many cases of robot liver resection, 3 year survival shows more benefits than conventional open surgery.*

### *Peerless skills in living donor transplantation*

#### *Number of living donor liver transplantation*

| Rank | Country | Per 1 Miilion |
|---|---|---|
| 1 | Korea | 13.64 |
| 2 | Singapore | 7.33 |
| 3 | Turkey | 5.45 |
| 4 | Japan | 3.62 |
| 5 | Jordan | 3.28 |
| 6 | Canada | 2.01 |
| 7 | New Zealand | 1.63 |
| 8 | Swiss | 1.60 |
| 9 | Saudi Arabia | 1.50 |
| 10 | Belgium | 1.21 |

*WHO, 2008*

*In liver transplantation, affected liver is completely removed and new liver is transplanted. Living donor transplantation is popular in Korea, since in more cases children donate their liver to parents(50-60% of cases) while few people pledge organ donation.*

*It is a difficult surgery since both donor and recipient must survive. But constant efforts developed two living donor liver transplantation which involves liver of two donor transplanted into one patient. It is an extremely advanced technique marking most number of operation cases in the world. Time of operation has been cut down to 6-7 hours, originally 10-12 hours, thanks to advance of vessel anastomosis technique. Leaving no doubt that the skill is world-leading, therefore surgeons, even from U.S. and Japan, visit Korea to learn the essentials of living donor transplantation.*


*Da Vinci robot operation*

# LIVER CANCER PATIENTS REGAIN THEIR HOPE IN KOREA



***Developed liver cancer while treating Hepatitis B(HBV)in Thailand***

*Mr. Delgerbayar living in Ulan Bator, Mongolia, visited a hospital in Thailand with frequent fatigue since 2008 and continuous fever. He was diagnosed hepatitis B and treated. In 2011, he got worse ascites, nausea of persisting pain made Mr.Delgerbayar lost his hope to live on.*

***Specialized coordinator and medical form***

*In Mongolia he heard by chance that Seoul National University in Korea had successfully transplanted Mongolian patient's liver for two times. Wondering the possibility of cure he visited Seoul National University International healthcare center in December 2011. It was unfamiliar place but it was comfortable, because there was dedicated coordinator who is able to speak Mongolian language and medical form written in Mongolian was provided in Seoul National University International healthcare center.*

***Diagnosed liver cancer, decided to undergo transplantation***

*According to Seoul National University hospital, his liver wasn't functioning properly. The blood vessels supplying liver affected esophagus to cause esophageal varices, which bleeded sometimes. Finally he was diagnosed for liver cancer, Mr. Delgerbayar was fortunate to find it out at the early stage, which can be treated.*
*Liver transplantation was planned, and professor reassured him that, since Seoul National University Hospital had successfully performed liver transplantation for the first time in Korea, technology of Seoul National University Hospital is very reliable. Fortunately his daughter was able to be a donor.*

*First he got laparoscopic esophageal varices ligation on January 2012, and his ascite was treated in order to undergo transplantation. Result was successful and tumor was clearly removed.*

***Regained hope once lost, in Korea***

*The day Mr. Delgerbayar was discharged from hospital, he recalled December 2011 when he visited Seoul National University Hospital, told his doctor "I thought I couldn't live long, and I lost my hope. But you gave me new life and I can't tell you how much I thank you. "Her daughter, the donor, donor, also said thanks and flew back to Mongolia in March 2012.*

*Delgerbayar family before his discharge from hospital*

# KOREA, THE MECCA OF LIVING-DONOR LIVER TRANSPLANTATION

***Operation time cut down in half***

*Liver transplantation team of Seoul National University Hospital is well known not only for their world-best skills of laparoscopic surgery, but also for their living donor liver transplantation surgery. They were the team that had first successful liver transplant in Korea, and marking 99% successful rate after 2007, which is much higher than in America(85%). The world's first Laparoscopic liver transplantation was successfully carried out by this team, showed that minimally invasive surgery is also possible in the field of liver transplantation. The team is especially famous that for reducing operation time to 6-7 hours, which originally took 10-12 hours to complete.*

*This is because three surgical specialists Specialized in the process to perform fast and accurate surgery, and because the vein from donor is not connected one by one – it is connected in one step with artificial vessel. The technique developed by the team had cut the time in half. Reduced operation time made patients recover faster with less complications. Also, patients are more satisfied since average hospital days decreased from a month to 7-10 days.*

***The world's first two Living-Donor Liver Transplantation(LDLT)***

*Two living donor liver transplantation is an operation performed when one donor is insufficient, transplanting part of two donor's liver to a recipient. It is an extremely advanced technique established by Korean surgeons by March 2000. Recently there was a case that Japanese surgeons thought it wasn't able to be operated while Korean surgeons successfully performed two living donor liver transplantation. Aleksei, admitted in December 2012, recovered his health after the transplantation held in January 2013.*

*Blood Group Incompatible Kidney Transplant is generalized, so patients don't need to wait for the same blood type. And for the patients that have a rare blood type, transfusion-free liver transplantation can be applied to decrease complications due to transplantation.*



*Seoul National University team discussing how to treat*

*Aleksei, a Russian patient successfully underwent two living donor liver transplantation*

# HOSPITALS TREATING LIVER CANCER IN KOREA



## *Kyung Hee University Hospital*

***Major Procedures _***
- *Surgical open resection*
- *Laparoscopic resection*
- *Transarterial chemolipiodolization (TACE)*
- *Radiofrequency ablation (RFA)*
- *Tomotherapy*

***Process for Treatment _***
- *Express imaging process*
- *Express liver biopsy*
- *Multidisciplinary case conference*
- *Nutritional support and counselling*
- *Navigation radiofrequency albation*
- *Contrast ultrasonography*

***Hospital State _ Seoul***
- *850 Beds*
- *447 Doctors*
- *692 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.95*

## *Seoul National University Hospital*

***Major Procedures _***
- *Transarterial Chemoembolization, TACE*
- *Radiofrequency ablation*
- *Percutaneous ethanol injection therapy*
- *Hepatectomy*
- *Liver transplantation (living donor, deceased donor)*

***Process for Treatment _***
- *Liver CT*
- *Lipiodol liver CT*
- *Liver sono*
- *Preoperative evaluation (lab. liver CT, MRI, PET etc.)*
- *Hepatectomy*
- *Liver transplantation*
- *Postoperative care counseling*

***Hospital State _ Seoul***
- *1,786 Beds*
- *1,342 Doctors*
- *1,835 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.97*

## *Seoul St. Mary's Hospital, The Catholic University Of Korea*

***Major Procedures _***
- *Liver resection*
- *Liver transplantation (LT)*
- *Radiofrequency Ablation (RFA)*
- *Percutanesou Ethanol Injection (PEI)*
- *TransAterial ChemoEmbolization (TACE)*
- *TransAterial ChemoEmbolization (TACE) with drug-eluting bead*
- *Radioembolization with Yttrium90*
- *Hepatic artery infusion chemotherapy*
- *Radiotion Therapy (Tomotherapy, CyberKnife etc)*
- *Sorafenib*

***Process for Treatment _***
- *Liver dynamic CT*
- *Liver Primovist MRI*
- *PET CT*
- *Lung CT*
- *Bone scan*
- *Gastroduodenoscopy*
- *Hepatic arteriography*
- *Liver biopsy*
- *Liver Ultrasound (doppler)*
- *Hepatic artery MRI*
- *99 albumin lung perfusion scan*

***Hospital State _ Seoul***
- *1,332 Beds*
- *799 Doctors*
- *1,718 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.101*

## *Severance Hospital*

***Major Procedures _***
- *Liver transplantation*
- *Concurrent chemoradiotherapy for hepatoma*
- *Helical tomotherapy for bone metastasis*
- *Helical tomotherapy for hepatoma*
- *Transarterial chemoembolization for Hepatoma*
- *Radioembolization of Hepatoma*
- *Radiofrequency ablation of Malignant tumor*
- *Cryoablation of Malignant tumor*
- *Ethanol injection of Hepatoma*

***Process for Treatment _***
- *Recipient evaluation*
- *Evaluation for property of donor*
- *Liver transplantation*
- *Postoperative management*
- *Closed follow up in outpatient clinic*

***Hospital State _ Seoul***
- *2,086 Beds*
- *1,342 Doctors*
- *2,135 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.103*

## *Inha University Hospital*

***Major Procedures _***
- *Hepatectic resection*
- *Laparoscopic hepatic resection*
- *Liver transplantation*
- *Radiofrequent ablation (RFA)*
- *Transarterial chemoembolization (TACE)*

***Process for Treatment _***
- *Laboratory test(liver function, serology, tumor marker)*
- *Dynamic CT*
- *Dynamic MRI*
- *Hepatic artery angiography*
- *Residual liver function test*
- *Surgery vs. RFA or TACE*
- *postoperative management*

***Hospital State _ Incheon***
- *861 Beds*
- *439 Doctors*
- *759 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.110*

## *Chonnam National University Hwasun Hospital*

***Major Procedures _***
- *Right/Left hemihepatectomy*
- *Right anterior/posterior sectionectomy*
- *Left lateral sectionectomy*
- *Segmentectomy of liver*
- *Wedge resection of liver*

***Process for Treatment _***
- *Abdominal ultrasonography(US)*
- *Abdominal Computed Tomograph(CT)*
- *Abdominal Magentic Resonance Image(MRI)*
- *Indocyanine Green Retention Rate at 15 minutes (ICG R15)*
- *Abdominal CT at postoperative day 7*
- *Radio-Frequency Ablation(RFA)*
- *Trans-Arterial Chemo-Embolization(TACE)*

***Hospital State _ Jeollanam-do***
- *701 Beds*
- *244 Doctors*
- *435 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.116*

## *Bundang Jesaeng General Hospital*

***Major Procedures _***
- *Transarterial chemoembolization*
- *Radiofrequency ablation*
- *Percutaneous enthanol injection*
- *Radiotherapy*
- *Surgical resection*

***Hospital State _ Gyeonggi-do***
- *602 Beds*
- *200 Doctors*
- *378 Nurses*

*more p.121*

## *Konyang University Hospital*

***Major Procedures _***
- *Anatomical liver resection*
- *Laparoscopic liver resection*
- *Liver transplantation*
- *TACE(Trans-arterial chemo-embolization)*
- *RFA ablation(percutaneous, Laparoscopy )*

***Process for Treatment _***
- *Liver function test*
- *Liver dynamic CT, MRI, PET-CT, Angiogram, Chest dynamic CT*
- *Multiple-clinical team approach*
- *Resection*
- *Discharge post operative day 14*
- *Follow up at outpatient clinic 3 month intervals*

***Hospital State _ Daejeon***
- *886 Beds*
- *262 Doctors*
- *517 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.122*

# THYROID CANCER

28

### *Risk factors for thyroid cancer*

① *Exposure to radiation*
② *Genetic factors*

*The most well known risk factor for thyroid cancer is exposure to radiation which is directly proportional. Exposure in young age increases the risk, thus radiotherapy should be avoided in young age. If a family member had thyroid cancer, testing RET genes for mutation could prevent thyroid cancer.*

### *General symptoms of thyroid cancer*

*Most of the patient does not develop symptoms. Mostly patients find a nodule on their neck but it does not cause pain so they couldn't think it is serious. Most thyroid cancer is diagnosed incidentally during a regular check up. Other symptoms include hoarsness of voice, dysphasia and aphagia.*

### *Guidelines on screening thyroid cancer*

① *Nodule + Family history*
② *Nodule + Radiation on head and neck in young age*

*Even if a person is in a high risk group, it doesn't need to be examined if there is no palpable nodule. There are several methods of examination when nodules exist, the most important test is Fine needle aspiration cytology biopsy, which uses a need to aspirate cells in a thyroid nodule to be examined under the microscope.*

### *Treatment of thyroid cancer*

① *Thyroidectomy*

*The basic treatment of thyroid cancer is removing entire or part of thyroid. Recently, Endoscopic thyroidectomy using endoscope and robot surgery using Da Vinci robot is being performed. Thyroid hormone drug is prescribed since there are no more thyroid hormone is secreted after removal of thyroid glands.*

② *Radioactive iodine therapy*

*If there is high risk of recurrence, radioactive iodine therapy is applied to remove remaining cancer cells which were not visible. Thyroid hormone drugs should be stopped for 4 weeks for this treatment, therefore hypothyroidism will develop and patient might claim symptoms like neck edema, hyposalivation.*

# OUTSTANDING ACHIEVEMENT OF THYROID CANCER TREATMENT



### *Incidence of thyroid cancer*

***Incidence of thyroid cancer in Korea***

| | Incidence | per 100,000 | % (Rank) |
|---|---|---|---|
| Male / Female | 81.0 | 40,568 | 18.6%(1st) |
| Male | 27.9 | 7,006 | 6.4%(6th) |
| Female | 134.1 | 33,562 | 31.1%(1st) |

*Korean National Cancer Information Center, 2011*
*(Unit: patients/100,000, patients/year)*

*Marking the largest incidence among all cancer in Korea, thyroid cancer is more often found in female patient than male.*
*(1st in female, 6th in male)*

***International comparison of thyroid cancer Incidence rate***

*< Male >*

| Korea('11) | Japan('12) | U.S.('12) | England('12) |
|---|---|---|---|
| 20.2 | Not listed within 10th place | | |

*< Female >*

| Korea('11) | Japan('12) | U.S.('12) | England('12) |
|---|---|---|---|
| 96.8 | 6.5 | 20.0 | - |

*International Agency for Research on Cancer 2012,*
*Korean National Cancer Information Center 2011*
*(Unit:patients/100,000)*

*Incident rate of thyroid cancer in male patients are not listed within 10th place in any other country beside Korea. It is shown that thyroid cancer is more common in female than male, but the incidence is significantly higher in Korea than other countries.*
*Korea has faced six times rate increasing of thyroid Cancer rate within the last 10 years, this is due to growing attention of individual healthcare made more people to be examined on ultrasound and blood test that could find an early stage thyroid cancer incidentally.*

### *Mortality rate of thyroid cancer*

*Mortality rate of thyroid cancer is very low, low enough to not be listed in top 10 cancer mortality, despite of its largest incidence among total cancer and female cancer. And the same goes in female cancer-related mortality rate. This means patients with thyroid cancer can expect a high 5-year survival rate and favorable prognosis.*

### *5-year survival rate of thyroid cancer*

| '93-'95 | '96-'00 | '01-'05 | '07-'11 |
|---|---|---|---|
| 94.2% | 94.9% | 98.3% | 100% |

*Korean National Cancer Information Center, 2011*

*5-year survival rate of thyroid cancer reaches 100%, record suggests nearly complete remission.*

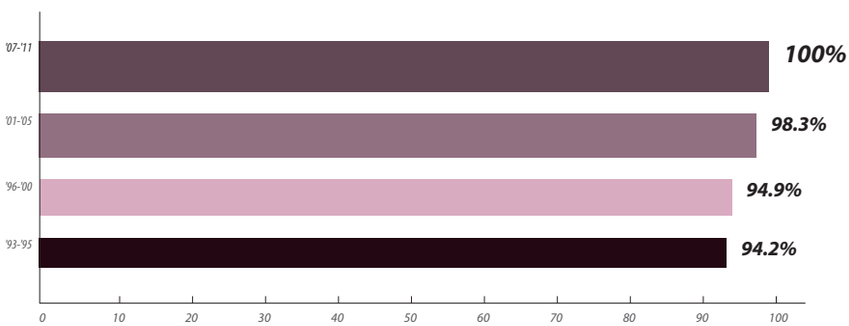
***International comparison of 5-year survival rate of thyroid cancer***

| Korea('96-'00) | Korea('01-'05) | Korea('07-'11) |
|---|---|---|
| 94.9% | 98.3% | 100% |
| U.S.('03-'09) | Canada('06-'08) | Japan('03-'05) |
| 97.7% | 98% | 92.2% |

*International Agency for Research on Cancer 2008,*
*Korean National Cancer Information Center 2011*

*This could be also seen in other countries- 5-year survival rate marking over 90%. Korea has highest 5-year survival rate, and 18%(2nd place) of international patients visiting Korea because of thyroid cancer. It seems people around the world have the notion that thyroid cancer can be nearly cured when it treated in Korea.*

*Even if the thyroid cancer was founded in advanced stage, thyroid cancer has favorable treatment outcomes. 5-year survival rate of thyroid cancer reaches 100%, record suggests nearly complete remission. However, it still needs careful management since it could spread into surrounding tissues when it left untreated.*




***5-YEAR SURVIVAL RATE OF THYROID CANCER***

# SCARLESS THYROID CANCER TREATMENT



***Conventional surgery leaves scar***

*Thyroidectomy is primary treatment in thyroid cancer. Often patients are not so worried since prognosis after treatment is very good. But the problem is : conventional operation leaves scar on the neck.*

*Thyroid is ranked in first place in the female cancer incidence. It means a lot of patients those get operated are women. The scar might become a serious problem in women. Endoscopic surgery was developed since quality of life and prognosis is as much as important in Korea.*

***Scar minimized by endoscopic surgery***

*Korean surgeons have advanced Laparoscopic surgery(which is endoscopic surgery held in abdomen)skills, so endoscopic thyroidectomy is also generalized. Using endoscopy, skin of neck is saved and incision is made around the nipple, areola and armpit which are unnoticeable sites.*

*As a result, scar is formed at unseen area and it is minimally cut. Small scar heals quickly and it is difficult to be recognized.*

***World's first robotic operation on thyroid cancer***

*Korea has the world's best surgical technology using endoscopy and robot. Severance hospital have been operating 3,200 cases after they had performed the world's first successful robotic thyroidectomy in 2007. It is now a well known procedure to be performed in a number of hospitals.*

*In robotic surgery, operation is proceeded through minimal incision through armpit, so there is no concern of leaving a scar. The scar becomes unnoticeable as time goes by. Conventional thyroidectomy which makes incision directly on the neck, may have complications like hoarseness and disphagia. These complication is reduced in robot surgery. And it provides fast recovery since operation time is reduced more than 30 minutes.*

***Thyroid nodule found during medical checkup***

*A 46-old Kazakhstan patient has been visited Seoul National University by recommendation of a friend. Ultrasound found a nodule in the neck, and it was diagnosed thyroid cancer after considering patient's family history and other conditions. The patient was referred to Seoul National University Hospital International Healthcare Center.*

# THYROID CANCER FOUND DURING CHECKUP, CURED WITHOUT SCAR

***Thyroid cancer has good prognosis***

*The patient was shocked after being diagnosed thyroid cancer in Seoul National University hospital international healthcare center. Doctor told the patient that it is in its early stage, and there will be no problem after getting treated since thyroid cancer has a favorable prognosis.*

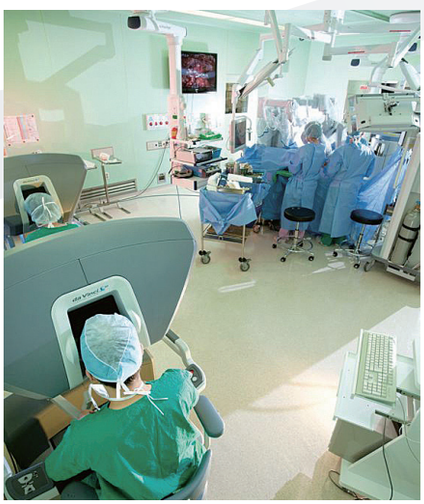
***Incision through armpit and breast***

*The patient had endoscopic thyroidectomy in Seoul National University hospital. The hospital has over 1,000 case of experience since they had their first successful minimally invasive surgery through armpit and breast since 2004 and so she could trust the surgeons.*

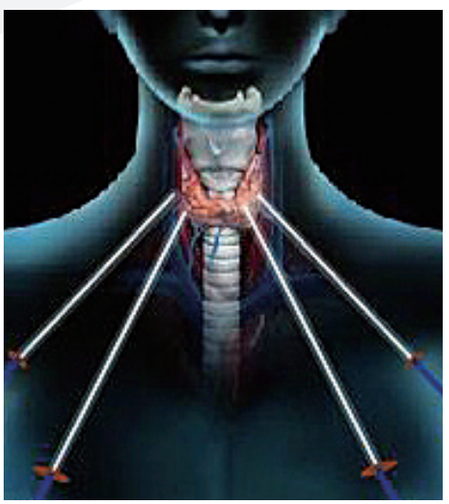
***Unrecognizable scar gave satisfaction***

*After successful operation, not only the success of removing cancer, but also unrecognizable scar gave her satisfaction. She was thankful for Seoul National University hospital.*





*Da Vinci robot surgery*



*Incision site of endoscopic thyroidectomy*

# HOSPITALS TREATING THYROID CANCER IN KOREA



## *Chung-Ang University Hospital*

***Major Procedures _***
- *Lobectomy*
- *Total thyroidectomy*
- *Central neck dissection*
- *Modified radical neck dissection*

***Process for Treatment _***
- *Laboratory examination, SONO, CT, PET-CT, Fine needle aspiration biopsy*
- *Laboratory examination (calcium, ionized calcium, albumin, phosphorus, PTH level)*
- *Laboratory examination (thyroglobuline level), I - scan*

***Hospital State _ Seoul***
- *870 Beds*
- *218 Doctors*
- *705 Nurses*

*more p.86*

## *Ewha woman's University Medical Center*

***Major Procedures _***
- *Unilateral thyroid lobectomy*
- *Total thyroidectomy*
- *Endoscopic thyroid lobectomy*
- *Robotic thyroidectomy*

***Process for Treatment _***
- *Thyroid Ultrasonogram*
- *Fine Needle Aspiration Cytology*
- *Neck Computed Tomography*
- *Positron Emission Tomography(PET)*
- *Thyroid Scan*

***Hospital State _ Seoul***
- *857 Beds*
- *466 Doctors*
- *727 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.88*

## *Hanyang University Hospital*

***Major Procedures _***
- *Conventional thyroidectomy*
- *Endoscopic thyroidectomy*
- *Robotic thyroidectomy*
- *Conventional neck dissection*
- *Robotic neck dissection*

***Process for Treatment _***
- *Preoperative test : ① Histologic test: FNAC or biopsy ② Blood test: thyroid function test (TFT), CBC, electrolytes, liver function test etc. ③ Radiologic exam. : routine test (neck ultrasonography, Dual-energy X-ray absorptiometry (DXA), chest X-ray), if needed (neck-CT or PET-CT) ④ Others: EKG, general state assessment*
- *Give an explanation and get permission, NPO from mid-night*
- *Closed observation, sips of water : 4 hours after surgery, pain control*
- *Wound dressing (every other days), drain manage and amount check-up (daily), blood test: CBC (POD#1) calcium, phosphate (daily), TFT (POD#3), i-PTH (POD#1,3)*
- *Dressing and removal of drain, explanation of discharge (education about postoperative care and medication, OPD follow-up)*
- *Explanation of biopsy, adjuvant treatment plan and explanation (medication, radioactive iodine therapy), education od wound care*
- *Regular test ① Blood test (every 3 or 6 months) : thyroid test (TFT, Tg, anti-TgAb) ② Radiologic exam. (every years) : neck ultrasonography, Dual-energy X-ray absorptiometry (DXA), chest X-ray ③ medication control*
- *If needed ① Blood test : parathyroid test (iPTH, calcium, phosphate), stimulated Tg ② Radiologic exam. : neck-CT or PET-CT, diagnostic iodine scan or radioactive iodine therapy*

***Hospital State _ Seoul***
- *805 Beds*
- *378 Doctors*
- *536 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.90*

## *Konkuk University Medical Center*

***Hospital State _ Seoul***
- *879 Beds*
- *456 Doctors*
- *705 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.92*

## *Korea University Anam Hospital*

***Major Procedures _***
- *Robotic Thyroid Surgery*
- *Robotic Thyroid Surgery (unilateral gaseless axillary approach)*

***Hospital State _ Seoul***
- *972 Beds*
- *590 Doctors*
- *810 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.94*

## Kyung Hee University Hospital

**Major Procedures _**
- Convetional, radical (open) thyroidectomy
- Robotic radical thyroidectomy

**Process for Treatment _**
- Neck & Thyroid ultrasonograpy
- US guided fine needle aspiration cytology of thyroid nodule and cervical lymph node
- Neck computed tomography (CT)
- Convetional, radical (open) thyroidectomy
- Robotic radical thyroidectomy
- Calcium, Phosphorus, PTH assay
- Radioactive iodide therapy

**Hospital State _ Seoul**
- 850 Beds
- 447 Doctors
- 692 Nurses
- International Healthcare Center
- Cancer Center

more p.95

## Seoul National University Hospital

**Major Procedures _**
- Thyroidectomy, Hemithyroidectomy, Thyroid lobectomy
- Oncoplastic thyroid surgery, BABA endoscopic thyroid surgery, BABA robotic thyroid surgery
- Radioactive iodine ablation and treatment
- USG-guided Ethanol Ablation
- USG-guided Radiofrequency Ablation
- Hereditary thyroid cancer counseling
- Voice clinic
- Cervical lymph node dissection, lateral lymph node dissection, Selective lateral neck dissection, Modified lateral neck dissection

**Process for Treatment _**
- USG guided core needle biopsy
- Preoperative lab, Thyroid CT, Chest CT
- Preop thyroid USG - guided LN marking
- Hereditary thyroid cancer counseling
- Voice therapy, percutaneous injection
- Detection of BRAF mutation
- Laryngoscopy
- Patient education
- Radioactive iodine ablation and treatment

**Hospital State _ Seoul**
- 1,786 Beds
- 1,342 Doctors
- 1,835 Nurses
- International Healthcare Center
- Cancer Center

more p.97

## Seoul St. Mary's Hospital, The Catholic University Of Korea

**Hospital State _ Seoul**
- 1,332 Beds
- 799 Doctors
- 1,718 Nurses
- International Healthcare Center
- Cancer Center

more p.101

## Severance Hospital

**Major Procedures _**
- Robotic thyroidectomy
- Robotic modified radical neck dissection for thyroid cancer

**Process for Treatment _**
- Pre op.
  - Staging neck ultrasonography
  - Fine needle aspiration biopsy
  - Neck computed tomography
- Post op.
  Radioactive iodine therapy

**Hospital State _ Seoul**
- 2,086 Beds
- 1,342 Doctors
- 2,135 Nurses
- International Healthcare Center
- Cancer Center

more p.104

## Inha University Hospital

**Major Procedures _**
- Thyroid lobectomy
- Total thyroidectomy
- Modified radical neck dissection (Mod. RND)
- Iodine 131 ablation therapy
- Radiotherapy

**Process for Treatment _**
- Ultrasonography
- Fine needle aspiration cytology
- Preoperative routine lab
- Thryoid CT scan
- Operation
- Whole body scan
- Iodine 131 ablation therapy
- OPD follow -up

**Hospital State _ Incheon**
- 861 Beds
- 439 Doctors
- 759 Nurses
- International Healthcare Center
- Cancer Center

more p.110

## Chonnam National University Hwasun Hospital

**Major Procedures _**
- Total thyroidectomy
- Thyroid lobectomy
- Central lymph node dissection
- Modified radical neck lymph node dissection

**Process for Treatment _**
- Fine needle aspiration cytology
- Neck ultrasonography
- Neck computed tomography
- Radioactive iodine therapy

**Hospital State _ Jeollanam-do**
- 701 Beds
- 244 Doctors
- 435 Nurses
- International Healthcare Center
- Cancer Center

more p.116

## Cheil General Hospital & Women's Healthcare Center

**Major Procedures _**
- Thyroidectomy
- Endoscopic thyroidectomy

**Hospital State _ Seoul**
- 300 Beds
- 163 Doctors
- 481 Nurses
- International Healthcare Center
- Cancer Center

more p.118

## MizMedi Women's Hospital

**Hospital State _ Seoul**
- 100 Beds
- 68 Doctors
- 207 Nurses
- Cancer Center

more p.120

## Konyang University Hospital

**Major Procedures _**
- Lobectomy of thyroid
- Total thyroidectomy
- Neck dissection (selective, modified, central neck...)
- Parathyroid autotransplantation
- Neurorrhaphy

**Process for Treatment _**
- Ultrasonography and fine needle aspiration cytology (FNAC)
- Laboratory test, EKG and chest X-ray
- Thyroidectomy
- Radioactive iodine therapy
- Thyroid hormone therapy

**Hospital State _ Daejeon**
- 886 Beds
- 262 Doctors
- 517 Nurses
- International Healthcare Center
- Cancer Center

more p.122

## Goo Hospital

**Major Procedures _**
- Lobectomy with central neck node dissection
- Total thyroidectomy with central neck node dissection
- Total thyroidectomy with modified radial neck dissection
- Selective neck dissection
- Endoscopic thyroidectomy

**Process for Treatment _**
- Pre OP. USG, CT
- Fine needle adpiration for thyroid
- Pre OP. Study for anesthesia
- Post OP. TSH suppression therapy
- Post OP. radioiodine therapy

**Hospital State _ Daegu**
- 185 Beds
- 27 Doctors
- 67 Nurses

more p.124

# GALL BLADDER / PANCREATIC CANCER

34

***Risk factor for GB/Pancreatic cancer***

*There are no specific mechanisms have yet been identified how GB/Pancreatic cancer develop. Such multiple risk factors as environment and genetics are considered.*

***General symptom of GB/Pancreatic cancer***

*There are no symptoms in early stage of GB/Pancreatic cancer. Symptoms suggest advance cancer, but they are similar to other benign gastrointestinal disease so they are often underestimated. Unknown mechanism makes it difficult to screen out.*

*Non-specific symptoms of GB cancer include weight loss, jaundice, fatigue, nausea, vomiting, abdominal pain. In case of pancreatic cancer, abdominal pain, digestive disorder, diabetes are most common symptoms.*

***Guidelines on screening GB/Pancreatic cancer***

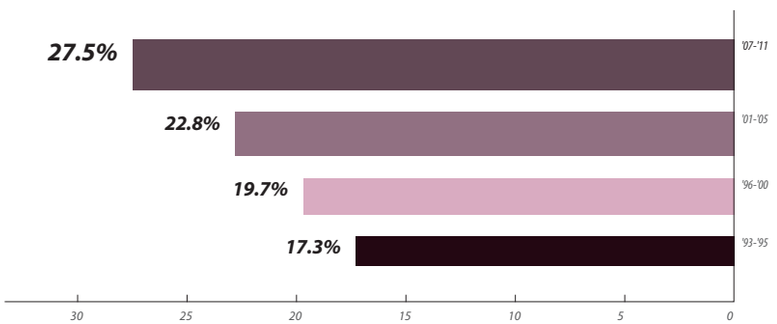
① *Family history of GB/Pancreatic cancer*
② *Old age*
③ *Symptoms similar to other gastrointestinal disease*
④ *Sudden onset diabetes, jaundice*

*Symptoms of GB/Pancreatic cancer are similar to other gastrointestinal disease. If a patient with symptom has old age or family history, the patient must be examined. Abdominal ultrasound and CT is the basic test for GB/Pancreatic cancer, MRI, ERCP, EUS, PET, Plasma tumor-marker may used in case needed. PTC test is required for some GB cancer. Biopsy is avaliable in pancreatic cancer, whereas GB cancer is not.*

***Treatment of GB/Pancreatic cancer***

① *Resection: Removes tumor from GB/Pancreas*
② *Radiotherapy: Removes cancer cell with radiation*
③ *Chemotherapy: Improves survival rate using chemotherapic agent*

*The best cure for GB/Pancreatic cancer is resection. However, it is frequently not available in advanced cancer. Resection could be performed only on 10-30% of GB cancer and 20-25% of Pancreatic cancer. And even the lesion is removed, possibility of recurrence remains.*




***5-YEAR SURVIVAL RATE OF GB CANCER***

### *Incidence of thyroid cancer*

***Incidence of GB/Pancreatic cancer in Korea***

| | per 100,000 | Incidence | % (Rank) |
|---|---|---|---|
| Male& Female | 10.0 | 4,993 | 2.3%(9th) |
| Male | 9.9 | 2,479 | 2.3%(10th) |
| Female | 10.0 | 2,514 | 2.3%(8th) |

*Korean National Cancer Information Center, 2011*
*(Unit: patients/100,000, patients/year)*

***Incidence of Pancreatic cancer in Korea***

| | per 100,000 | Incidence | % (Rank) |
|---|---|---|---|
| Male& Female | 10.1 | 5,080 | 2.3%(8th) |
| Male | 11.2 | 2,807 | 2.5%(8th) |
| Female | 9.1 | 2,273 | 2.1%(9th) |

*Korean National Cancer Information Center, 2011*
*(Unit: patients/100,000, patients/year)*

*Incident rate of GB/Pancreatic cancer is not high among all cancers, ranked 8th and 9th respectively.*

***International comparison of GB cancer incidence rate***

*< Male >*

| Korea('11) | Japan('12) | U.S.('12) | England('12) |
|---|---|---|---|
| 7.6 | Not listed within 10th place | | |

*< Female >*

| Korea('11) | Japan('12) | U.S.('12) | England('12) |
|---|---|---|---|
| 5.5 | Not listed within 10th place | | |

*International Agency for Research on Cancer 2012,*
*Korean National Cancer Information Center 2011*
*(Unit:patients/100,000)*

***International comparison of Pancreatic cancer incidence rate***

*< Male >*

| Korea('11) | Japan('12) | U.S.('12) | England('12) |
|---|---|---|---|
| 8.5 | 10.6 | Not listed within 10th | |

*< Female >*

| Korea('11) | Japan('12) | U.S.('12) | England('12) |
|---|---|---|---|
| 5.1 | 6.7 | - | 7.2 |

*International Agency for Research on Cancer*
*2012, Korean National Cancer Information Center*
*20101(Unit:patients/100,000)*

*Comparing to other countries, Korea has high GB/Pancreatic cancer incidence. But in the matter of pancreatic cancer, Japan has higher incident rate than Korea.*

### *Mortality rate of GB/Pancreatic cancer*

***Mortality rate of GB/Pancreatic in Korea***

| | per 100,000 | Death | % (Rank) |
|---|---|---|---|
| GB | 7.3 | 3,688 | 5.0%(6th) |
| Pancreatic | 9.5 | 4,778 | 6.5%(5th) |

*Korean National Cancer Information Center, 2011*
*(Unit: patients/100,000, patients/year)*

*Mortality of GB/Pancreatic cancer is high while incidences are low. Steve Jobs, former CEO of Apple, had died of pancreatic cancer.*

### *5-year survival rate of GB/Pancreatic cancer*

| | '93-'95 | '96-'00 | '01-'05 | '07-'11 |
|---|---|---|---|---|
| GB | 17.3% | 19.7% | 22.8% | 27.5% |
| Pancre atic | 9.4% | 7.6% | 8.0% | 8.7% |

*Korean National Cancer Information Center, 2011*

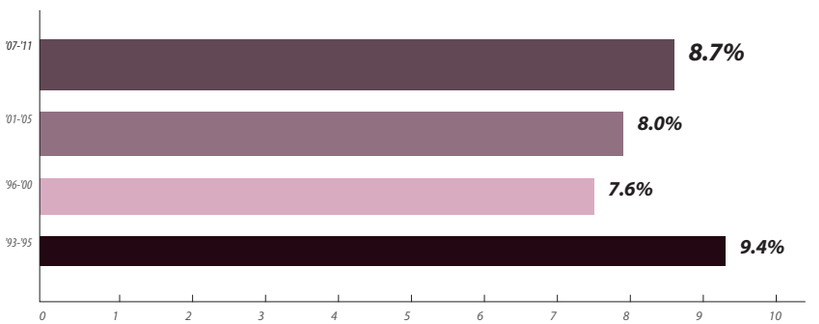
*5-year survival rate of GB cancer is increasing steadily while that of pancreatic cancer remains no change.*

***International comparison of 5-year survival rate of Pancreatic cancer***

| Korea('96-'00) | Korea('01-'05) | Korea('07-'11) |
|---|---|---|
| 7.6% | 8.0% | 8.0% |
| U.S.('03-'09) | Canada('06-'08) | Japan('03-'05) |
| 6.0% | 8.0% | 7.0% |

*International Agency for Research on Cancer 2012,*
*Korean National Cancer Information Center 2011*

*Pancreatic cancer has lowest 5-year survival, not only in Korea but also in any other countries. There are several reasons. First, the mechanism of cancer formation is not well known. Second, there are no significant symptoms unless progressed. Lastly, the cancer has already been spread to other organs after symptoms show up. So it is ideal to have regular checkups and if there are suspicious signs, running more detailed tests is required to detect the cancer in its early stage.*




***5-YEAR SURVIVAL RATE OF PANCREATIC CANCER***

# CUTTING-EDGE ROBOTIC RADIOSURGERY



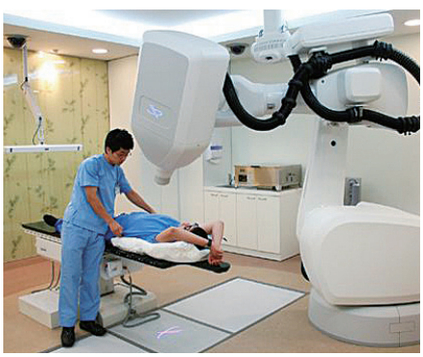
***Robotic radiosurgery, cyberknife***

*Though radiation must be applied in adequate dose in order to cure GB/Pancreatic cancer, treatment is difficult since stomach and duodenum, radiation sensitive organs, are near to GB/Pancreas. Doctors could be blamed despite of their best effort and risk-taking since the outcome is often disappointing, so in many cases the treatment become conservative.*
*Recently, advancement of radiotherapy equipments made 2-3 out of ten patient operable. Among those equipments, Cyberknife is robotic radiosurgery system that can approach tumor at any location of human body, its real-time treatment consider patients' movement and breathing, applying accurate radiation. It has reduced complication of conventional radiotherapy, yielding favorable outcomes with reduced treatment time.*

***Surgery performed after chemotherapy and radiotherapy***

*There are many inoperable cases of GB/Pancreatic cancer. Since nearby organs and important blood vessels are surrounding GB and Pancreas, cancer is frequently spread when it gets advanced. That is why it is often inoperable even though the tumor is sized only 2cm.*

*A patient diagnosed with pancreatic cancer received radiotherapy and chemotherapy, and heard that progression of disease has been stopped but yet cured. Anticipating complete remission, the patient went to Severance hospital and realized that conventional radiotherapy treated him in low-dose and aggressive treatment could be applied for his case. Chemotherapy and additional radiotherapy is applied for a month and condition has improved that tumor could be resected. Tumor was removed in surgery and patient regained his health.*



*Da Vinci robot surgery*

# HOSPITALS TREATING GB / PANCREATIC CANCER IN KOREA



## *Kyung Hee University Hospital*

***Major Procedures _***
- *Laparoscopic cholecystectomy*
- *Laparoscopic extended cholecystectomy*
- *Extended cholecystectomy*
- *Pyrolus preserving pancreaticoduodenectomy*
- *Pancreaticoduodenectomy*
- *Tomotherapy*

***Process for Treatment _***
- *Computed tomography*
- *Magnetic resonance imaging*
- *Tumor marker and blood tests*
- *Postron emission tomography*
- *Pre-/post- chemoradiation*
- *Express liver biopsy*

***Hospital State _ Seoul***
- *850 Beds*
- *447 Doctors*
- *692 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.95*

## *Seoul National University Hospital*

***Major Procedures _***
- *Cholecystectomy*
- *Chemotherapy*
- *Radiotherapy*
- *Pancreaticoduodenectomy*
- *Distal pancreatectomy*
- *Chemotherapy*
- *Radiotherapy*

***Process for Treatment _***
- *Blood tests, serum tumor markers, abdominal CT, abdominal MRI, positron emission tomography (PET), high resolution ultrasonography, endoscopic ultrasonography*
- *Endoscopic retrograde biliary drainage, endoscopic nasobiliary drainage, percutaneous transhepatic biliary drainage*
- *Blood tests, serum tumor markers, abdominal CT, histopathology*
- *Blood tests, serum tumor markers, abdominal CT, positron emission tomography (PET)*
- *Chemotherapy and/or radiotherapy as required by the stage*

***Hospital State _ Seoul***
- *1,786 Beds*
- *1,342 Doctors*
- *1,835 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.97*

## *Seoul St. Mary's Hospital, The Catholic University Of Korea*

***Hospital State _ Seoul***
- *1,332 Beds*
- *799 Doctors*
- *1,718 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.101*

## *Severance Hospital*

***Major Procedures _***
- *Endoscopic Approach to Early Diagnosis of Pancreatic Cancer*
- *Diagnostic and therapeutic uses of ERCP in pancreatic and biliary tract malignancies*
- *Radical pancreatectomy following neoadjuvant treatment*
- *Laparoscopic minimally invasive pancreatectomy*
- *Liver and bile duct resection, hepaticojejunostomy*
- *Neoadjuvant chemoradiation(TOMO) therapy in pancreatic cancer.*
- *Robotic function-preserving minimally invasive pancreatectomy*
- *Robotic modified anterior RAMPS (radical antegrade modular pancreatosplenectomy)*

***Process for Treatment _***
- *Patients evaluation ①*
- *Patients evaluation ② (Radiologic diagnosis)*
- *Preoperative management*
- *Medical examination*
- *Endoscopic diagnosis of pancreatic cancer*
- *Conferece*
- *Operation*
- *Postoperative management*
- *Staging work up and preoperative study*
- *Multidisciplinary team approach to management, admission and informed consent for surgery*
- *Postoperative patient care for early recovery*
- *Follow up for recurrence of tumor and multidisciplinary team approach to management for recurred cholangiocarcinoma*

***Hospital State _ Seoul***
- *2,086 Beds*
- *1,342 Doctors*
- *2,135 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.104*

## Inha University Hospital

***Major Procedures _***
- *Open / Laparoscopic Cholecystectomy*
- *Extended Radical Cholecystectomy*
- *Standard / Pylorus-Preserving Pancreaticoduodenectomy*
- *Distal Pancreatectomy with Splenectomy*
- *Laparoscopic Distal Pancreatectomy*

***Process for Treatment _***
- *Diagnostic Work-Up*
- *Routine Laboratory Examination*
- *Metastatic Work-Up*
- *Consultation for Anesthesia*
- *Consultation for Adjuvant Chemotherapy and Radiotherapy*
- *Routine Check for Recurrence*

***Hospital State _ Incheon***
- *861 Beds*
- *439 Doctors*
- *759 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.110*

## Chonnam National University Hwasun Hospital

***Major Procedures _***
- *Radical cholecystectomy*
- *Laparoscopic cholecystectomy*
- *Simple cholecystectomy*
- *Rt hepatectomy with extrahepatic bile duct resection, T-colon wedge resection*
- *Pylorus preserving pancreaticoduodenectomy*
- *Whipple's operation*
- *Distal pancreatectomy*
- *Total pancreatectomy*
- *Palliative bypass operation or diagnostic biopsy*

***Process for Treatment _***
- *Preoperative CT & MRI, lab*
- *Operation*
- *Postoperative care*
- *CT F/U at POD 7*
- *Routine F/U*
- *Gemcitabine therapy if needed*

***Hospital State _ Jeollanam-do***
- *701 Beds*
- *244 Doctors*
- *435 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.116*

## Konyang University Hospital

***Major Procedures _***
- *Pancreatoduodenectomy*
- *Laparoscopic pancreatectomy*
- *Extended cholecystectomy*
- *Laparoscopic extended cholecystectomy*

***Process for Treatment _***
- *Pre operative evaluation*
- *Clinical tumor staging (Abdominal dynamic CT, MRI, PET-CT, Angiogram, Chest dynamic CT)*
- *Multiple-clinical team approach*
- *Resection*
- *Discharge post operative day 14*
- *Chemotherapy and radiotherapy*
- *Follow up at outpatient clinic 3 month intervals*

***Hospital State _ Daejeon***
- *886 Beds*
- *262 Doctors*
- *517 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.122*

# COLON CANCER



### *Risk factors of colon cancer*

① *Age over 50*
② *Excessive consumption of aniaml fat*
③ *Ulcerative colitis and Crohn's disease*
④ *Adenomatous polyps*
⑤ *Familial polyposis syndrome*
⑥ *Hereditary nonpolyposis colorectal cancer*
⑦ *Family history of Colon cancer, Colon adenoma*

*Excessive consumption of meat increases risk of colon cancer, and high-fiber food has effect of preventing cancer – but it doesn't mean vegetarians are risk free. There are various risk factors, so early diagnosis through annual checkup is important. Particularly, if patients with familial polyposis syndrome is not treated, it will develop to colon cancer in 100%.*

### *General symptoms of colon cancer*

*Generally there are no significant symptoms in early stage colon cancer but patient may have common symptoms like anorexia, weight loss, and anemia caused by unnoticed bleeding.*

① *Bowel habit change: diarrhea, constipation*
② *Fresh, or dark colored bloody stool*
③ *Abdominal distension, palpable mass on lower abdomen*

*Symptom of colon cancer depends on location and progression. If symptoms listed above happens in 40+ years old person, those may be symptoms of colon cancer.*

### *Guidelines on screening colon cancer*

① *50+ years old male & female*
② *Occult blood test, annually*

*Like other cancer, early diagnosis is important for colon cancer. For 50+ years old, annual medical checkup is recommended. Colonoscopy and double contrast study is needed if there are abnormal findings.*

*Recommendation for high-risk group of colon cancer*

| High Risk Group | | | Age for Exam | Duration | Method |
|---|---|---|---|---|---|
| Family History | If having parents or siblings with cancer, Age < 55yrs old or number of cases > 2 | | 40yrs old | Every 5yrs | Colonoscopy |
| | If having parents or siblings with cancer, Age > 55yrs old | | 50yrs old | Every 5yrs | |
| Polyp | Hyperplastic Polyposis | | Follow average risk group | | |
| | Adenomatous Polyp | Size < 1cm | - | 3yrs after removal | Colonoscopy |
| | | Size > 1cm or multiple | - | 1yrs after removal | |
| Inflammatory Bowel Disease | Localized in right side of colon | | 15yrs since onset | Every 1~2yrs | Colonoscopy |
| | Affected entire of colon | | 8yrs since onset | Every 1~2yrs | |
| Hereditary | Family history of Familial polyposis | | 12yrs old | Every 1~2yrs | Sigmoidoscopy |
| | Family history of Herediyary nonpolyposis colon cancer | | 21~40yrs old | Every 2yrs | Colonoscopy |

*National cancer center of Korea,*
*The Korean society of coloproctology*

### *Treatment of colon cancer*

*Generally there are no significant symptoms in early stage colon cancer but patient may have common symptoms like anorexia, weight loss, and anemia caused by unnoticed bleeding.*

① *Resection: remove tumor from colon*
② *Radiotherapy: Removing cancer cell with radiation*
③ *Chemotherapy: Improves survival rateusing chemotherapic agent*

# OUTSTANDING ACHIEVEMENT OF COLON CANCER TREATMENT



## *Incidence of liver cancer*

***Incidence of colon cancer in Korea***

| | per 100,000 | Incidence | % (Rank) |
|---|---|---|---|
| Male& Female | 56.1 | 28,112 | 12.9%(3rd) |
| Male | 68.4 | 17,157 | 15.6%(2nd) |
| Female | 43.8 | 10,955 | 10.2%(3rd) |

*Korean National Cancer Information Center, 2011*
*(Unit: patients/100,000, patients/year)*

*Incidence of colon cancer is the second most common cancer in Korea, while thyroid cancer ranks the first. Men are more likely to have colon cancer than women.*

***International comparison of colon cancer Incidence rate***

*< Male >*

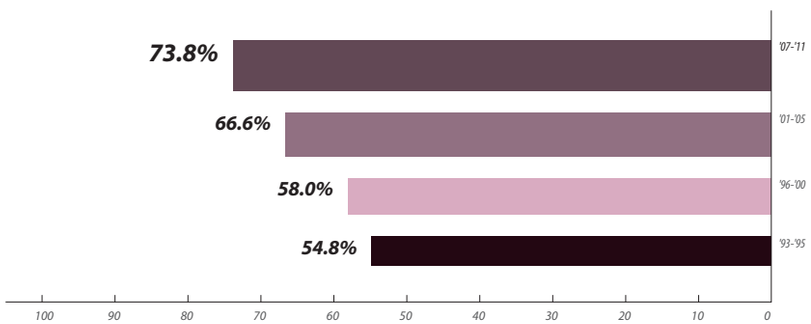
| Korea('11) | Japan('12) | U.S.('12) | U.K.('12) |
|---|---|---|---|
| 51.4 | 42.1 | 28.5 | 36.8 |

*< Female >*

| Korea('11) | Japan('12) | U.S.('12) | U.K.('12) |
|---|---|---|---|
| 26.4 | 23.5 | 22.0 | 23.7 |

*International Agency for Research on Cancer 2012,*
*Korean National Cancer Information Center 2011*
*(Unit:patients/100,000)*

*Regardless of race and dietary habits, incidence of colon cancer is high world wide. Korea has highest rate of colon cancer per 100,000 people among asian countries.*




***5-YEAR SURVIVAL RATE OF COLON CANCER***

## *Mortality rate of colon cancer*

***Mortality rate of colon cancer in Korea***

| | per 100,000 | Death | % (Rank) |
|---|---|---|---|
| Male& Female | 16.3 | 8,198 | 11.1%(4th) |
| Male | 18.6 | 4,692 | 10.1%(4th) |
| Female | 13.9 | 3,506 | 12.8%(2nd) |

*Korean National Cancer Information Center, 2011*
*(Unit: patients/100,000, patients/year)*

*Mortality rate of colon cancer is high, but incidence is much higher. This means when treated, it is expected to have good prognosis.*

## *5-year survival rate of colon cancer*

| '93-'95 | '96-'00 | '01-'05 | '07-'11 |
|---|---|---|---|
| 54.8% | 58.0% | 66.6% | 73.8% |

*Korean National Cancer Information Center, 2011*

*Steady effort has been made for high incidence rate of colon cancer in Korea, resulting in 73.8% of 5-year survival rate.*

***International comparison of 5-year survival rate of colon cancer***

| Korea('96-'00) | Korea('01-'05) | Korea('07-'11) |
|---|---|---|
| 58.0% | 66.6% | 73.8% |
| U.S.('03-'09) | Canada('06-'08) | Japan('03-'05) |
| 64.9% | 65.0% | 69.2% |

*International Agency for Research on Cancer 2012,*
*Korean National Cancer Information Center 2011*

*5-year survival rate in Korea is higher since patients treated in Korea had better prognosis.*

***5-year survival rate according to cancer stage***

| Stage I | Stage II | Stage III | Stage IV |
|---|---|---|---|
| 95-98% | 80-89% | 58-90% | 12-69% |

*KHIDI, 2013*

*According to research of Korea Health Industry Development Institute in 2013, Stage I colon cancer has shown nearly 100% cure in major Korean hospitals. As cancer stage advances, 5-year survival decreases. But still it shows fair prognosis.(Hospitals that reported 100% remission have been excluded)*

# TREATMENT RESULTING GOOD OUTCOME AND QUALITY OF LIFE



***Endoscopic submucosal dissection***

*Endoscopic submucosal dissection made it possible to remove colon polyp, which is larger than 2cm, and early colon cancer, while conventional endoscopic dissection couldn't. Korean hospitals were the first in the world to apply the technology. Until now success rate reaches 95% and recurrence rate is only 0.7%. Tumor as large as 10cm is also curable nowadays. There is no scar since it is not conventional open abdominal surgery, it is more similar to endoscopy examination used for screening colon cancer.*

***Minimal incision, one-port laparoscopic surgery***

*Laparoscopic surgery leaves less scar than conventional open abdominal surgery. But conventional laparoscopic surgery still makes 3-4 holes to approach the cancer site. One-port laparoscopic surgery makes only one hole, through navel, leaves no scar to be seen after recovery.*

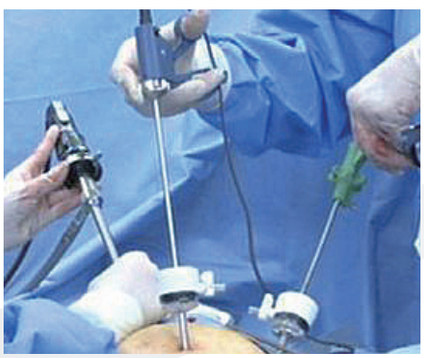
*Furthermore, one-port laparoscopic surgery bleeds little and its operation time is short. In 2009 Korea, world's first one-port laparoscopic surgery is successfully performed on colon cancer. 50cm of large intestine was removed through the hole made on navel, size of only 1.5cm. Tube that guides dissected intestine to anus for removal is also developed by Korean surgeons. Now one-port laparoscopic surgery is generalized. Beside its difficulty, cost is similar to conventional laparoscopic surgery.*

***Robotic surgery; an elaborate procedure***

*World-top skills of Korean robotic surgery has also applied to colorectal cancer. Robot surgery provides 10-15 times magnified 3D image, and stabilizes hand tremors, thus reducing bleeding and nerve damage. It is appliable in many sites since robot could operate where hand and conventional tools couldn't reach. But it is often used in selected cases, when extremely elaborate skills are needed or in condition that conventional surgery couldn't do.*

***Anus could be saved even in low rectal cancer***

*In low rectal cancer which cancer lies close to anus, permanent artificial anus is made on abdomen since removal of cancer removes anus together. This makes patient frustrated and give up operation. In Korea, it is considered that good quality of life is as much important as good outcome. So sphincter saving surgery was steadily developed to save anus.*
*In Seoul St. Mary's Hospital, tumor is shrinken via neoadjuvant radiotherapy before removed by laparoscopic resection. 85% of patients' anus were saved. The rate is much higher than that of Europe(52.8%) performing open abdominal surgery. Even in cases those cancer lies within 5cm from anus, 73.1% of patients' could get their anus saved. 5-year survival rate reaches 73.1%, higher than Memorial sloan-Kettering cancer center in U.S.(69.6%), Northhampshire hospital in England(61.6%).*



*Scene of one port laparoscopic surgery*

# VISITING KOREA TO HAVE SPHINCTER SAVING RESECTION

42

***Once judged that anus couldn't be saved***

*A primary school vice-principal from Vladivostok, Russia, Elena was diagnosed rectal cancer in her country. It was on early 2013. It was shocking by cancer itself, but it was much more frustrating to hear that her anus couldn't be saved. Tumor lied near the anus and dissecting it meant anus would be removed together, and permanent artificial anus should be made. She has consulted at three cancer enters in Russia, however, she has received same replies.*

***Chonnam National University Hwasun hospital, recommended by her friend***

*There was still a glimmer of hope. Her friend once treated in Korea recommended her Chonnam National University Hwasun hospital. Her children started to gather informations about the hospital via internet. They found that the hospital had top skills on laparoscopic colon cancer surgery. So she came with her husband, himself a head of a microbiology research center, to Chonnam National University Hwasun hospital international healthcare center.*

*With her husband she didn't feel so anxious, and Russian dedicated coordinator of the healthcare center provided her full language service.*

***Early rectal cancer; No chemotherapy needed***

*Chonnam National University Hwasun hospital diagnosed her early rectal cancer. If it was advanced, radiotherapy and chemotherapy could be applied together in order to downsize the tumor. But the tumor was small enough and the date was set immediately.*

***Laparoscopic surgery minimalizing scar***

*On April 10th 2013, Laparoscopic surgery took her 2 hours to complete. It was an relatively easy operation in Korea. Operation was successful and since it was laparoscopic surgery, there were only small scars left. She had shown fast recovery and she could do some simple exercises two days after operation.*

***70% of colon cancer resected via laparoscopy***

*U.S. was the first country to use laparoscopy to perform minimally invasive surgery for colon(rectal) cancer. But now Korea is the world-leading nation in the matter of case numbers and proportion to entire cancer surgery. Seoul St.Mary's hospital was the first hospital to import laparoscopic colon cancer surgery in 1994. And before that, the hospital performed first laparoscopic cholecystectomy in 1991. Also, The world-first sphincter saving laparoscopic surgery was done in 1996. This is because in Korea, quality of post-operation life is as much important as treatment outcome.*

*Elena and her husband, with prof. Kim-Hyung-Rok*

# WORLD-LEADING MINIMALLY INVASIVE SURGERY



*Korea's advanced surgical skill was obtained by endless effort with the development of technology, based on chopstick-using, which is gift of culture.*

*In December 2011, Laparoscopic surgery had been successfully done on 102-year-old women with stage II colon cancer. She was one of the oldest patients who underwent general anesthesia. 70% of colon cancer is resected through laparoscopic surgery in Seoul St.Mary's hospital. It is significantly high comparing to domestic rate(60%) and U.S. rate(25%). Even in advanced colon cancer, open abdominal surgery is avoided and the method using radiotherapy and chemotherapy to downsize tumor is applied. Comparing to open abdominal surgery which leaves big scar and takes long time to recover after operation, laparoscopic surgery leaves small scar and provides good manipulability where conventional surgery is hard to reach and fast recovery. Due to its cost-efficiency, it is popular among Korean patients.*

***Local hospital with 1st class outcome in colon cancer surgery***

*Hwasun is a city 300km away from Seoul. However, Chonnam National University Hwasun hospital became the first class outcome of colon cancer surgery, certified by Health Insurance Review & Assessment Service Korea.*

*Established in 2004, average amount of 400 laparoscopic surgery was performed to colon cancer patients, total 3,500 cases were done by the hospital. The technique not only leaves small scars, but also provides better sight that naked eye couldn't see, making delicate operation possible.*

***Patient who thought it's impossible to save his anus get cured***

*A 40-year old patient with colorectal cancer was treated with radiotherapy, waiting for operation. Suddenly he was diagnosed that tumor lies too close to anus, so that his anus couldn't be saved. Relying on folk remedies, to avoid making permanent artificial anus, the cancer was developed and spreaded to his prostate. He was frustrated to hear that his prostate should be removed as well and a urinary fistula must be made to empty urine.*

*Searching for the cure, he visited Severance hospital, mecca of advanced robotic surgery among Korean hospitals. Rectum is surrounded by other organs which is related to bowel evacuation and urine emptying, as well as sexual function. Delicate approach was needed and conventional open surgery and laparoscopic surgery was not able to do the job.*
*First, cancer that was spreaded to prostate was removed by robot, and remaining colorectal cancer was removed by laparoscopic surgry. The case ended up saving patient's anus without an urine fistula.*

*Laparoscopic cancer resection team of Seoul St.Mary's hospital*

# HOSPITALS TREATING COLON CANCER IN KOREA



## Chung-Ang University Hospital

***Major Procedures _***
- Laparoscopic colectomy
- Laparoscopic rectal resection
- Laparosopic ultra-low anaterior resection & coloanal anastomosis
- Robotic rectal surgery
- Radiofrequency ablation colorectal cancer with liver metastasis

***Process for Treatment _***
- Preoperative study(PET)
- Postoperative conservative treatment
- Postoperative adjuvant chemotheraphy(after chemoport insertion)
- Regular follow up study

***Hospital State _ Seoul***
- 870 Beds
- 218 Doctors
- 705 Nurses

more p.86

## Ewha woman's University Medical Center

***Major Procedures _***
- Hemicolectomy
- Laparoscopic hemicolectomy
- (Lower) Anterior resection
- Laparoscopic (lower) anterior resection
- (Laparoscopic) Abdominoperineal resection
- Hartmann's operation, Transanal excision

***Process for Treatment _***
- Colonoscopy
- Abdominal pelvis Computed Tomography
- Positron Emission Tomography (PET)
- Tumor marker
- Preoperative test

***Hospital State _ Seoul***
- 857 Beds
- 466 Doctors
- 727 Nurses
- International Healthcare Center
- Cancer Center

more p.88

## Konkuk University Medical Center

***Major Procedures _***
- Right hemicolectomy
- Transverse colectomy
- Left hemicolectomy
- Anterior resection
- Low anterior resection
- Abdomino-perineal resection
- Transanal excision
- Subtotal colectomy
- Total colectomy
- Multiorgan resection for metastatic colorectal cancer
- Chemotherapy for colorectal cancer

***Process for Treatment _***
- Unified colorectal cancer center
- Systematic process of surgery and chemotherapy for colorectal cancer
- Stoma care with specialized stoma therapist
- Nutrition counseling for operation or chemotherapy
- Biweekly meeting with colorectal cancer patients
- Regular lectures for colorectal cancer(every three months)

***Hospital State _ Seoul***
- 879 Beds
- 456 Doctors
- 705 Nurses
- International Healthcare Center
- Cancer Center

more p.92

## Korea University Anam Hospital

***Major Procedures _***
- Robotic-assisted rectal cancer surgery

***Hospital State _ Seoul***
- 972 Beds
- 590 Doctors
- 810 Nurses
- International Healthcare Center
- Cancer Center

more p.94

## Kyung Hee University Hospital

***Major Procedures _***
- Laparoscopic colorectal surgery
- Single-port laparoscopic colorectal surgery
- Robotic colorectal surgery
- Open colorectal surgery
- Transanal excision
- Endoscopic resection

***Process for Treatment _***
- Colonoscopy and express biopsy
- Computed tomography
- Tumor marker and LAB
- Postron emission tomography
- Magnetic resonance imaging
- Concurrent chemoradiotherapy
- Adjuvant chemotherapy

***Hospital State _ Seoul***
- 850 Beds
- 447 Doctors
- 692 Nurses
- International Healthcare Center
- Cancer Center

more p.95

## Seoul National University Hospital

**Major Procedures _**
- Colectomy or Proctectomy
- Laparoscopic colectomy or proctectomy

**Process for Treatment _**
- Digital rectal examination (DRE), tumor marker (CEA), colonoscopy, CT, prn) MRI, PET
- Tumor marker (CEA)
- Digital rectal examination (DRE), tumor marker (CEA), colonoscopy, CT, prn) MRI, PET

**Hospital State _ Seoul**
- 1,786 Beds
- 1,342 Doctors
- 1,835 Nurses
- International Healthcare Center
- Cancer Center

more p.97

## Seoul St. Mary's Hospital, The Catholic University Of Korea

**Hospital State _ Seoul**
- 1,332 Beds
- 799 Doctors
- 1,718 Nurses
- International Healthcare Center
- Cancer Center

more p.101

## Severance Hospital

**Major Procedures _**
- Colonoscopic diagnosis and treatment for colorectal tumor
- Chemotherapy
- Radiotherapy
- Colorectal surgery for colorectal cancer
- Laparoscopic surgery for colorectal cancer
- Robotic surgery for colorectal cancer

**Process for Treatment _**
- Medical consultation with coordinator
- Medical consultation with medical team
- Evaluation of colorectal cancer
- Multidiciplinary team consultation
- Treatment plan consultation
- Colonoscopic treatment for colorectal tumor
- Chemotherapy
- Radiotherapy
- Surgery for colorectal cancer
- Patients education after treatment
- Regular medical checks and tests

**Hospital State _ Seoul**
- 2,086 Beds
- 1,342 Doctors
- 2,135 Nurses
- International Healthcare Center
- Cancer Center

more p.104

## Gachon University Gil Medical Center

**Major Procedures _**
- Transanal local excision
- Low anterior resection ± laparoscopy
- Anterior resection ± laparoscopy
- Right/Left hemicolectomy ± laparoscopy
- Endoscopic mucosal resection

**Process for Treatment _**
- Colonoscopy ± sleeping
- Chest computed tomography
- Abdominopelvic computed tomography
- Endoscopic ultrasonogrphy
- Colorectal magnetic resonance

**Hospital State _ Incheon**
- 1,397 Beds
- 93 Doctors
- 321 Nurses
- International Healthcare Center
- Cancer Center

more p.108

## Inha University Hospital

**Major Procedures _**
- Radical colectomy(Rt.hemi, Lt.hemi, Transverse)
- Radical (low) anterior resection
- Laparoscopic colectomy(anterior resection) (same as above)
- Transanal resection & Endoscopic submucosal dissection
- Adjuvant chemotherapy
- Neo-adjuvant chemoradiotherapy

**Process for Treatment _**
- Preoperative routine Lab.(CEA)
- Colonoscopy & biopsy
- Abdominopelvic CT, chest CT
- Pelvic MRI or Transrectal US
- PET CT
- Operation or ESD(transanal resection)
- Postoperative general maangement
- Adjuvant chemotherapy

**Hospital State _ Incheon**
- 861 Beds
- 439 Doctors
- 759 Nurses
- International Healthcare Center
- Cancer Center

more p.110

## Yeungnam University Medical Center

**Major Procedures _**
- Convnetional colorectal cancer surgery
- Laparoscopic colorectal cancer surgery
- Chemotherapy
- Radiation therapy(+/- chemotherapy)
- Novalis traeatment

**Hospital State _ Daegu**
- 908 Beds
- 419 Doctors
- 652 Nurses
- International Healthcare Center
- Cancer Center

more p.112

## Chonnam National University Hwasun Hospital

**Major Procedures _**
- Laparoscopic colorectal surgery
- Single port laparoscopic surgery
- Robotic surgery
- HIPEC

**Process for Treatment _**
- CEA. CA 19-9
- Abdpelvic CT
- Chest CT
- PET CT
- Rectal MRI
- Colonoscopy
- Anorectal Ultrasound
- Operation
- Chemoradiation

**Hospital State _ Jeollanam-do**
- 701 Beds
- 244 Doctors
- 435 Nurses
- International Healthcare Center
- Cancer Center

more p.116

## Konyang University Hospital

**Major Procedures _**
- Conventional colectomy
- Laparoscopic colectomy
- Radiofrequency abrasion
- Colonic stent
- Cyber-knife / conventional radiation therapy

**Process for Treatment _**
- Colon cancer multidisciplinary team
- Post operative pain control
- Wound care specialist
- Stoma care Nurses

**Hospital State _ Daejeon**
- 886 Beds
- 262 Doctors
- 517 Nurses
- International Healthcare Center
- Cancer Center

more p.122

## Goo Hospital

**Major Procedures _**
- Laparoscopic Low Anterior Resection
- Laparoscopic Anterior Resection
- Laparoscopic Hemicolectomy

**Process for Treatment _**
- CEA. CA19-9
- Pre OP. CT, MRI
- Post OP. CT, MRI
- Colonoscopy
- Chemotherapy

**Hospital State _ Daegu**
- 185 Beds
- 27 Doctors
- 67 Nurses

more p.124

# BLADDER CANCER

46

### *Risk factors for bladder cancer*

① *Old age (Especially in 60~70s)*
② *Men(3~4 times more than women)*
③ *Smoker(chances become 2~7 times higher than non-smoker)*
④ *Exposure to chemical(total 20~25% of patients)*
⑤ *Analgesics, anti-cancer drug*
⑥ *Infection & Bladder stone*
⑦ *Radiation(2~4 times)*
⑧ *Family history of bladder cancer*
⑨ *Race(White 2 times more than black)*

*The most important risk factor is smoking in bladder cancer. 50~65% of male and 0~30% of female patients develop bladder cancer due to smoking. Incidence increases in the people who started smoking in their early age. Asian has the least chance to have bladder cancer.*

### *General symptoms of Bladder cancer*

① *Hematuria*
② *Urgency(Sudden need of urination)*
③ *Dysuria(pain in urination)*
④ *Urinary frequency(frequent urination)*
⑤ *Palpable mass at pelvis*

*In cases of hematuria, it is usually from urinary tract infection or ureteral stone rather than bladder cancer. It may disappear after few days. But if one is over 40 years old, bladder cancer may be suspected.*

### *Guidelines on screening in Bladder cancer*

*There are no early diagnostic methods of Bladder cancer. But if one has risk factors, urine cytology and a cystoscopy under local anesthesia may be needed for screening. If bladder cancer is diagnosed, radiologic tests are required to determine the stage of cancer.*

### *Treatment of Bladder cancer*

① *Resection : tumor resection via cystoscopy*
② *Intrabladder drug injection: preventing recurrence and progression*
③ *Partial cystectomy: Removes part of bladder*
④ *Total cystectomy: Removes entire bladder*
⑤ *Artificial bladder replacement: Artificial bladder is made from small intestine, replacing the need of urine bag*
⑥ *Radiotherapy: Removes cancer cell with radiation*
⑦ *Chemotherapy: Improves survival rate using chemotherapic agent*

*Different treatment is applied according to the stage of bladder cancer. Recently artificial bladder made from small intestine is replacing the need of urine bag.*

Smart Care MEDICAL KOREA

# OUTSTANDING ACHIEVEMENT OF BLADDER CANCER TREATMENT



### *Incidence of bladder cancer*

*Incidence of bladder cancer in Korea*

| | per 100,000 | Incidence | % (Rank) |
|---|---|---|---|
| Male& Female | Not listed within 10th place | | |
| Male | 11.4 | 2,847 | 2.6%(7th) |
| Female | Not listed within 10th place | | |

*Korean National Cancer Information Center, 2011*
*(Unit: patients/100,000, patients/year)*

*Bladder cancer is not a cancer with high incidence, despite high cancer incidence rate in Korea. Men are more likely to have bladder cancer than women.*

*International comparison of bladder cancer incidence rate*

*< Male >*

| Korea('11) | Japan('12) | U.S.('12) | England('12) |
|---|---|---|---|
| 8.7 | 9.8 | 19.6 | 9.2 |

*International Agency for Research on Cancer 2012,*
*Korean National Cancer Information Center 2011*
*(Unit:patients/100,000)*

*Race is one of the risk factors of bladder cancer. Chances are more than two times higher among white, compared to black. Asians have relatively low risk to have bladder cancer. International comparison of bladder cancer incidence rate shows the difference. In U.S. and England it is listed at 4th place, while in asian countries like Korea and Japan it is ranked at low place.*

### *Mortality rate of bladder cancer*

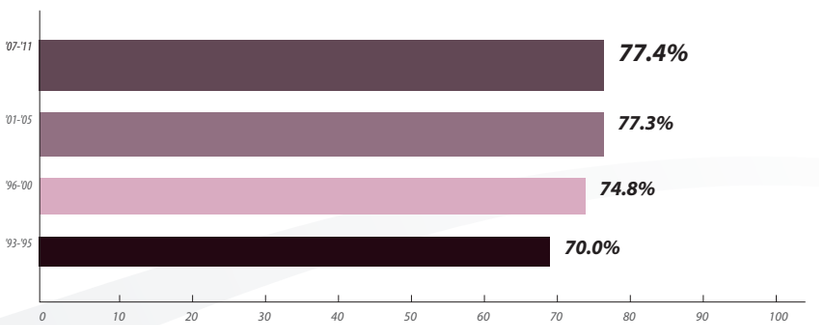
*Mortality rate was also lower than other cancer. Similar to its incidence rate, it is ranked at low place.*

### *5-year survival rate of bladder cancer*

| '93-'95 | '96-'00 | '01-'05 | '07-'11 |
|---|---|---|---|
| 70.0% | 74.8% | 77.3% | 77.4% |

*Korean National Cancer Information Center, 2011*

*Thus, 5-year survival rate was high. 7th most cancer in Korean men, 5-year survival has been steadily increasing, marking 77.4%.*




***5-YEAR SURVIVAL RATE OF BLADDER CANCER***

# TREATMENT WITHOUT URINE BAG



***Artificial bladder replaces urine bag***

*In the past, urine bag was required to store urine after removal of bladder which keeps urine inside the body. Cancer must be treated, but the reality of bringing a urine bag for rest of the life is hard enough to face. Patients quite often refused to have operation for that, but now the circumstances have changed.*

*Pusan national university hospital has been performing artificial bladder replacement since their first successful operation in 1990. The technique replaces patient's bladder with part of the small intestine, replacing the need of urine bag, makes patient urinate like a normal person. Treatment outcome is also excellent, now marking 3.2% mortality rate which is similar to that of medically advanced nations.*

***Era of 100-year-old patient; popular procedure among old patients***

*Advancement of medical technology made people live over 100 years if one's health is well managed. Rather than length of life, quality of life has became a new focus when treating cancer patients in Korea.*

*According to the data of Ewha woman'ss university medical center, artificial bladder replacement after cystectomy in 2011 has increased by 83.3% compared to 2010, and increased by 50% in 2012 compared to 2011. It became a popular procedure that over 70% of old patients aged 60-80 have received the treatment, as well as patient aged below 60.*

*In old days it was hard to manage since operation itself was difficult and complication like digestive disorder, fever, nephritis occurred. Advancement of treatment lets patients empty without urine bag, nerve sparing surgery made sexual life possible. Now overall complication rate is low and many patients are satisfied after operation.*

*Pusan national university hospital*
*Urogenital tumor/prostate team*

# HOSPITALS TREATING BLADDER CANCER IN KOREA





## *Chung-Ang University Hospital*

***Major Procedures _***
- *Transurethral resection of bladder tumor*
- *Intravesical therapy (chemotherapy or immunotherapy)*
- *Radical cystectomy with reconstructive surgery*
- *Chemotherapy*
- *Radiation therapy*

***Process for Treatment _***
- *Abdomen-Pevis Dynamic Computed Tomography (CT)*
- *Cystoscopy*
- *Urine Cytology*
- *Intravesical chemotherapy*
- *Intravesical immunotherapy*
- *Cystoscopy*
- *Urine Cytology*

***Hospital State _ Seoul***
- *870 Beds*
- *218 Doctors*
- *705 Nurses*

*more p.86*

## *Kyung Hee University Hospital*

***Major Procedures _***
- *Transurethral resection of bladder tumor*
- *Partial cystectomy*
- *Radical cystectomy*

***Process for Treatment _***
- *Computer tomography*
- *Urinary cytology*
- *Cystoscopy*
- *Transurethral resection of bladder tumor*
- *Partial cystectomy*
- *Radical cystectomy*
- *Intravesical BCG instillation*

***Hospital State _ Seoul***
- *850 Beds*
- *447 Doctors*
- *692 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.95*

## *Seoul St. Mary's Hospital, The Catholic University Of Korea*

***Major Procedures _***
- *Open radical cystectomy*
- *Laparoscopic radical cystectomy*
- *Robot-assisted radical cystectomy*
- *Transurethral resection of bladder tumor*
- *Radiation therapy*
- *Chemotherapy*
- *Intravesical instillation*

***Process for Treatment _***
- *Urinanlysis*
- *Urine cytology*
- *Cystoscopy*
- *Computed tomography*
- *Cystoscopy (Follow-up)*
- *Computed tomography*
- *PET (Positron Emission Tomography)*

***Hospital State _ Seoul***
- *1,332 Beds*
- *799 Doctors*
- *1,718 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.101*

## *Severance Hospital*

***Major Procedures _***
- *Transurethral resection of bladder tumor*
- *Radical cystectomy*
- *Laparoscopic radical cystectomy*
- *Robot assisted laparoscopic radical cystectomy*
- *Radiation therapy*

***Process for Treatment _***
- *Urinary analysis*
- *Urinary cytology*
- *Cystoscopy*
- *Cystoscopic biopsy*
- *Computed tomography*
- *Whole body bone scan*
- *PET-CT scan*

***Hospital State _ Seoul***
- *2,086 Beds*
- *1,342 Doctors*
- *2,135 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.104*

## Inha University Hospital

***Major Procedures _***
- *Transurethral resection of bladder tumor (TURB)*
- *Partial cystectomy*
- *Radical cystectomy*
- *Chemotherapy(adjuvant, neoadjuvant)*
- *Radiotherapy*

***Process for Treatment _***
- *Preoperative routine lab.*
- *Cystoscopy and urine cytology*
- *Abdominopelvic CT*
- *Premedication, operation permission*
- *Endoscopic resection (TURB)*
- *Postoperative general management*
- *Intravesical chemotherapy*
- *Radical cystectomy,*
- *Partial cystectomy*
- *Adjuvant chemotherapy*
- *Radiotherapy*

***Hospital State _ Incheon***
- *861 Beds*
- *439 Doctors*
- *759 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.110*

## Chonnam National University Hwasun Hospital

***Major Procedures _***
- *TUB-BT(Transurethral resection of bladder tumor)*
- *Radical cystectomy*
- *Partial cystectomy*
- *Chemotherapy*
- *Radiotherapy*

***Process for Treatment _***
- *Urinanalysis*
- *Abdomen CT*
- *Cystoscopy*
- *Urine Cytology*

***Hospital State _ Jeollanam-do***
- *701 Beds*
- *244 Doctors*
- *435 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.116*

## Konyang University Hospital

***Major Procedures _***
- *Transurethral resection of bladder tumor*
- *Radical cystectecmy and ileal conduit*
- *Radical cysteectomy and orthotopic neobladder*
- *Partial cystecomtomy*

***Process for Treatment _***
- *Confirm pathology Preoperative clinical staging (Abdominopelvc CT, Chest X-ray, etc)*
- *① Patient-controlled anesthesia*
  *② Early ambulation and pneumatic compression for prevention of pulmonary embolism*
  *③ Discharge after building up regular diet in cases with radical cystectomy.*
  *④ Confirm of pathology and plan further treatments*
- *① Follow up at outpatient clinic for recurrence or metastasis*
  *② Adjuvant therapy such as chemotherapy or radiotherapy if need*

***Hospital State _ Daejeon***
- *886 Beds*
- *262 Doctors*
- *517 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.122*

# STOMACH CANCER



### *Risk factors for stomach cancer*

| | |
|---|---|
| Related Disease | - History of Surgery : 2 to 6 times higher in risk<br>- Atrophic gastritis : causing hypoxia<br>- Pernicious anemia : causing stomach cancer in 10%<br>- Helicobacter pylori : causing Atrophic gastritis<br>- Polyp |
| Dict | - Nitrogen compound (processed ham, sausage)<br>- Low protein, low vitamin, Salty or burnt food<br>- Aflatoxin from fungi |
| Hereditary | - 2 times higher if, having family history |
| Others | - 2 times higher in male than female<br>- Higher over 50s<br>- Drinking<br>- Smoking |

*Risk factors of stomach cancer (National Cancer Information Center)*

*In stomach cancer, it is considered Multiple risk factors interact rather than single powerful risk factor dominating. Korea and Japan, which has high incident rate of stomach cancer, have similar diet habits. Immigrants in U.S. from these countries tend to have lower stomach cancer incidence than people of their homeland. This suggests that stomach cancer is closely related to dietary habits. To prevent stomach cancer, it is recommended to avoid salty and burned food and consume enough fresh vegetables and fruit.*

### *General symptoms of stomach cancer*

*Since there are no specific symptoms, it is difficult to tell the difference from non-cancer disease. As cancer progresses, various symptom will develop depending on cancer cite.*

*Usual symptoms include anorexia, weight loss, epigastric discomfort and pain, distension. Nausea is common in stomach cancer, and there may be palpable mass in case of advanced cancer. Melena and hemoptysis may occur when there is bleeding in stomach*

### *Guidelines on screening stomach cancer*

① *40+ years old Male & Female*
② *Endoscopy or contrast radiography in every 2 years*

*It is hard to diagnose early stomach cancer with symptoms only. But early diagnosis is still important for its treatment outcome, so when patients is more than 40 years old, even if without any symptom, endoscopy or contrast radiography is recommended every two years.*

### *Treatment of stomach cancer*

*< Local therapy >*

① *Open abdominal resection*
② *Endoscopic resection*
③ *Laparoscopic resection*
④ *Intracoporeal anastomosis: connects dissected digestive organs together*
⑤ *Robot surgery*

*< Systemic therapy >*

① *Chemotherapy: Improves survival rate using chemotherapic agent*

*Recurrence rate of stomach cancer is high, marking 55%. In most cases of recurring stomach cancer, it is highly likely that cancer is spread to whole body and making it difficult to be treated.*
*So early diagnosis is important than anything else.*

# OUTSTANDING ACHIEVEMENT OF STOMACH CANCER TREATMENT



## *Incidence of stomach cancer*

*Incidence of stomach cancer in Korea*

| | per 100,000 | Incidence | % (Rank) |
|---|---|---|---|
| Male& Female | 63.1 | 31,637 | 14.5%(2nd) |
| Male | 85.1 | 21,344 | 19.4%(1st) |
| Female | 41.1 | 10,293 | 9.5%(4th) |

*Korean National Cancer Information Center, 2011*
*(Unit: patients/100,000, patients/year)*

*Recently incidence rate of gastric cancer is decreasing due to westernized dietary habits. However, it is still one of the major cancer in Korea, ranked 2nd among all. Men are especially likely to have stomach cancer, marking the highest incidence rate.*

*International comparison of stomach cancer incidence rate*

*< Male >*

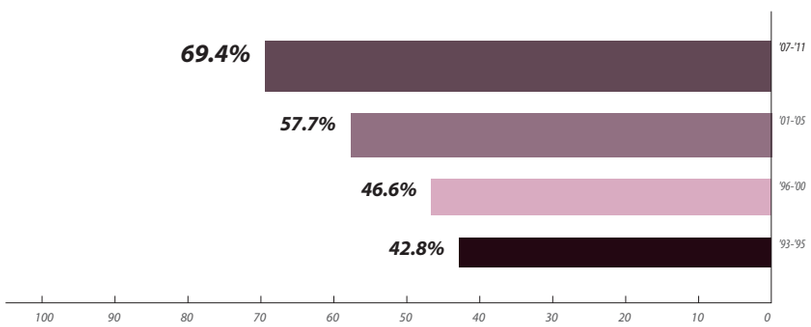
| Korea('11) | Japan('12) | U.S.('12) | U.K.('12) |
|---|---|---|---|
| 63.3 | 45.7 | Not listed within 10th | |

*< Female >*

| Korea('11) | Japan('12) | U.S.('12) | U.K.('12) |
|---|---|---|---|
| 25.1 | 16.5 | Not listed within 10th | |

*International Agency for Research on Cancer 2012,*
*Korean National Cancer Information Center 2011*
*(Unit:patients/100,000)*

*Both men and women have low incidence rate in U.S. and England. However, in Korea and Japan, the incidence is very high. Despite the fact that it is similar in Asian countries, incidence rate is higher in Korea, so there were more treatment cases followed by steady research. Now Korea has the most advanced medical technology related to stomach cancer.*




***5-YEAR SURVIVAL RATE OF STOMACH CANCER***

## *Mortality rate of stomach cancer*

*Mortality rate of stomach cancer in Korea*

| | per 100,000 | Death | % (Rank) |
|---|---|---|---|
| Male& Female | 18.6 | 9,342 | 12.7%(3rd) |
| Male | 24.2 | 6,090 | 13.1%(3rd) |
| Female | 12.9 | 3,252 | 11.9%(3rd) |

*Korean National Cancer Information Center, 2011*
*(Unit: patients/100,000, patients/year)*

*Both incidence rate and mortality rate are high in stomach cancer. But steady research was done to meet demand, so 5-year survival became top-class in the world.*

## *5-year survival rate of stomach cancer*

| '93-'95 | '96-'00 | '01-'05 | '07-'11 |
|---|---|---|---|
| 42.8% | 46.6% | 57.7% | 69.4% |

*Korean National Cancer Information Center, 2011*

*Recently, survival rate of stomach cancer in Korea increased more than 1.5 times compared to past days, reaching 67.0%.*

*International comparison of 5-year survival of stomach cancer*

| Korea('96-'00) | Korea('01-'05) | Korea('07-'11) |
|---|---|---|
| 46.6% | 57.7% | 69.4% |
| U.S.('03-'09) | Canada('06-'08) | Japan('03-'05) |
| 27.7% | 25.0% | 63.3% |

*International Agency for Research on Cancer 2012,*
*Korean National Cancer Information Center 2011*

*5-year survival rate of Korean stomach cancer patient show twice as much as that of U.S. and Canada, nations those have less stomach cancer patients. It is higher than Japan which has as many patients as Korea does. It means treatment on stomach cancer is excellent in Korea.*

*5-year survival rate according to stage*

| Stage I | Stage II | Stage III | Stage IV |
|---|---|---|---|
| 88-99% | 67-94% | 41-81% | 6-64% |

*KHIDI, 2013*

*According to major hospital data investigated by Korea Health Industry Development Institute in 2013, early diagnosis of stomach cancer is followed by high 5-year survival rate. Also, even if it is diagnosed at the terminal stage, high survival rate may be achieved depending on cancer site and metastatic condition.*

Smart Care MEDICAL KOREA

# WORLD-BEST STOMACH CANCER TREATMENT



***Endoscopic mucosal resection(EMR) for early stomach cancer***

*Stomach cancer develops from stomach mucosa, grows through layers of submucosa, muscle, serosa and spreads to nearby organs. Early stomach cancer is the stomach cancer which only involves mucosa and submucosa. In this type of cancer, rate of complete remission is high, reaching 90-95%.*

*EMR is widely spread in Korea. Most of the patients those who can be treated by open abdominal surgery can also be treated with EMR. The procedure is safe to elderly patients since sedative anesthesia can be done instead of general anesthesia. Recovery time is short, patients can drink water the day after operation, and food intake is possible from the third day.*

***Complete remission rate 95%, world-most high-risk surgery performed***

*A lot of hospital in Korea perform laparoscopic surgery, which is well-known by the world. In case of stomach cancer, as a minimally invasive surgery, laparoscopic surgery and robot surgery are frequently performed. However, there are only 4 hospitals that perform intracorporeal anastomosis, which connects remaining digestive organs without the need of stoma. Even in the same laparoscopic surgery, incision of 5-6cm is required to connect organs outside the body, while smaller incision is required for intracorporeal anastomosis. Furthermore, infection is less concerned since organ stays inside the body.*

***Treatment preserving maximal stomach function***

*In case of total dissection of stomach, patient will suffer severe problem when eating. It is caused by dysphagia and acid reflux. Lower esophageal sphincter plays important role here. Quality of life in post operation is largely determined by existence of sphincter.*

*Even if the patient needs complete resection of stomach, surgeons try to save 5% of stomach if possible. This is because quality of life is considered important in Korea, and 5% of stomach will let the patient have normal life.*

*Also, surgical method that removes stomach while preserving the pylorus is often performed.*

***1,000 Foreign doctors visit Korea to learn surgical techniques every year***

*Sam Yoon, professor of Harvard medical school, U.S., had consulted his mother's stomach cancer surgery to a Korean hospital. This could be a good example that shows stomach cancer treatment is world-best. Also, number of foreign docters visiting Korea to learn surgical technique every year has been reaching 1,000.*
*Korea has abundant stomach cancer cases due to high incidence, and patients are often actively participate in clinical trials. Culture using chopstick has sublimated into laparoscopy and robot surgery, laying the ground work for the nation with most advanced stomach cancer treatment.*

*Intracorporeal anastomosis*

# VISITING KOREA FOR THE STOMACH CANCER

54

***Who knew that worsening stomachache was sign of stomach cancer***

*Mr. Dmitrii, living in Vladivostok, Russia, is a veteran sailor who served for 15 years. For occupational reasons, he often left home and stayed abroad for long period of time. He frequently had stomachache but he did not think it was serious, although it was caused by irregular eating habits. Moreover, every time he went back home, he was too busy spending time with his family so he never planned to visit hospital. He started to lose weight for several month, and sweating at night, while pain got worse. He went to a nearby hospital with his wife, to hear that the test diagnosed him of stomach cancer. It was a shock, but he couldn't step back. He started to search on the web about stomach cancer. But the more he search, the bigger the fear grew because  Mortality rate and recurrence rate were both high.*

***Inha University Hospital, recommended by a friend***

*He was once a sailor sailing throughout the world, so he already knew that Korea has the world-best skills of treating stomach cancer. Soon he decided to visit Korea, but he couldn't figure it out which hospital to go to. Through his friends he began to ask around, and finally he made a call to Inha university hospital international healthcare center. Fortunately they had Coordinator who spoke Russian, so there was no problem to making an appointment.*

***Direct progress made from examination to operation***

*After entering Korea, Mr. Dmitrii was admitted in Inha University Hospital which is not far from Incheon international airport. He received endoscopy, PET-CT and bone scan without delay. He was happy be told that the cancer didn't spread to other part of the body. Operation date was set right away. The examination result was satisfying because he was worried about the search result on the web in Russia. Operation was successful.*

***6 cycles of chemotherapy after gastrectomy***

*6 cycles of chemotherapy was done after successful gastrectomy. Due to its high recurrence rate, it was still too soon to relax. After the sixth chemotherapy, Inha university hospital had his blood tested again. The number of white blood cells and platelets were normal. Also, PET-CT showed there was no metastasis in other parts of body. He could then go back to Russia.*

***Long-term care makes patient satisfied***

*Mr. Dmitrii went back to work as a sailor after he has recovered. Professor of Inha university hospital is still in charge of him, making regular contact via telephone and e-mail. Saying that not only the result of operation, but also post-operation care was very satisfying. Dmitrii thanked Inha university hospital which cured him and mentioned that the medical service of Korea is well beyond his expectation.Visiting Korea for the best treatment*

# AIMING TO BE THE WORLD STANDARD IN STOMACH CANCER TREATMENT

***A world record : 20,000 cases operated by single center***

*Seoul National University hospital is the world's first single center to operate over 20,000 stomach cancer patients total. Now the hospital is the leading center in Korea for disseminating pylorus preserving gastrectomy, which saves the part that connects stomach to duodenum called pylorus, to preserve maximum gastric function.*

*Seoul National University hospital does numerous of research. In fact, the hospital publishes the most academic paper in Korea. Recently, the research that was done together with Severance hospital has been included in NCCN(National Comprehensive Cancer Network) guidelines of stomach cancer, and became a world-standard of cancer treatment.*

***Stomach cancer hidden in MRI could be found***

*In Seoul St.Mary's hospital, hidden cancer cells could be discovered using laparoscopy. Cancer that endoscopy, CT and MRI missed was sometimes found at submucosa level under laparoscopy. They have published an article in U.S. academic journal about 11 patients whose metastasis discovered by laparoscopy, which was not found using CT or PET scan.*

*Early diagnosis is required to achieve complete remission and effective treatment, since Stage III and Stage IV advanced cancer has recurrence rate over 50%.*

*In a joint research with Memorial Sloan-Kettering cancer center, one of the best cancer center in U.S., Seoul St.Mary's hospital had compared patients who received gastrectomy from 1995 to 2005, and found out that patients had survival rate of 81%, much higher than that of U.S. rating 58%. The result was enough to make U.S. physicians surprised.*

***Operation manual became a world standard***

*Severance hospital, famous for its robot surgery, is running a separate robot surgery center. 40 surgeons with 5 surgical robots have done 9,000 cancer surgery until the end of June 2012.*

*800 doctors from 28 countries including U.S. and Japan visited severance hospital for training. From 2008, operation manual of Severance hospital has been the world standard in robot surgery.*



*Seoul National University hospital stomach cancer center having multidisciplinary conference*

*Seoul St.Mary's hospital stomach cancer centers searching for hidden stomach cancer to check its recurrence*

*Robot surgery center, Severance hospital*

# HOSPITALS TREATING STOMACH CANCER IN KOREA



## *Chung-Ang University Hospital*

***Major Procedures _***
- *Gastrectomy*
- *Laparoscopy Gastrectomy*
- *Robotic Gastrectomy*
- *Intraperitoneal Chemotherapy*

***Process for Treatment _***
- *Preoperative stage work-up study*
- *Periopeative conservative management*
- *Postoperative adjuvant chemotherapy*
- *Regular follow-up study*

***Hospital State _ Seoul***
- *870 Beds*
- *218 Doctors*
- *705 Nurses*

*more p.86*

## *Ewha woman's University Medical Center*

***Major Procedures _***
- *Gastrectomy*
- *Laparoscopic(assisted) gastrectomy*
- *Robotic(assisted) gastectomy*
- *Endoscopic submucosal dissection*

***Process for Treatment _***
- *Esophagogastroduodenoscopy*
- *Abdominal pelvis Computed Tomography*
- *Positron Emission Tomography (PET)*
- *Tumor marker*

***Hospital State _ Seoul***
- *857 Beds*
- *466 Doctors*
- *727 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.88*

## *Konkuk University Medical Center*

***Major Procedures _***
- *Total gastrectomy*
- *Subtotal gastrectomy*
- *Proximal gastrectomy*
- *Laparoscopy-assisted distal gastrectomy*
- *Laparoscopy-assisted*
- *Pylorus preserving gastrectomy*

***Hospital State _ Seoul***
- *879 Beds*
- *456 Doctors*
- *705 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.92*

## *Kyung Hee University Hospital*

***Major Procedures _***
- *Endoscopic Submucosal Dissection*
- *Laparoscopic-assisted Gastrectomy*
- *Robot-assisted Gastrectomy*
- *Open Gasrectomy*

***Process for Treatment _***
- *Gastroscopy*
- *Endoscopic ultrasonography*
- *Computed Tomography*
- *PET-CT*
- *Endoscopic Submucosal dissection*
- *Laparoscopic-assisted Gastrectomy*
- *Robot-assisted Gastrectomy*
- *Open Gasrectomy*

***Hospital State _ Seoul***
- *850 Beds*
- *447 Doctors*
- *692 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.95*

## *Seoul National University Hospital*

***Major Procedures _***
- *Distal gastrectomy (subtotal gastrectomy)*
- *Total gastrectomy*
- *Proximal gastrecotomy*
- *Pylorus-preserving gastrectomy*
- *Laparoscopy-assisted gastrectomy*
- *Endoscopic submucosal dissection*
- *Postoperative chemotherapy*
- *Targerted chemotherapy*

***Process for Treatment _***
- *Preoperative workup*
- *Clinical pathway for gastric cancer operation*
- *Patient Educational program*
- *Multidisciplinary conference*

***Hospital State _ Seoul***
- *1,786 Beds*
- *1,342 Doctors*
- *1,835 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.97*

## *Seoul St. Mary's Hospital, The Catholic University Of Korea*

***Major Procedures _***
- *Endoscopic submucosal dissection*
- *Laparoscopic gastrectomy*
- *Robot assisted gastrectomy*

***Process for Treatment _***
- *Critical pathway for gastrectomy*
- *Critical pathway for wedge resection*
- *Critical pathway for ESD*

***Hospital State _ Seoul***
- *1,332 Beds*
- *799 Doctors*
- *1,718 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.101*

## *Severance Hospital*

***Major Procedures _***
- *Endoscopic submucosal dissection*
- *Radical (sub)total gastrectomy with lymph node dissection*
- *Laparoscopy assisted radical (sub)total gastrectomy with lymph node dissection*
- *Robot assisted radical (sub)total gastrectomy with lymph node dissection*

***Process for Treatment _***
- *Pre-procedure study (blood test, EGD etc.)*
- *Sedation for procedure*
- *ESD procedure*
- *Follow-up EGD and CT scan*
- *Baseline study (Laboratory blood test, Tumor marker, Endoscopy, CT scan)*
- *EGD Clipping (Optional)*
- *No drain tube and nasogastric tube*
- *Minimal skin incision*
- *Early ambulation and early feeding*

***Hospital State _ Seoul***
- *2,086 Beds*
- *1,342 Doctors*
- *2,135 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.104*

## *Inha University Hospital*

***Major Procedures _***
- *Radical Gastrectomy (subtotal, total, segmental)*
- *Laparoscopic Gastrectomy(same as above)*
- *Endoscopic submucosal resection*
- *Adjuvant chemotherapy*
- *Billroth I, II Roux en Y, long limb Roux en Y*

***Process for Treatment _***
- *Preoperative routine Lab.*
- *Endoscopy and/or biopsy*
- *Abdominopelvic CT*
- *Operation or endoscopic resection*
- *Postoperative general management*
- *Adjuvant chemotherapy, prn.*

***Hospital State _ Incheon***
- *861 Beds*
- *439 Doctors*
- *759 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.110*

## *Pusan National University Hospital*

***Major Procedures _***
- *Imaging & pathologic diagnosis of Benign or malignant Breast disease.*
- *Stereotactic Vaccuum assisted biopsy for microcalcification*
- *Breast Conserving Surgery & Sentinel Lymph node biopsy for early breast cancer*
- *Immediate reconstruction after skin sparing mastectomy for Breast Cancer treatment*

***Process for Treatment _***
- *One stage Imaging diagnosis and Core needle biopsy in selected case*
- *Functional imaging study, MRI, PET CT*
- *Intraoperative extended 8 directional margin frozen*
- *IntraOperative Blue dye marking for proper surgical margin*
- *Immediate reconstruction after positive surgical margin Regular follow up with selected imaging diagnosis*

***Hospital State _ Busan***
- *908 Beds*
- *419 Doctors*
- *652 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.114*

## *Chonnam National University Hwasun Hospital*

***Major Procedures _***
- *Radical distal gastrectomy*
- *Laparoscopic distal gastrectomy*
- *Radical total gastrectomy*
- *Laparoscopic total gastrectomy*
- *Robot assisted gastrectomy*

***Process for Treatment _***
- *Preoperative evaluation*
- *Operation*
- *Post operative F/U*
- *Adjuvant chemotherapy*

***Hospital State _ Jeollanam-do***
- *701 Beds*
- *244 Doctors*
- *435 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.116*

# BREAST CANCER



### *Risk factors for breast cancer*

① *Obesity, Alcohol consumption, family history of breast cancer*
② *Early menarche, late menopause*
③ *Long term hormone therapy after menopause*

*Risk of having breast cancer becomes higher when epithelial cell is exposed to Estrogen, the female hormone, for longer time. One who had early menarche and late menopause has higher risk of having breast cancer. Also, obesity after menopause increases the level of female hormone, and 5-10% of breast cancer patients have genetic factors.*

### *General symptoms of breast cancer*

| Symptom | Number of patient | % |
|---|---|---|
| Breast mass without pain | 3,320 | 62.4 |
| No symptom, found from regular exam | 946 | 17.8 |
| Breast mass without pain | 298 | 5.6 |
| Nipple discharge | 220 | 4.1 |
| Skin color change, nipple retraction | 202 | 3.8 |
| Breast pain and discomfort | 147 | 2.8 |
| Axillary mass | 100 | 1.9 |
| Others | 89 | 1.6 |
| **Total** | **5,322** | **100%** |

*Symptoms of breast cancer by observating Korean breast cancer patient*
*(Korea breast cancer society, 2004)*

*There are no symptoms in early breast cancer, and pain of breast isn't a common symptom of breast cancer. The most common symptom is palpable nodule without pain, corresponding to total 62.4% of patients, incidental discovery accounts for 17.8%. Otherwise symptoms may suggest advanced breast cancer, and immediate checkup is recommended.*

### *Guidelines on screening in breast cancer*

*< Guidelines on screening breast cancer >*

| | |
|---|---|
| Over 30yrs old female | Self exam, monthly |
| Over 35yrs old female | Clinical exam, every 2yrs |
| Over 40yrs old female | Clinical exam and mammography, every 1~2yrs |

*National cancer center, Korea breast cancer society*

*National Cancer Institute(NCI) in U.S. recommends women over 40 years old to take a mammography every 1-2 years. But in Korea, checkup is recommended to patients over age 30, since it occurs in different age group. Radiologic test like mammography, breast ultrasound is done for breast cancer screening.*

### *Treatment of breast cancer*

① *Breast conserving surgery: removes part of the breast*
② *Mastectomy: removes whole breast*
③ *Sentinel lymph node biopsy*
④ *Lymph node dissection : when lymph node metastasis is found*
⑤ *Breast reconstruction : Repairs removed breast*
⑥ *Chemotherapy: Removes cancer cell with radiation*
⑦ *Radiotherapy: Removes cancer cell with radiation*
⑧ *Antihormonal therapy: blocks female hormone*

# OUTSTANDING ACHIEVEMENT OF BREAST CANCER TREATMENT



### *Incidence of breast cancer*

***Incidence of breast cancer in Korea***

| | per 100,000 | Incidence | % (Rank) |
|---|---|---|---|
| Male& Female | 32.0 | 16,015 | 7.3%(6th) |
| Female | 63.7 | 15,942 | 14.8%(2nd) |

*Korean National Cancer Information Center, 2011*
*(Unit: patients/100,000, patients/year)*

*Breast cancer is ranked at 6th most common incidence in Korea, but among female cancer it is ranked 2nd, right after thyroid cancer. Despite its low incidence, men may develop breast cancer, mostly in old aged patient.*

***International comparison of incidence of breast cancer***

*< Female >*

| Korea('11) | Japan('12) | U.S.('12) | England('12) |
|---|---|---|---|
| 43.8 | 51.4 | 92.9 | 87.9 |

*International Agency for Research on Cancer 2012,*
*Korean National Cancer Information Center 2011*
*(Unit:patients/100,000)*

*According to data comparing female cancer incidence, breast cancer is ranked 1st in female cancer in most of the world. But in Korea it is ranked at 2nd after thyroid cancer, and incidence rate itself is relatively low.*

### *Mortality rate of breast cancer*

***Mortality rate of breast cancer in Korea***

| | per 100,000 | Incidence | % (Rank) |
|---|---|---|---|
| Male& Female | 7.3 | 2,013 | 2.7%(7th) |
| Female | 7.9 | 1,993 | 7.3%(6th) |

*Korean National Cancer Information Center, 2011*
*(Unit: patients/100,000, patients/year)*

*patients/100,000, patients/year)*
*While incidence is high in breast cancer, mortality is low and it is one of the cancer which has good treatment outcome. Early diagnosis makes better outcome.*

### *5-year survival rate of breast cancer*

| '93-'95 | '96-'00 | '01-'05 | '07-'11 |
|---|---|---|---|
| 77.9% | 83.2% | 88.5% | 91.3% |

*Korean National Cancer Information Center, 2011*

*5-year survival rate of breast cancer has been steadily increasing, now marking high rate of 91.3%*

***International comparison of 5-year survival rate of breast cancer***

| Korea('96-'00) | Korea('01-'05) | Korea('07-'11) |
|---|---|---|
| 83.2% | 88.5% | 91.3% |
| U.S.('99-'06) | Canada('04-'06) | Japan('97-'99) |
| 89.2% | 88.0% | 89.1% |

*International Agency for Research on Cancer 2012,*
*Korean National Cancer Information Center 2011*

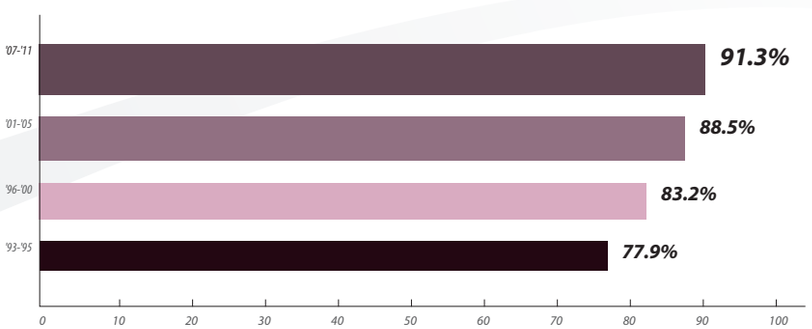
*Compared to other countries, 5-year survival rate of breast cancer in Korea is as high as countries having higher incidence rate. It shows that the world shares similar standards of treating breast cancer.*

***5-year survival rate of breast cancer according to stage***

| Stage I | Stage II | Stage III | Stage IV |
|---|---|---|---|
| 96-99% | 91-99% | 38-89% | 0-75% |

*KHIDI, 2013*

*According to investigation of major hospitals in 2013 by Korea Health Industry Development Institute, Remission rate reaches 90% in stage I-II breast cancer patients, and end stage patients also show high survival rate. (Hospitals that reported 100% remission have been excluded)*




***5-YEAR SURVIVAL RATE OF BREAST CANCER***

# RESPECTING FEMININITY OF BREAST CANCER PATIENTS



***Breast, symbol of female, should be conserved***

*Breast resection is considered for survival, but life without breast, symbol of women, is hard to imagine for most of the female patients. Breast is conserved as much as possible in Korea, considering both treatment outcome and quality of life. In the past, entire breast had to be removed. But nowadays, surgeries preserving the shape of the breast with making incisions in size of 1-2cm is prevailing for this reason.*

*The most important point in conserving breast is maintaining its shape after surgery. If tumor is large, it maybe hard to preserve its shape in small breast while large breast has enough chance.*

***Conserving breast while removing tumor at the same time***

*It was hard to preserve breast in past days. So tumor was downsized by neoadjuvant therapy. But recently, Oncoplastic breast surgery, a method that reconstructs breast after resection of tumor, is widely performed.*

***Breast reconstruction for whole breast resection***

*Korea has the highest rate of plastic surgery per capita. So plastic surgery has been developed by the high demand from women interested in their appearance.*

*If tumor exceeds 30% size of breast, oncoplastic surgery cannot preserve its shape. And total mastectomy should be performed if tumor has developed much. This is where breast reconstruction takes place. Cooperating with plastic surgeons, reconstruction is performed right after mastectomy, to preserve breast after operation.*

***Sentinel lymph node biopsy reducing aftereffects***

*Axillary lymph node was always dissected in breast cancer surgeries performed in past days. It was because 40% of patients had cancer spreaded at axillary lymph node, and dissecting it could prevent recurrence and clear the cancer definitely. But axillary lymph node dissection is followed by complications like lymphatic edema and movement disorder due to nerve damage. For example, movement using arms and hands, like lifting arm up, becomes difficult.*

*Recently, sentinel lymph node biopsy is done to determine lymph node metastasis and dissection is not performed if there is not cancer cell spread to lymph node. Stability of treatment has been proven by Korean professor, and the treatment became the standard in breast cancer surgery.*

*Quality of life and treatment outcome are both considered in development of cancer surgery of Korea. Other than advanced skills, fine communication between physician and patients are important for patient to overcome the fear before operation. It's same in the case of breast cancer and these are why international patients with breast cancer visit Korea for their treatment.*

***Should whole breast be removed for survive?***

*Ms. Al Zawari, 42 years old woman living in capital of United Arab Emirates(UAE), Abu Dhabi, has diagnosed with breast cancer in her country on April 2012. She was worried because she once thought that there will be no problem if surgery is well done, and it turned out she needs to remove her whole breast to cure the cancer. It is reasonable to do that for survival, but as a woman, it was hard to face the fact that she will lose the symbol of female. Does entire breast have to be removed? Isn't there any other way? She started to ask around.*

*Oncoplastic breast surgery by Pusan national university hospital*

# VISITING KOREA FOR BREAST CONSERVING TREATMENT



***Agreement on patient referrals & the first patient from Abu Dhabi***

*Germany, Thailand, and Korea were recommended to receive breast conserving treatment by Abu Dhabi health authority. Her friends recommended Korea for its advanced medical service, beautiful city, and environment. She flew 10 hours to get to Korea. Her choice was Ewha woman's university cancer center and she became the No.1 patient that referred to Korea after agreement on patient referral was made between Ewha woman's university and Abu Dhabi Health Authority.*

***Concentrating on treatment only immediately***

*Ms. Al Zawari had visited Ewha woman's university cancer center with her family on July 2012. She could concentrate on treatment immediately after she arrived because of nice clinical system and caring personnel. It was a strange place for her indeed, so the hospital have been served her with more care.*

***Chemotherapy planned additionally due to trust***

*She was originally planning to go back to Abu Dhabi after operation. But she had her length of visit extended for extra 2 months to receive chemotherapy. It was due to trust built during the treatment in Ewha woman's university cancer center, and the fact that outcome was also satisfying, which preserved breast while removing cancer cells.*

***A note given when getting discharged***

*An year has past since her first visit. Ms Al Zawari gave her thanks to Ewha woman's university cancer center and Abu Dhabi Health Authority, mentioning that she was given a new life in Ewha woman's university cancer center. She was planning a trip to Korea to have a good time with her family, who had hard times during the treatment, and to make a plan for a new life. That was when she got a note with sights of Korea written by nurses who cared for her everyday and eventually became her friends.*

***'Lady ward' for female cancer patients***

*Ewha woman's university cancer center had separated men and women patients for the first time in Korea. Separated space was provided to examine female patients in female health promoting center and `lady ward' was established for female inpatients. A center belonged to Ewha woman's university, best woman's university in Korea, they know how to fulfill woman's need.*
*Facilities are not everything. Ewha woman's university cancer center has breast specialist on duty all day, so that patients can solve their problems whenever they want.*
*Moreover, there is also services that saves waiting time which is a usual problem in big hospitals.*

*Lady ward of Ewha woman'ss university medical center*


*Lady ward of Ewha woman'ss university medical center*

# HOSPITAL SPECIALIZED IN FEMALE CANCER



*Open in March 2009, Ewha Woman's University Cancer Center is a new hospital and spare no expense to cutting-edge facilities. The hospital has imported 128 channel PET-CT which is a high-end radiologic device for the first time in Korea and second in asia. Trilogy, an up-to-date radiotherapy device, and da Vinci® robot for robotic surgery are imported and applied.*
*Expert of world's foremost authority in breast cancer was invited as the head of the center, and the hospital received JCI certificate, a certificate of hospital meeting world standards in July 2011. Although it is a relatively new hospital, there are many patients from various countries visiting the hospital.*

***First female cancer center in Korea***
*Well-known as No.1 in number of annual OBGY outpatients and annual number of delivery, Jeil hospital, the first women-specialized hospita in Korea, has established female cancer center, which is also the first female cancer center in Korea, runs the most of female cancer tests in Korea.*
*The primary motto of Jeil hospital female cancer center is 'fast testing, fast result, and fast treatment'. Diagnosis is made at the day which patient visits hospital, hospitalization and operation happens within a week. In Jeil hospital female cancer center, specialist is directly in charge of the tests while other hospitals let residents do the job,*
*Breast cancer center, established at 1983, ranked 1st place for number of breast cancer examination. 80% of surgery is breast conservating which is higher than Korean average, 60%.*

***Many specialists, comparing to its size***
*Mizmedi hospital started as an infertility specialized clinic in 1991 and now grew into female specialized hospital. Having only 100 beds in total, 80 specialist and 600 staffs are serving for patients from two hospitals in Gangseo and Gangnam area.*
*In case of breast cancer center, it is consists of five breast specialist surgeons who majored breast disease and breast cancer, four breast pathologic specialists, and seven radiologic specialists. Surgery is performed to conserve breast as much as possible, and department of plastic surgery in Korea has recently considered to perform both breast reconstruction & breast cosmetic surgery. Other than advanced skills, fine communication between physician and patients are important for the patient to overcome the fear before operation. It's same in the case of breast cancer and these are why international patients with breast cancer visit Korea for their treatment.*

# HOSPITALS TREATING BREAST CANCER IN KOREA

63

## Chung-Ang University Hospital

**Major Procedures _**
- Total mastectomy
- Breast-conserving surgery
- Breast oncoplastic surgery

**Hospital State _ Seoul**
- 870 Beds
- 218 Doctors
- 705 Nurses

more p.86

## Ewha woman's University Medical Center

**Major Procedures _**
- Breast conserving surgery
- Modified radical mastectomy
- Skin sparing mastectomy
- Sentinel lymph node biopsy

**Process for Treatment _**
- Breast ultrasonogram
- Mammography
- Breast MRI
- Core needle biopsy
- Stereotactic mammotome biopsy
- Positron Emission Tomography(PET)
- Bone Scan
- Abdomen Ultrasonogram

**Hospital State _ Seoul**
- 857 Beds
- 466 Doctors
- 727 Nurses
- International Healthcare Center
- Cancer Center

more p.88

## Konkuk University Medical Center

**Major Procedures _**
- Breast Conserving Surgery and Sentinel Lymphnode biopsy
- Breast Conserving Surgery and Axillary LymphNode Dissection
- Modified Radical Mastectomy
- Oncoplastic Breast Surgery
- Subcutaneous Mastectomy and immediate Reconstruction
- DIEP free flap breast reconstruction

**Process for Treatment _**
- Unified breast cancer center
- One-stop service system, customer-centered
- Systematic process of surgery and chemotherapy for breast cancer
- Nursing education for chemotherapy (individual)
- Nutrition counseling for chemotherapy (individual)
- Biweekly meeting with breast cancer center medical team
- Regular lectures for breast cancer

**Hospital State _ Seoul**
- 879 Beds
- 456 Doctors
- 705 Nurses
- International Healthcare Center
- Cancer Center

more p.92

## Kyung Hee University Hospital

**Major Procedures _**
- Breast conserving surgery/ Modified radical mastectomy/oncoplastic surgery
- Chemotherapy
- Target therapy
- Radiation therapy
- Endocrine therapy

**Process for Treatment _**
- Physical examination and breast image study (Mammography, breast sonography)
- Express biopsy
- Systemic evaluation
- Surgery for breast cancer
- Chemotherapy for breast cancer
- Radiation therapy for breast cancer
- Target therapy for breast cancer
- Endocrine therapy for breast cancer
- Follow up

**Hospital State _ Seoul**
- 850 Beds
- 447 Doctors
- 692 Nurses
- International Healthcare Center
- Cancer Center

more p.95

## Seoul National University Hospital

**Major Procedures _**
- Breast conserving surgery, total mastectomy curative breast cancer resection
- Oncoplastic breast surgery
- Immediate breast reconstruction, delayed breast reconstruction
- Clinical trial
- Hereditary breast cancer counseling
- Lymphedema clinic- stellate ganlion block & complex decongestive therapy
- Breast image:Ultrasound elasotography, Post operative screening MRI, Stereotactic biopsy, Digital Breast Tomosynthesis

**Process for Treatment _**
- Preoperative lab, breast MRI, chest CT, PET, bone scan
- Preoperative breast tumor localization by US and/ or MMG, Ultrasound elasotography, Stereotactic iopsy, Digital Breast Tomosynthesis
- Consider immediate breast reconstuction (for total mastectomy patients) consider for oncoplasty (for breast conserving patients)
- Consider individualized adjuvant treatment (chemotherapy, radiation therapy, hormone therapy)
- Individual postoperative care counseling
- Hereditary breast cancer counseling
- Stellate ganlion block & complex decongestive therapy

**Hospital State _ Seoul**
- 1,786 Beds
- 1,342 Doctors
- 1,835 Nurses
- International Healthcare Center
- Cancer Center

more p.97

## Seoul St. Mary's Hospital, The Catholic University Of Korea

**Major Procedures _**
- Mastectomy (Simple mastectomy, Modified radical mastectomy)
- Breast conserving surgery(Quadrantectomy, Wide excision)
- Axillart Lymph node dissection (or Sentinel lymph node biopsy)
- Breast reconstruction (Implant procedure, Tissue flap procedure)
- Ultrasoud-guided breast biopsy, Stereotatic mammotome biopsy, MRI-guided biopsy
- Vaccum-assited biopsy(mammotome)

**Process for Treatment _**
- Preparation course surgery for breast cancer
- Drain insertion of Breast cancer
- Drain non-insertion of Breast cancer
- Outpatient chemotherapy

**Hospital State _ Seoul**
- 1,332 Beds
- 799 Doctors
- 1,718 Nurses
- International Healthcare Center
- Cancer Center

more p.101

## Severance Hospital

**Major Procedures _**
- Breast Conserving Surgery
- Total Mastectomy
- Total Mastectomy with immediate breast reconstruction
- Sentinel lymph node biopsy

**Process for Treatment _**
- Staging work up and preoperative study
- Multidisciplinary team approach to management of breast cancer
- Postoperative patient care for early recovery
- Multidisciplinary team approach for adjuvant therapy and rehabilitation after surgery
- Multidisciplinary team approach to management of metastatic breast cancer

**Hospital State _ Seoul**
- 2,086 Beds
- 1,342 Doctors
- 2,135 Nurses
- International Healthcare Center
- Cancer Center

more p.104

## Yeungnam University Medical Center

**Major Procedures _**
- Breast conserving surgery
- Modified radical mastectomy
- Subcutaneous mastectomy
- Arm node preserving surgery
- Chemotherapy (+/- target therapy, hormonal Tx.)

**Hospital State _ Daegu**
- 908 Beds
- 419 Doctors
- 652 Nurses
- International Healthcare Center
- Cancer Center

more p.112

## Inha University Hospital

**Major Procedures _**
- Modified radical mastectomy
- Breast Conserving Surgery
- Skin(or Nipple areolar complex) sparing mastectomy
- Breast Reconstruction(Immediate or Late)
- Preoperative chemotherapy

**Process for Treatment _**
- Digital mammography
- Breast MRI
- Mammotome biopsy
- Ultrasonography guided Biopsy
- Preoperative chemo- or hormone therapy
- Ultrasonography guided localization
- SPECT CT
- Sentinel node biopsy
- Mastectomy (and reconstruction) or Breast Conserving Surgery
- Postoperative management and education for patient
- Adjuvant chemo- or hormone treatment, Radiation treatment

**Hospital State _ Incheon**
- 861 Beds
- 439 Doctors
- 759 Nurses
- International Healthcare Center
- Cancer Center

more p.110

## Pusan National University Hospital

**Major Procedures _**
- Endoscopic submucosal dissection
- Endoscopic mucosal resection

**Process for Treatment _**
- Abdominal computed tomography
- Endoscopic ultrasonography
- Proton pump inhibitor

**Hospital State _ Busan**
- 908 Beds
- 419 Doctors
- 652 Nurses
- International Healthcare Center
- Cancer Center

more p.114

## Chonnam National University Hwasun Hospital

**Major Procedures _**
- Modified radical mastectomy
- Breast conserving surgery
- Axillary lymph node dissection
- Sentinel lymph node dissection

**Process for Treatment _**
- Core needle biopsy
- Fine needle aspiration cytology
- Breast ultrasonography
- Breast magnetic resonance imaging
- Anti-estrogen therapy
- Radiation therapy
- Chemotherapy
- Target therapy

**Hospital State _ Jeollanam-do**
- 701 Beds
- 244 Doctors
- 435 Nurses
- International Healthcare Center
- Cancer Center

more p.116

## Cheil General Hospital & Women's Healthcare Center

**Major Procedures _**
- Oncoplastic surgery for breast cancer
- Breast conserving surgery
- Modified radical mastectomy

**Hospital State _ Seoul**
- 300 Beds
- 163 Doctors
- 481 Nurses
- International Healthcare Center
- Cancer Center

more p.118

## MizMedi Women's Hospital

**Major Procedures _**
- Radical / Modified radical mastectomy
- Breast conserving surgery (Breast Caner)
- Oncoplastic surgery (Breast Caner)
- Breast reconstructive surgery
- Sentinel lymph node biopsy
- Lymph edema
  - Supermicro lymphaticovenular bypass surgery
- Breast benign surgery

**Hospital State _ Seoul**
- 100 Beds
- 68 Doctors
- 207 Nurses
- Cancer Center

more p.120

## Konyang University Hospital

**Major Procedures _**
- Modified radical mastectomy
- Breast conservation surgery (lumpectomy, quadrantectomy...)
- Subcutaneous mastectomy and implant insertion
- Sentinel lymph node dissection
- Axillary LN dissection

**Process for Treatment _**
- Ultrasonography and core-biopsy
- Systemic evaluation (bone, liver, lung...)
- Lab test and EKG
- Chemotherapy
- Radiation therapy
- Antihormonal therapy (Tamoxifen, aromatase inhibitor)

**Hospital State _ Daejeon**
- 886 Beds
- 262 Doctors
- 517 Nurses
- International Healthcare Center
- Cancer Center

more p.122

# CERVICAL CANCER

65

### *Risk factors for cervical cancer*

① *Human papilloma virus (over 99.7% of patients)*
② *Incidence increase from 30 years old, peak at 50*
③ *Latin America, Africa, Asia rather than western countries*
④ *Partner's unsafe sex life*
⑤ *Smoking*
⑥ *Long term usage of oral contraceptives*

*The biggest risk factor of cervical cancer is Human papilloma virus(HPV), which is found at 99.7% of cervical cancer patients. But 70-80% of HPV infection disappear naturally without treatment, so HPV infection does not always develop into cervical cancer. HPV is transmitted by sexual intercourse, a common virus that 1 out of 10 women is infected.*

### *General symptoms of cervical cancer*

| | |
|---|---|
| Early stage | - No symptom<br>- Irregular bleeding<br>- Continuous vaginal bleeding<br>- Bloody vaginal discharge<br>- Bleeding after sexual intercourse |
| Middle stage | - Bleeding after voiding<br>- Dysuria / Haematuria |
| Advanced stage | - Weight loss<br>- Bloody discharge with odor<br>- Severe pelvic pain, back pain |

*There are no symptoms in early cervical cancer. When the cancer is advanced, symptoms occur.*

### *Guidelines on screening cervical cancer*

① *20+ years old female, or had sexual experience*
② *Annual basis cervical cancer screening (Pap smear test) is recommended.*

*Annual Pap smear is required to cervical cancer in its early stage, since HPV, the biggest risk factor of cervical cancer, is transmitted by sexual intercourse and it is common in women who had sexual experience. There are HPV vaccines currently available, so cervical cancer by HPV infection is preventable if one is vaccinated in one's adolescent period.*

### *Treatment of cervical cancer*

① *Hysterectomy: Removes uterus*
② *Radical hysterectomy: Removes uterus and surrounding tissues*
③ *Radiotherapy: Removes cancer cell with radiation*
④ *Chemotherapy: Improves survival rate using chemotherapic agent*
⑤ *HIFU: Removes cancer cell with ultrasound*
⑥ *Photodynamic therapy : Removes cancercell with chemical agent and laser*

*Treatment depends on cancer site and progression. For example, radical hysterectomy is performed in Stage I and early Stage II invasive cervical cancer, which removes uterus, parametrium, and pelvic lymph nodes. A large proportion of female genital organ is removed, nevertheless it has good treatment outcome. Recently cervical cancer of unmarried women is increasing, so effort to preserve uterus is being made.*

# ACHIEVEMENT OF CERVICAL CANCER TREATMENT



## *Incidence of cervical cancer*

*Incidence of cervical cancer in Korea*

| | per 100,000 | Incidence | % (Rank) |
|---|---|---|---|
| Female | 14.9 | 3,728 | 3.5%(7th) |

*Korean National Cancer Information Center, 2011*
*(Unit: patients/100,000, patients/year)*

*The incidence of cervical cancer is not so high in Korea, ranked at 7th place among female cancer.*

*International comparison of incidence rate of cervical cancer*

*< Female >*

| Korea('11) | Japan('12) | U.S.('12) | U.K.('12) |
|---|---|---|---|
| 10.1 | 10.9 | - | 5.2 |

*International Agency for Research on Cancer 2012,*
*Korean National Cancer Information Center 2011*
*(Unit:patients/100,000)*

*However, compared to other countries, incidence of cervical cancer is relatively higher. In Korea it is ranked at 7th, while 5th in Japan and 8th in England. However, incidence rate per100,000 people is the highest in Korea. U.S. and England have more uterine cancer than cervical cancer.*

## *Mortality rate of cervical cancer*

*Mortality rate of cervical cancer*

| | per 100,000 | Death | % (Rank) |
|---|---|---|---|
| Female | 3.5 | 889 | 3.3%(9th) |

*Korean National Cancer Information Center, 2011*
*(Unit: patients/100,000, patients/year)*

*Mortality rate is similar to incidence, ranked at 8th place among female cancer.*

## *5-year survival rate of cervical cancer*

| '93-'95 | '96-'00 | '01-'05 | '07-'11 |
|---|---|---|---|
| 77.5% | 80.0% | 81.3% | 80.1% |

*Korean National Cancer Information Center, 2011*

*From the past to present, cervical cancer shows no significant change in 5-year survival rate.*

*International comparison of 5-year survival rate of cervical cancer*

| Korea('96-'00) | Korea('01-'05) | Korea('07-'11) |
|---|---|---|
| 80.0% | 81.3% | 80.1% |
| U.S.('03-'09) | Canada('06-'08) | Japan('03-'05) |
| 67.9% | 74.0% | 72.2% |

*International Agency for Research on Cancer 2012,*
*Korean National Cancer Information Center 2011*

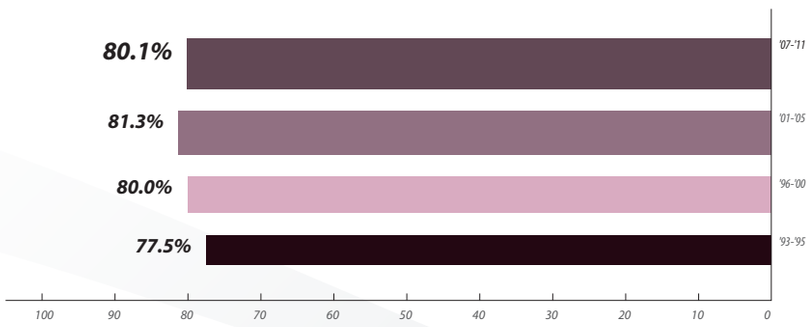
*However, Korea has higher 5-year survival rate than other countries. It is because of the advancement of treatment following numerous successful cases, despite of lower incidence.*

*5-year survival rate of cervical cancer according to stages*

| Stage I | Stage II | Stage III | Stage IV |
|---|---|---|---|
| 92-98% | 89-96% | 74-93% | 30-51% |

*KHIDI, 2013*

*According to the investigation of major hospitals in 2013 by Korea Health Industry Development Institute, patients having Stage I-II cervical cancer have very high 5-year survival rate. (Hospitals that reported 100% remission have been excluded)*




***5-YEAR SURVIVAL RATE OF CERVICAL CANCER***

Smart Care MEDICAL KOREA

# MAKING THE UTMOST EFFORT TO PRESERVE REPRODUCTIVE FUNCTION



***Uterus, symbol of femininity along with breasts***

*Similar to breast cancer, uterus is also a symbol of women, thus treatment of cervical cancer should be approached very carefully. Despite the fact that cervical cancer has less incidence than breast cancer, patient may have no periods and pregnancy for rest of her life if get treated, a consequence which makes it different from breast cancer treatment. Recently ages of marriage as been delayed, and cervical cancer in unmarried women is increasing. Disappointment of infertility must be understood and treatment must be planned to preserve the function as much as possible.*

*Surgery is performed only for early stages of cervical cancer. The fact that operation is generally done for complete remission of cancer, so operability suggests, nevertheless, good outcome. Quality of life and treatment outcome are both emphasized in Korea, so it is treated to cure the disease while preserving reproductive function as much as possible.*

***Surgery fulfilling patients' needs, even it's not a standard therapy***

*For early diagnosed (Stage I or II) invasive cervical cancer, radical hysterectomy, which removes both uterus and parametrium, upper part of vagina, is the standard approach. Fortunately, despite of its broad operation site, most early stage patients could be cured. It is not operable in more advanced cancer. However, the situation is different when the patient is considering to be pregnant. There are treatment options other than surgery but if decision is delayed the situation might become worse; the fact that surgery is the definite way to cure makes patient concerning.*

*In cases mentioned above, radical trachelectomy is performed to remove part of uterus and save the rest. Pregnancy becomes possible.*

***Laparoscopic surgery without scar***

*Laparoscopic surgery is also used in cervical cancer. Since only 0.5-1cm sized hole is made on the belly to apply endoscope and surgical tools, less scars, less pain and fast recovery is achieved followed by high satisfaction of patients. Radical trachelectomy which makes pregnancy possible, is also performed by laparoscopy nowadays.*

***Combined treatment, even if it's not operable***

*Cancer staged lower than early Stage II is surgically removed for cure. But for more advanced cancer, radiotherapy and various types of therapies are combined together. Radiotherapy alone has many options available like Tomotherapy, Linear Accelerator, Cyberknife, while these are all cutting-edge equipments with better effect and low complication rate.*

*However, radiotherapy has demerit such as hinderance of pregnancy. Thus various treatment options are considered. HIFU, a treatment with high intensity focused ultrasound to selectly remove cancer cells, and Phytodynamic therapy, which uses photosensitizer and non-thermal laser to kill cancer cells, are applied in treatment. These treatment options preserve uterus while using ultrasound and laser have fewer complications.*

# HOSPITALS TREATING CERVICAL CANCER IN KOREA



## *Ewha woman's University Medical Center*

***Major Procedures _***
- *Laparoscopic radical hysterectomy with bilateral pelvic and paraaortic lymph node dissection*
- *Laparoscopic radical trachelectomy*
- *Robotic radical radical hysterectomy with bilateral pelvic and paraaortic lymph node dissection*
- *Single port laparoscopic hysterectomy*
- *Total laparoscopic hysterectomy/ laparoscopic hysterectomy*

***Process for Treatment _***
- *Baseline study including MRI, PET-CT, tumor marker*
- *Daily checkup with lab test*
- *Test for adjuvant therapy*
- *Preoperative lab test, sonogram*

***Hospital State _ Seoul***
- *857 Beds*
- *466 Doctors*
- *727 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.88*

## *Konkuk University Medical Center*

***Major Procedures _***
- *Radical hysterectomy*
- *Laparoscopic radical hysterectomy*
- *Radical trachelectomy*
- *Simple hysterectomy*
- *Conization*
- *Concurrent chemoradiation therapy*

***Process for Treatment _***
- *Unified women's gynecologic cancer center*
- *Systemic process for surgery and chemoradiation*
- *Nutrition counseling for chemotherapy*
- *Information service regarding chemotherapy*

***Hospital State _ Seoul***
- *879 Beds*
- *456 Doctors*
- *705 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.92*

## *Kyung Hee University Hospital*

***Major Procedures _***
- *Robotic Davinci Radical Hysterectomy*
- *Laparoscopic Radical Hysterectomy*
- *Chemoradiotherapy*

***Process for Treatment _***
- *Punch biopsy*
- *Conization*
- *Imaging study*
- *Adjuvant chemoradiotherapy*

***Hospital State _ Seoul***
- *850 Beds*
- *447 Doctors*
- *692 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.95*

## *Seoul National University Hospital*

***Major Procedures _***
- *Radical hysterectomy*
- *Radical trachelectomy*
- *Laparoscopic pelvic lymph node dissection*
- *Concurrent chemoradiotherapy*
- *Pelvic exenteration*

***Process for Treatment _***
- *Colposcopy directed biopsy*
- *Loop electrosurgical excision procedure*
- *Preoperative lab, pelvic MRI, PET/CT, cystoscopy, sigmoidoscopy*
- *Neoadjuvant chemotherapy*
- *Ovarian transposition*
- *Adjuvant chemoradiation*
- *Post-treatment surveillance, Pap test, pelvis/abdomen CT, PET/CT, tumor marker test*

***Hospital State _ Seoul***
- *1,786 Beds*
- *1,342 Doctors*
- *1,835 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.97*

## *Seoul St. Mary's Hospital, The Catholic University Of Korea*

***Major Procedures _***
- *Radical hysterectomy or trachelectomy (laparotomy, laparoscopic, single-port, robotic assisted)*
- *Concurrent chemo-radiation therapy*
- *Chemotherapy*
- *Radiation*
- *Laparoscopic staging surgery (retroperitoneal lymph node sampling)*

***Process for Treatment _***
- *Colposcopy for confirmation of the disease*
- *CT/MRI/PET-CT evaluation for distent of the disease*
- *Radical hysterectomy for curative purpose (laparotomic/laparoscopic/ single-port/robotic assisted) Radical trachelectomy for preseving uterus in reproductive age (laparotomic/laparoscopic/ single-port/ robotic assisted) Staging surgery (laparoscopic retroperitoneal lymph node sampling) * Operation could be omitted by the staging of the disease*
- *Concurrent chemo-radiation therapy/ Chemotherapy/ Radiation as salvage or adjuvant therapy*

***Hospital State _ Seoul***
- *1,332 Beds*
- *799 Doctors*
- *1,718 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.101*

## *Severance Hospital*

***Major Procedures _***
- *Radical hysterectomy (abdominal/ laparoscopic/ robotic)*
- *Radical trachelectomy (abdominal/ laparoscopic/ robotic)*
- *Radiotherapy, tomotherapy*
- *Chemotherapy, concurrent chemoradiotherapy*

***Process for Treatment _***
- *Baseline study for staging*
- *Staging and planning treatment*
- *Surgery*
- *Radiotherapy*
- *Chemotherapy*
- *Response evaluation of the treatment*
- *Regular follow-up*

***Hospital State _ Seoul***
- *2,086 Beds*
- *1,342 Doctors*
- *2,135 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.104*

## *Inha University Hospital*

***Major Procedures _***
- *Radical Hysterectomy*
- *Laparoscopic Radical Hysterectomy*
- *Adjuvant Radiotherapy*
- *Concurrent Chemo-Radiotherapy*

***Process for Treatment _***
- *Preoperative routine Lab.*
- *Abdomino-pelvic CT*
- *Cystoscopy*
- *Sigmoidoscopy*
- *Pelvic Exam*
- *Postoperative general management*
- *Concurrent Chemo-Radiotherapy*

***Hospital State _ Incheon***
- *861 Beds*
- *439 Doctors*
- *759 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.110*

## *Chonnam National University Hwasun Hospital*

***Major Procedures _***
- *Hysterectomy*
- *Laparoscopic hysterectomy*
- *Radical hysterectomy*
- *Laparoscopic radical hysterectomy*

***Process for Treatment _***
- *Preoperative evaulation*
- *Operation*
- *Post operative F/U*
- *Adjuvant chemoradiation therapy*

***Hospital State _ Jeollanam-do***
- *701 Beds*
- *244 Doctors*
- *435 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.116*

## *Cheil General Hospital & Women's Healthcare Center*

***Major Procedures _***
- *Laparoscopic Radical hysterectomy with pelvic and paraarotic lymph node dissection.*
- *Vaginal Hysrerectomy*
- *Laparoscopic tumor debulking operation.*

***Hospital State _ Seoul***
- *300 Beds*
- *163 Doctors*
- *481 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.118*

## *Konyang University Hospital*

***Major Procedures _***
- *Laparoscopic radical hysterectomy*
- *Abdominal radical hysterectomy*
- *Concurrent chemo-radiation therapy*

***Process for Treatment _***
- *Medical assessment prior to surgery consists of confirming the diagnosis of cancer, determining the extent (stage) of disease, and assessing medical problems*
- *Patient-controlled epidural or intravenous analgesia is given for pain relief. Early ambulation is encouraged and intermittent pneumatic compression devices are used while the patient is in bed*
- *OPD follow up should be performed every 3 months for 2 years and then every 6 months for the next 3 years*
- *The woman and her family should understand the indications for surgery, expected benefits of the procedure, alternatives (usually radiation therapy), complications, and the expected course of the problem without therapy*

***Hospital State _ Daejeon***
- *886 Beds*
- *262 Doctors*
- *517 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.122*

# PROSTATE CANCER

70

### *Risk factors for prostate cancer*

① *Age: over 40 years old, risk increases in older age*
② *Race: Black > White > Asian*
③ *Male hormone: no incidence when testicle is removed*
④ *Diabetes: lowers the risk*
⑤ *Family history of prostate cancer: 9% of overall patients*
⑥ *Westernized dietary habits*

*Prostate cancers are rare in age below 40. Its incidence rate rapidly increases in patients over 50 years old, and marks high incidence over 60 years old. Black people have 30% higher chance to have prostate cancer than White, while Asians have the least incidence. It is the most common male cancer in U.S. and UK.*

### *General symptoms of prostate cancer*

① *Early stage: no symptoms*
② *Progression: Acute urinary retention, hematuria, urinary incontinence*
③ *After metastasis: Bone pain, Neural symptoms*

*There are no significant symptoms in its early stage. Dysuria and metastat symptoms caused by metastasis begin to show up when cancer has progressed.*

### *Guidelines on screening prostate cancer*

① *50+ years old Male*
② *Annual basis preostate cancer screening is recommended*

*The risk increases rapidly from 50 years old, so Prostate specific antigen(PSA) test and digital rectal examination are recommended for men over 50 years old.*

### *Treatment of prostate cancer*

① *Prostatecomy: removes prostate*
② *Radiotherapy: Removes cancer cell with radiation*
③ *Brachytherapy: Direct insertion of radioisotope to tumor*
④ *Cryotherapy: Destroys cancer cell by freezing under -25 degrees celsius*
⑤ *Antihormonal therapy: Blocks male hormone*
⑥ *Chemotherapy: Removes cancer cell with radiation*

*Risk is determined by gleason score (staging according to tissue biopsy). Patient with gleason score below 6 can be treated if needed, patients with gleason score 7 could benefit from treatment, and patients who have score 8-10 needs intensive treatment.*

Smart Care MEDICAL KOREA

# OUTSTANDING ACHIEVEMENT OF PROSTATE CANCER TREATMENT



### *Incidence of prostate cancer*

***Incidence of prostate cancer in Korea***

| | per 100,000 | Incidence | % (Rank) |
|---|---|---|---|
| Male& Female | 17.9 | 8,952 | 4.1%(7th) |
| Male | 35.7 | | 8.1%(5th) |

*Korean National Cancer Information Center, 2011*
*(Unit: patients/100,000, patients/year)*

*Prostate cancer is ranked 7th among all cancers in Korea, while ranked 5th among male cancers.*

***International comparison of incidence of prostate cancer***

*< Male >*

| Korea('11) | Japan('12) | U.S.('12) | England('12) |
|---|---|---|---|
| 27.4 | 30.4 | 98.2 | 73.2 |

*International Agency for Research on Cancer 2012,*
*Korean National Cancer Information Center 2011*
*(Unit:patients/100,000)*

*Race is one of the risk factors of prostate cancer and it is clearly shown in international comparison. While prostate cancer in U.S. and England has considerably high incidence, ranked 1st among male cancer in both country, Korea and Japan show relatively low incidence.*

### *Mortality rate of prostate cancer*

***Mortality rate of prostate cancer in Korea***

| | per 100,000 | Death | % (Rank) |
|---|---|---|---|
| Male | 5.8 | 1,460 | 3.1%(7th) |

*Korean National Cancer Information Center, 2011*
*(Unit: patients/100,000, patients/year)*

*Prostate cancer, ranked at 5th by its incidence, has mortality rate of 7th. It is a cancer with good treatment outcome.*

### *5-year survival rate of prostate cancer*

| '93-'95 | '96-'00 | '01-'05 | '07-'11 |
|---|---|---|---|
| 55.9% | 67.2% | 80.1% | 92.0% |

*Korean National Cancer Information Center, 2011*

*5-year survival rate of prostate cancer has been steadily increased, marking high survival rate of 90.2%.*

***International comparison of 5-year survival rate of prostate cancer***

| Korea('96-'00) | Korea('01-'05) | Korea('07-'11) |
|---|---|---|
| 67.2% | 80.1% | 92.0% |
| U.S.('03-'09) | Canada('06-'08) | Japan('03-'05) |
| 99.2% | 96.0% | 93.8% |

*International Agency for Research on Cancer 2012, Korean National Cancer Information Center 2011*

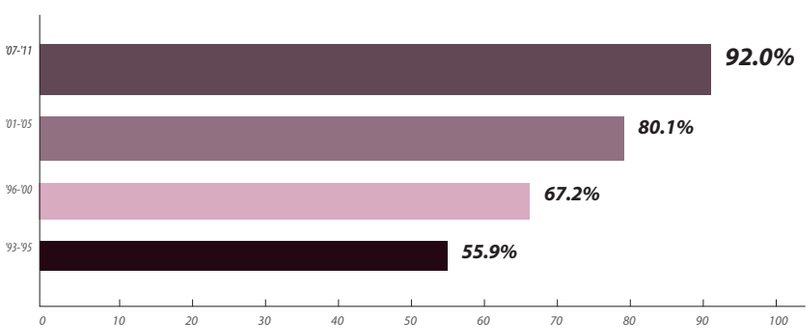
*5-year survival rate was higher in U.S. and Canada, which also had relatively high incidence rates. U.S., the nation with the highest incidence, showed 99.2% of 5-year survival rate suggesting most of the patients could be cured. Korea has 5-year survival rate of 92.0%, which is also high.*

***5-year survival rate of prostate cancer according to stages***

| Stage I | Stage II | Stage III | Stage IV |
|---|---|---|---|
| 93-99% | 98% | 85.3% | 75-86% |

*KHIDI, 2013*

*According to investigation of major hospitals in 2013 by Korea Health Industry Development Institute, over 90% of stage I-II prostate cancer patient are completely cured, and even in advanced stage patients had high survival rate in some cases (Hospitals that reported 100% remission have been excluded). Therefore, it is important not to give up when diagnosed advanced prostate cancer, and actively participate in treatment.*




***5-YEAR SURVIVAL RATE OF PROSTATE CANCER***

# TREATMENT MINIMIZING COMPLICATIONS



***Surgery preserves genital nerve functions***

*While female patients suffer from breast cancer and cervical cancer, prostate cancer is the case for men. If found operable, treatment of choice of prostate cancer is prostatectomy, which removes entire prostate. The problem is, nerve in charge of erectile function may be damaged, leading to impotence.*
*In the past, most of the prostate cancer patients were over 60 years old, so the problem was not so important. However, recently patient aged between 40-50 years old have been rapidly increased, thus complication has been taken into consideration. Surgical technique have also been advanced, now it is possible to preserve nerve and blood vessels while treating prostate cancer. 2/3 of original sexual function could be preserved via nerve sparing surgery.*

***The most active field of robotic surgery***

*Not only in Korea, a nation with advanced robotic surgery, prostate cancer is actively treated with robot surgery worldwide. 80% of surgeries were done with robot in U.S. Robotic surgery leaves smaller scar than conventional open surgery and provides fast recovery. Futhermore, it has fewer complications such as erectile dysfunction. Thanks to accurate and precise surgery by robot.*
*Prostate has size of a chestnut, located below bladder and in front of anus, making it hard to approach during surgery. Moreover, due to its importance in urinary and sexual function, delicate surgical technique is required. Robotic surgery provides magnified 3D images to identify vessels and nerves on the surface of prostate, and delicate movements via robotic arms making precise operation possible. Prostate is taken out without nerve damage, so it has few complications.*

***Prostate cancer could be treated while preserving prostate***

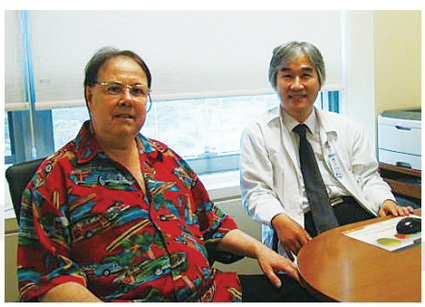
*Brachytherapy, widely applied in U.S. and Europe for its high incidence of prostate cancer, is generally applied to the patient for whom prostatectomy is hard to be done. However, it could be applied to treat prostate cancer without removing entire prostate. Confirmed by real-time ultrasound, brachytherapy administers radioisotope to tumor tissue. Intensive treatment of 200Gy can be applied, while 145Gy is usually used. Radiation only affects cancer site, so complications such as urinary incontinence and erectile dysfunction is less common than conventional surgery. Procedure takes only an hour, and patients are discharged the day after the treatment.*

***Perineal approach rather than abdomen***

*There is also surgery that approaches cancer site via perineal region rather than abdomen. Generally, conventional open surgery, laparoscopic surgery, and robotic surgery start from the incision of abdomen. If incision of 10cm length is made in perineal region, the scar will be impossible to be seen despite its length, and laparoscopic surgery could also be performed through the incision.*
*A early prostate cancer patient with his kidney transplanted was treated by this surgery, while other hospital couldn't operate due to history of transplantation.*

***Post operation erectile dysfunction is treated***

*Even in nerve sparing prostatectomy, and regardless of the type of surgery, robot or laparoscopic, erectile dysfunction may happen after treatment. In this case, erectile dysfunction may be treated with adult stem cell and growth factor.*



*Dane Arthur Miller with professor, Kim Sae Woong*

# DOCTOR BECAME A PATIENT: TREATMENT OUTCOME WAS THE CHOICE



***A doctor became a patient***

*A 67 years old Kazakh doctor has been diagnosed of prostate cancer in his country. Prostate cancer is a cancer of good treatment prognosis, but it was hard to be treated in his own country. He decided to choose the hospital he would visit by searching related references such as medical journal.*

***Recommendation of colleague doctor and outcome taken into consideration***

*While searching related materials, Severance hospital caught his attention. The hospital was well known as robotic surgery training center of Asia, and its operation manual which was a standard manual of world robotic surgery. It was indeed a leading hospital of robot surgery, but what especially caught his eyes was the treatment outcome. He decided to have his cancer operated in Severance hospital and wanted to know more about them.*
*He consulted his colleague doctor for information of Severance hospital, and friends had told what they have experienced in Severance hospital during treatment. He finally decided to visit Severance hospital.*

***Satisfied for fast recovery***

*Operation was successfully done in March 2011. The doctor, which once was a patient, was impressed by high medical standards of Korean medical institution. High-tech robotic surgery of Severance hospital was very impressive and especially its fast recovery was satisfying in the patient's point of view. He regained his health back so quickly that he could travel Korea around after the treatment and fly back home. He visited Korea again in November 2011 to receive post operative management including PET-CT.*

***Prostate cancer found during heart examination***

*Mr. Dane Arthur Miller, a veteran of the 8th army of America, had visited Seoul St.Mary's hospital due to dyspnea and chest pain. He suspected heart disease and was examined to diagnose aortic stenosis and Stage III prostate cancer. Professor relieved him by telling that even if it's stage III, prostate cancer has a good treatment outcome when treated, and aortic stenosis could be cured with surgery too.*

***Two consecutive operation in one day***

*Considering multiple conditions, Seoul St.Mary's hospital decided to perform two consecutive operation in one day, by its multidisciplinary cooperating system. Both surgeries were successful, and he is now visiting every six weeks for checkups after receiving 40 times of radiotherapy.*

***Seoul St.Mary's hospital, a warm hearted hospital***

*Mr. Dane Arthur Miller mentioned that besides the successful surgery, sincere encouragement of professor and devotion of nurses, made him feel the touch of humanity. And it was what he thanked the most.*


*Tomotherapy, Korea University Anam Hospital*


*Ronot surgery in Korea University Anam Hospital*

# OFFERING MULTIPLE SOLUTIONS FOR PROSTATE CANCER



***First cryotherapy done in Korea***

*Surgery is not the only option for prostate cancer. Korea University Anam Hospital cryotherapy center has imported cyrotherapy for the first time in Korea to apply it to treatment of prostate cancer. Argon and Helium gases are continuously applied via Needle of 1.5mm diameter, to rapidly freeze-thaw tumor cells. Cryotherapy was a technique once popular in U.S., replacing prostatectomy and radiotherapy. Korea University Anam Hospita is such an active hospital to apply various treatment strategy to minimize complication.*

***Oncothermia treatment on prostate cancer***

*Along with radiotherapy and chemotherapy, Korea University Anam Hospital applied oncothermia treatment. With high frequency electric current, tumor cell is heated to destroy, without complications like nausea, vomiting, anorexia, digestive dysfunction and hair loss, which are seen in conventional anticancer therapy, improving quality of life.*

***Tomotherapy, a high-end radiotherapy device***

*Tomocenter of Korea University Anam Hospital has been steadily upgrading tomotherapy, a high-end radiotherapy device, to apply on prostate cancer radiotherapy.*

***Participating in a robotic surgery textbook***

*Korea University Anam Hospital robotic surgery center was the third to import robotic surgery in Korea. However, the hospital has world-standard skills in the field of prostate cancer, which is the field that robotic surgery is most frequently applied.*
*The hospital was the only team in Asia which participated in writing the most sophisticated part of world-known robotic surgery textbook. An medical illustration specialist from U.S. visited Korea and observed robotic surgeries in order to draw the illustration for the textbook,*

*Korea University Anam Hospital has been building their experience of treating prostate cancer. Various treatment mentioned above was applied to provide optimal treatment which accounts for individual patient's status and progress. Futhermore, not only the treatment outcome, but also the quality of life is considered during the treatment*

# HOSPITALS TREATING PROSTATE CANCER IN KOREA



## *Chung-Ang University Hospital*

***Major Procedures _***
- *Robotic-Assisted Laparoscopic Radical Prostatectomy (RALP)*
- *Laparoscopic Radial Prostatectomy (LRP)*
- *Radiation Therapy of Prostate Cancer*
- *Androgen Deprivation Therapy*
- *Chemotherapy of Prostate Cancer*

***Process for Treatment _***
- *Transrectal Ultrasound (TRUS) of Prostate*
- *Serum Prostate Specific Antigen (PSA)*
- *Ultrasound-guided Prostate Biopsy*
- *Abdomen-Pelvis Dynamic Computed Tomography (CT)*
- *Whole Body Bone Scan*
- *Magnetic Resonance Imaging (MRI) of Prostate*
- *Cystography*
- *Serum Prostate Specific Antigen (PSA)*

***Hospital State _ Seoul***
- *870 Beds*
- *218 Doctors*
- *705 Nurses*

*more p.86*

## *Ewha woman's University Medical Center*

***Hospital State _ Seoul***
- *857 Beds*
- *466 Doctors*
- *727 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.88*

## *Kyung Hee University Hospital*

***Major Procedures _***
- *Radical retropubic prostatectomy*
- *Robot-assisted laparoscopic radical prostatectomy*
- *Laparoscopic radical prostatectomy*
- *Tomotherapy*
- *Transurethral resection of prostate*

***Process for Treatment _***
- *Serum PSA assay*
- *Transrectal ultrasonography*
- *Transrectal ultrasound-guided biopsy of prostate*
- *Bone scan*
- *Magnetic resonance imaging*
- *Radical retropubic prostatectomy*
- *Robot-assisted laparoscopic radical prostatectomy*
- *Laparoscopic radical prostatectomy*
- *Tomotherapy*
- *External beam radiotherapy*
- *Antiandrogen therapy*

***Hospital State _ Seoul***
- *850 Beds*
- *447 Doctors*
- *692 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.95*

## *Seoul National University Hospital*

***Major Procedures _***
- *Retropubic radical prostatectomy*
- *Robot-assisted laparoscopic radical prostatectomy*
- *Transurethral prostatectomy*
- *Androgen deprivation therapy*
- *Radiation therapy*

***Process for Treatment _***
- *Prostate MRI*
- *Bone scan*
- *Curative treatment (surgery, radiation therapy)*
- *Cystography*
- *Serm PSA level*
- *Androgen deprivation therapy*
- *Palliative chemotherapy*

***Hospital State _ Seoul***
- *1,786 Beds*
- *1,342 Doctors*
- *1,835 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.97*

## *Seoul St. Mary's Hospital, The Catholic University Of Korea*

***Major Procedures _***
- *Laparoscopic radical prostatectomy*
- *Robot-assisted laparoscopic radical prostatectomy (RALP)*
- *Open radical prostatectomy*
- *Hormonal therapy*
- *Radiation therapy*
- *Chemotherapy*

***Process for Treatment _***
- *PSA (prostate specific antigen)*
- *Prostate biopsy*
- *MRI (Magnetic Resonance Imaging)*
- *Bone scan*
- *CT (Computerized Tomography)*
- *PSA (prostate specific antigen)*
- *PET (Positron Emission Tomography)*

***Hospital State _ Seoul***
- *1,332 Beds*
- *799 Doctors*
- *1,718 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.101*

## Severance Hospital

**Major Procedures _**
- Robot assisted laparoscopic radical prostatectomy
- Radical prostatectomy
- Laparoscopic radical prostatectomy
- MR guided focused ultrasound
- Radiation therapy/ Brachytherapy

**Process for Treatment _**
- Prostate specific antigen
- Transrectal ultrasonography
- Prostate biopsy
- Prostate magnetic resonance imaging
- Whole body bone scan
- Computed tomography
- PET-CT scan

**Hospital State _ Seoul**
- 2,086 Beds
- 1,342 Doctors
- 2,135 Nurses
- International Healthcare Center
- Cancer Center

more p.104

## Inha University Hospital

**Major Procedures _**
- Radical prostatectomy
- Cyberknife
- Androgen deprivation therapy
- Transurethral Resection of prostate

**Process for Treatment _**
- Preoperative routine Lab
- Transrectal Prostate Biopsy
- Staging Work-up
- Operation/cyberknife
- Postoperative general management
- Adjuvant Hormone therapy, prn.

**Hospital State _ Incheon**
- 861 Beds
- 439 Doctors
- 759 Nurses
- International Healthcare Center
- Cancer Center

more p.110

## Pusan National University Hospital

**Major Procedures _**
- Laparoscopic radical prostatectomy

**Process for Treatment _**
- Prostate biopsy
- MR-prostate
- Bone scan
- ICI
- Cystography
- Pad test

**Hospital State _ Busan**
- 908 Beds
- 419 Doctors
- 652 Nurses
- International Healthcare Center
- Cancer Center

more p.114

## Chonnam National University Hwasun Hospital

**Major Procedures _**
- Radical prostatectomy
- Laparoscopic radical prostatectomy
- Robot assisted laparoscopic radical prostatectomy
- Hormone therapy
- Chemotherapy

**Process for Treatment _**
- Prostate-specific antigen(PSA)
- Trans-rectal ultrasonography guided biopsy(TRUS)
- Prostate MRI
- Whole body bone scan

**Hospital State _ Jeollanam-do**
- 701 Beds
- 244 Doctors
- 435 Nurses
- International Healthcare Center
- Cancer Center

more p.116

## Konyang University Hospital

**Major Procedures _**
- Radical retropubic prostatectomy
- Laparoscopic radical prostatectomy

**Process for Treatment _**
- ① Confirm pathology
  ② Preoperative clinical staging (digital rectal exam, prostate MRI, Whole body bone scan etc.)
- ① Patient-controlled anesthesia
  ② Early ambulation and pneumatic compression for prevention of pulmonary embolism
  ③ Discharge within postoperative 7days, and confirm of pathology. Planning of further treatment
- ① Follwow up at outpatient clinic for biochemical recurrence, local recurrence, metastasis and postoperative complications

**Hospital State _ Daejeon**
- 886 Beds
- 262 Doctors
- 517 Nurses
- International Healthcare Center
- Cancer Center

more p.122

# LUNG CANCER

77

### *Risk factors for lung cancer*

① *Smoking*
② *Occupational reasons (Asbestos, arsenic, chrome, etc.)*
③ *Environmental factor (Carcinogen in the air)*
④ *Family history of lung cancer*

*Smoking is the most important risk factor of lung cancer, the risk is 15-80times higher in smokers than non-smokers. Also, indirect smoking solely can cause lung cancer.*

### *General symptoms of lung cancer*

① *Tumor growth : Cough, hemoptysis, dyspnea, chest pain, etc.*
② *Invasion to surrounding tissue : Hoarseness, dysphagia*
③ *Metastasis brain dysfunction, headache, vomiting, bone pain*
④ *Caused by cancer metabolite : Anorexia, fever, abnormal hormone production*

### *Guidelines on screening of lung cancer*

① *40+ years old (Earlier for smokers)*
② *Annual basis lung cancer screening is recommended*

*There are no early symptoms of lung cancer. But late diagnosis makes it difficult to be treated, and it is ranked 1st in mortality. So early diagnosis is very important. There are some patients diagnosed during medical checkups, but it accounts for only 5-15% of total lung cancer patients. So annual Low dose CT, Sputum test, Chest X-ray are recommended to diagnose in its early stage.*

### *Treatment of lung cancer*

① *Pneumonectomy: Removes whole lung*
② *Lobectomy: Removes a lobe of the lung*
③ *Bilobectomy: Removes two lobes of the lung*
④ *Wedge resection: Removes only a part of the lung*
⑤ *Radiotherapy: Removes cancer cell with radiation*
⑥ *Chemotherapy: Removes cancer cell with radiation*

*Non-small cell lung cancer, which has slow progression, resection is performed until early Stage III, and chemotherapy and radiotherapy is required after then. It is important to diagnose in its early stage, since it is curable by surgery if it is diagnosed early, just like other types of cancer.*

*Small cell cancer grows rapidly and it spreads to entire body. Patients untreated will die within few months. So chemotherapy and radiotherapy is more effective than surgery.*

# OUTSTANDING ACHIEVEMENT OF LUNG CANCER TREATMENT



## *Incidence of lung cancer*

*Incidence of lung cancer in Korea*

| | per 100,000 | Incidence | % (Rank) |
|---|---|---|---|
| Male& Female | 43.4 | 21,753 | 10.0%(4th) |
| Male | 60.5 | 15,167 | 13.8%(3rd) |
| Female | 26.3 | 6,586 | 6.1%(5th) |

*Korean National Cancer Information Center, 2011*
*(Unit: patients/100,000, patients/year)*

*Lung cancer is ranked 4th in total cancer incidence in Korea, while ranked 3rd in male cancer and 5th in female cancer, showing larger incidence in male than female.*

*International comparison of incidence of lung cancer*

*< Male >*

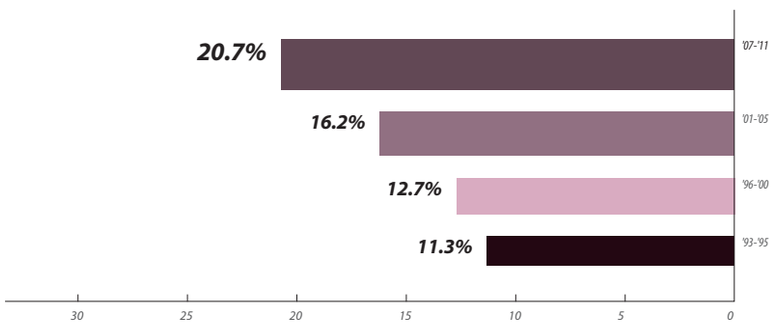
| Korea('11) | Japan('12) | U.S.('12) | England('12) |
|---|---|---|---|
| 46.0 | 38.8 | 44.2 | 34.9 |

*< Female >*

| Korea('11) | Japan('12) | U.S.('12) | England('12) |
|---|---|---|---|
| 15.1 | 12.9 | 33.7 | 23.5 |

*International Agency for Research on Cancer 2012,*
*Korean National Cancer Information Center 2011*
*(Unit:patients/100,000)*

*Men are more likely to have lung cancer than women according to international comparison. In case of male patients, incidence of Korea and Japan is ranked 3rd respectively, while it is ranked 2nd in U.S. and England. For female patients, incidence of Korea and Japan in low, while U.S. and England shows high incidence, ranked 2nd and 3rd respectively.*




***5-YEAR SURVIVAL RATE OF LUNG CANCER***

## *Mortality rate of lung cancer*

*Mortality rate of lung cancer in Korea*

| | per 100,000 | Death | % (Rank) |
|---|---|---|---|
| Male& Female | 33.1 | 16,654 | 22.6%(1st) |
| Male | 48.3 | 12,175 | 26.2%(1st) |
| Female | 17.8 | 4,479 | 16.4%(1st) |

*Korean National Cancer Information Center, 2011*
*(Unit: patients/100,000, patients/year)*

*Regardless of incidence, lung cancer is ranked 1st in mortality rate, suggesting that it is hard to be treated.*

## *5-year survival rate of lung cancer*

| '93-'95 | '96-'00 | '01-'05 | '07-'11 |
|---|---|---|---|
| 11.3% | 12.7% | 16.2% | 20.7% |

*Korean National Cancer Information Center, 2011*

*5-year survival rate of lung cancer has been increasing steadily, but even now it marks below 20.7%.*

*International comparison of 5-year survival rate of lung cancer*

| Korea('96-'00) | Korea('01-'05) | Korea('07-'11) |
|---|---|---|
| 12.7% | 16.2% | 20.7% |
| U.S.('03-'09) | Canada('06-'08) | Japan('03-'05) |
| 16.6% | 17.0% | 29.7% |

*International Agency for Research on Cancer 2012,*
*Korean National Cancer Information Center 2011*

*Japan has the highest 5-year survival rate in the world, since Japan has high rate of early diagnosis. It is unusual that U.S. has unremarkable 5-year survival rate despite its high incidence of lung cancer, considering high incidence is followed by curing experience and high 5-year survival usually.*

*5-year survival rate of lung cancer according to stages*

| Stage I | Stage II | Stage III | Stage IV |
|---|---|---|---|
| 80-89% | 60-72% | 40-67% | 5-62% |

*KHIDI, 2013*

*According to investigation of major hospitals in 2013 by Korea Health Industry Development Institute, 5-year survival of lung cancer has significant difference depending on its stage. (Hospitals that reported 100% remission have been excluded)*

# TREATMENT OF LUNG CANCER IN KOREA



***Curing lung cancer while saving lung***

*Stomach cancer develops from stomach Even though it is an early lung cancer, if it shows up at the center of the lung rather than peripheral sites, entire affected lung has to be removed. Pneumonectomy, removing the affected side of lung, a dangerous procedure and also has various complications. Bronchoplasty is performed in National cancer center to spare the lung as much as possible and selectively remove cancer cells, improving post operative quality of life. It could be also performed regardless of having lymph node metastasis.*

*Treatment outcome is also excellent. According to the analysis of 5-year survival rate of 191 patients who were treated with bronchoplasty among 2,006 non-small cell cancer patient in National cancer center from 2001 to 2009, even though the most of the patient had stage II-III cancer, 5-year survival of 62.8% is reported. Especially in the case which had no lymph node metastasis, survival rate was 68.6%, and even in case with those who had lymph node metastasis, it marked survival rate of 64.4%. This is an excellent achievement compared to the data of International association of lung cancer, which reported 5-year survival rate of 30-40% in stage II-III non-small cell lung cancer patients.*

***Targeted anticancer therapy and radiotherapy applied at the same time***

*Inoperable stage III patients were treated with chemotherapy and radiotherapy. Complications that conventional chemotherapy had were reduced by appling targeted anticancer agents, which selectively suppresses tumor cell growth, and multi-target anticancer agents, which blocks not only tumor cells but also vascular endothelial cells supporting nutritions to tumor cells. Radiotherapy is applied together at the same time because concurrent therapy is more effective than consecutive therapy. These are fruitful results thanks to a long term research done by Korean medical society.*

***3D thoracoscope via one hole***

*Accurate and precise surgery is achieved by surgeon watching Full-HD monitors with 3D glasses, which are connected to 3D thoracoscope, a device that two high-performance lens attached to an endoscope, which generates 3D images. Furthermore, since only one hole is made on patient's body and due to its small size, recovery after the operation is fast.*

***Pneumonectomy is performed by robots***

*Having the world-best technique in robotic surgery, Korea offeres robotic pneumonectomy. Pneumonectomy, which means total removal of one-side lung, is performed via a hole sized 5cm. Scar is small, recovery is thus fast : It takes only 4-5 days for patients to be discharged and return to normal daily life after operation.*

*Lung cancer surgery in National cancer center*

*Surgery using 3D thoracoscope*

# VISITING KOREA TO CATCH AT A STRAW



***A patient previously treated in China***

*Mr. Lao shun, 37 year old patient, has been diagnosed of lung cancer in October 2010. The reason why he had lung cancer in relatively young age was because of his smoking habit. He went to Beijing, capital of China, to receive chemotherapy in a bigger hospital. But one day, he was told that it was difficult to continue the treatment. He wanted to live and thought he should crave for life, so he eventually started to search for any hope.*

***Participating in LDK378 clinical trial***

*Then he heard about clinical trial of a new anticancer drug. To clutch at a straw, he thought he should join the trial. Knowing that the trial of LDK378, drug for non-small cell lung cancer, is only held in Singapore hospital and Seoul National University Hospital in Korea among all Asian countries, he decided to visit Korea with his family.*

*He had his first outpatient examination at Christmas Eve of 2012. It was snowing in Korea. It flashed through his mind that this may be the last snow he may see, but eventually he calmed himself down and visited Seoul national university international healthcare center with hope.*

*In January 2013, Lao shun had in-depth interview about participating clinical trial. Interview didn't bother him since there was Chinese dedicated coordinator serving him. Seoul National University Hospital gave thorough explanation to patient and his family and gave them sufficient time for decision. Since he made his decision from the time he boarded on the plane to Korea, he said yes.*

*There was VISA problem while series of screening was on progress for the suitability of joining clinical trial, and Seoul National University Hospital had it resolved.*

***Beginning of LDK 378 trial***

*From January 30th 2013, clinical trial on Lao Shun began. He was treated every two weeks in Korea according to the trial.*

***Brain metastasis found***

*Meanwhile, brain metastasis was found on April 2013. He received Gamma knife radiosurgery for tumor inside his head in Seoul national university brain tumor center in May 2013, without cutting his scalp and skull. Treatment result was good according to outpatient examination in department of neurosurgery in June 2013.*

*Mr. Lao Shun is still on his clinical trial. Medicine is working well on him, so patient and family are very satisfied and his condition is still fine.*

*Proton therapy device*

# WORLD-CLASS LUNG CANCER TREATMENT

***National cancer center, the center of lung cancer surgery in Korea***

*National cancer center is a leading institute of lung cancer clinical trial in Korea. The research that had shown the effect of bronchoplasty and about concurrent chemotherapy and radiotherapy belongs to National cancer center.*
*National cancer center had 38 clinical trials done under project named `Developing new lung cancer treatment through clinical trials', and still runs 11 more. The institute is putting enormous effort to develop optimal lung cancer treatment, publishing 10 SCI journals annually.*

*Over 3,000 patient having lung cancer had been operated, and 400 patients are treated annually in National cancer center. The center is also leading the field of robot surgery, since the first successful lobectomy and pneumonectomy done on February and June 2009 respectively.*

*Moreover, it is the only institute in Korea which practices proton therapy, applied to various cancer therapy since the first treatment in March 2007.*

***World-top level institutes***

*There are many Korean hospitals which have 5-year survival rate exceeding that of international lung cancer association. And some hospitals have over 5,000 case experience of lung cancer(a record superior to leading U.S. hospitals as a single institute). Especially for stage II-III lung cancer, 5-year survival rate is similar to that of MD Anderson, which is the world-best lung cancer center.*

*There are plenty of hospitals performing surgeries with high level of difficulty, such as sleeve resection. Sleeve resection is a technique that makes it possible to avoid pneumonectomy on patients who have cancer in the center of the lung, by restoring normal portion of the lung to the original place after removing the cancer site. Complications like dyspnea are less common than pneumonectomy, improving quality of life. In fact, there is a case that stage III lung cancer patient was cured by sleeve resection. It is clear that Korea has top-level medical standards in the field of lung cancer surgery.*

# HOSPITALS TREATING LUNG CANCER IN KOREA



## *Kyung Hee University Hospital*

***Major Procedures _***
- *Open thoracotomy*
- *Video Assisted Thoracoscopic Surgery*
- *Tomotherapy*

***Process for Treatment _***
- *Bronchoscopy*
- *Computed Tomography*
- *Sputum Cytology*
- *Multidisciplinary Team Approach*
- *Express Lung Biopsy*
- *Bone Scan*
- *Magnetic Resonace Imaging*

***Hospital State _ Seoul***
- *850 Beds*
- *447 Doctors*
- *692 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.95*

## *Seoul National University Hospital*

***Major Procedures _***
- *Thoracoscopic lobectomy in lung cancer*
- *Clinical Trials of Targeted Agents / Individualized Chemotherapy based on Molecular Targets*

***Process for Treatment _***
- *Thoracoscopic lobectomy*
- *Individualized chemotherapy based on molecular targets*

***Hospital State _ Seoul***
- *1,786 Beds*
- *1,342 Doctors*
- *1,835 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.97*

## *Severance Hospital*

***Major Procedures _***
- *Lobectomy (thoracotomy)*
- *Lobectomy (video-assisted)*
- *Sleeve lobectomy*
- *Pneumonectomy*
- *Segmentectomy*
- *Lobectomy (Da Vinci Robot-assisted)*
- *Stereotactic body radiotherapy*
- *Image-guided Intensity-modulated*
- *Radiation therapy using tomotherapy*

***Process for Treatment _***
- *Onestep Treatment of lung cancer*
- *Multidiscriptionary Discussion*
- *Early Diagnosis Program of lung cancer*
- *Chest CT*
- *PET*
- *Bronchoscopy*
- *Brain MRI*
- *Pulmonary function test*
- *PCA (patient controlled analgesics)*
- *Radiotherapy*
- *Regular medical check and test*

***Hospital State _ Seoul***
- *2,086 Beds*
- *1,342 Doctors*
- *2,135 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.104*

## *Inha University Hospital*

***Major Procedures _***
- *Personalized Chemotherapy*
- *Radiotherapy (Cyberknife, Rapid Arc)*
- *Surgical resection*
- *Therapeutic bronchoscopy (Photodynamic Therapy, Cryotherapy, Electrocautery, Rigid bronchoscopy)*

***Process for Treatment _***
- *64 Channel Multidetector Computed tomography*
- *Bronchoscopy and/or Endobronchial ultrasound Percutaneous needle aspiration or biopsy Vidoassisted thoracoscopic surgery (VATS) Mediastinoscopy*
- *Positron emission tomography Brain Magnetic resonance imaging Bone scan*
- *Molecular testing of K-ras, EGFR, ALK, ROS-1 for personalized treatment*
- *Discussion of stage and appropriate treatment*

***Hospital State _ Incheon***
- *861 Beds*
- *439 Doctors*
- *759 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.110*

## *Chonnam National University Hwasun Hospital*

***Major Procedures _***
- *Lobectomy*
- *Pneumonectomy*
- *Segmentectomy or wedge resection*

***Hospital State _ Jeollanam-do***
- *701 Beds*
- *244 Doctors*
- *435 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.116*

## *Konyang University Hospital*

***Major Procedures _***
- *Pneumonectomy & video-assisted pneumonectomy*
- *Lobectomy & video-assisted lobectomy*
- *Segmental resection & video-assisted segmental resection*
- *Wedge resection & video-assisted wedge resection*
- *Bronchoplasty*

***Hospital State _ Daejeon***
- *886 Beds*
- *262 Doctors*
- *517 Nurses*
- *International Healthcare Center*
- *Cancer Center*

*more p.122*

# SPECIALIZED CANCER CENTER OF KOREA

*Chapter*

***03***

*Tertiary Care Teaching Hospitals*

*In Seoul*

*CHUNG-ANG UNIVERSITY HOSPITAL*
*EWHA WOMAN'S UNIVERSITY MEDICAL CENTER*
*HANYANG UNIVERSITY HOSPITAL*
*KONKUK UNIVERSITY MEDICAL CENTER*
*KOREA UNIVERSITY ANAM HOSPITAL*
*KYUNG HEE UNIVERSITY HOSPITAL*
*SEOUL NATIONAL UNIVERSITY HOSPITAL*
*SEOUL ST. MARY'S HOSPITAL, THE CATHOLIC UNIVERSITY OF KOREA*
*SEVERANCE HOSPITAL*

*In Incheon*

*GACHON UNIVERSITY GIL MEDICAL CENTER*
*INHA UNIVERSITY HOSPITAL*

*In Daegu*

*YEUNGNAM UNIVERSITY MEDICAL CENTER*

*In Busan*

*PUSAN NATIONAL UNIVERSITY HOSPITAL*

*In Jeollannam-do*

*CHONNAM NATIONAL UNIVERSITY HWASUN HOSPITAL*

*General Hospitals*

*In Seoul*

*CHEIL GENERAL HOSPITAL & WOMEN'S HEALTHCARE CENTER*
*MIZMEDI WOMAN'S HOSPITAL*

*In Gyeonggi-do*

*BUNDANG JESAENG GENERAL HOSPITAL*

*In Daejeon*

*KONYANG UNIVERSITY HOSPITAL*

*In Daegu*

*GOO HOSPITAL*

** Listed in order of: type of medical institue, location, alphabetical order*

# CHUNG-ANG UNIVERSITY HOSPITAL


* Address: 102 HEUKSEOK-RO, DONGJAK-GU, SEOUL 156-755, KOREA
* Homepage: www.caumc.or.kr
* Telephone: +82-2-6299-3027
* Fax: +82-2-6299-3029
* E-mail: cauic@caumc.or.kr
* Counseling time: (Mon~Fri) 08:30~17:30 (Sat) 08:30~12:30




*Chung-ang university hospital, a certificated institute by ministry of Health and Welfare, provides high-standard medical services. Medical school, hospital, and research center have been cooperating since its establishment in 1968. It is a tertiary hospital with 218 doctors, 700 nurses and 870 beds(20 beds for international patients only), developing educational and research competitivity by participating in international committee together with Mayo clinic, and international academic conferences.*

## *Number of cancer patient treated in 2013*

| Cancer type | Out-patient | Inpatient |
|---|---|---|
| Thyroid cancer | - | 957 |
| Colon cancer | - | 1.042 |
| Bladder cancer | - | 111 |
| Stomach cancer | - | 664 |
| Breast cancer | - | 779 |
| Prostate cancer | - | 141 |

***CANCER PATIENT STATUS OF HOSPITALS***
*KHIDI, 2012, Unit:person*
** Excluded the number of re-visited/re-admitted patients*

## *Number of operations by type of cancer*

| Cancer type | 2011 | 2012 | 2013 |
|---|---|---|---|
| Thyroid cancer | - | 663 | 542 |
| Colon cancer | - | 88 | 67 |
| Bladder cancer | - | - | - |
| Stomach cancer | - | 115 | 132 |
| Breast cancer | - | 165 | 218 |
| Prostate cancer | - | 18 | 31 |

***NUMBER OF SURGERY DONE IN RESPECTIVE HOSPITALS***
*KHIDI, 2014, Unit:person*

## *Major high-tech equipments for cancer treatment*

| Equipment | | # |
|---|---|---|
| Full-field digital mammography | | 4 |
| Multi-slice CT | | 3 |
| PET-CT | | 1 |
| Da Vinci / Aesop | | 1 / - |
| Tomotherapy | | - |
| Linear accelerator | Image-guided radiotherapy | 1 |
| | Intensity-modulated radiotherapy | 1 |
| | 3D conformal radiotherapy | 1 |
| | Volumetric-modulated Arc radiotherapy | 1 |
| | Stereotactic Body radiotherapy | - |
| High dose rate remote after loading system | | - |
| Gamma Knife / Cyber knife | | - / - |

***EQUIPMENT & FACILITY STATUS OF HOSPITALS***
*KHIDI, 2014*

## *International healthcare center for international patients*

*There are English & Russian available medical translators and dedicated coordinators standing by 24/7. Also, clinical office and hospital room for international patient only are provided along with western, Russian, and Mongolian diet.*

***Multilingual service provided***

| | Commu-nication | Paper Form | bro-chures | Infor-mation signs |
|---|---|---|---|---|
| English | Y | Y | Y | Y |
| Russian | Y | Y | Y | Y |
| Mongolian | Y | Y | Y | Y |
| Chinese | N | N | Y | N |

Smart Care MEDICAL KOREA

### *Thyroid Cancer*

- *Lobectomy*
- *Total thyroidectomy*
- *Central neck dissection*
- *Modified radical neck dissection*

### *Colon Cancer*

- *Laparoscopic colectomy*
- *Laparoscopic rectal resection*
- *Laparosopic ultra-low anaterior resection & coloanal anastomosis*
- *Robotic rectal surgery*
- *Radiofrequency ablation colorectal cancer with liver metastasis*

### *Bladder Cancer*

- *Transurethral resection of bladder tumor*
- *Intravesical therapy (chemotherapy or immunotherapy)*
- *Radical cystectomy with reconstructive surgery*
- *Chemotherapy*
- *Radiation therapy*

### *Stomach Cancer*

- *Gastrectomy*
- *Laparoscopy Gastrectomy*
- *Robotic Gastrectomy*
- *Intraperitoneal Chemotherapy*

### *Breast Cancer*

- *Total mastectomy*
- *Breast-conserving surgery*
- *Breast oncoplastic surgery*


* *Nomogram for predicting positive resection margins after breast-conserving surgery. Breast Cancer Research and Treatment. 2012.*

* *Limited Value and Utility of Breast MRI in Patients Undergoing Breast-Conserving Cancer Surgery. Annals of Surgical Oncology. 2012.*

* *Sentinel lymph node identification with radiopharmaceuticals in patients with breast cancer: a comparison of 99mTc-tin colloid and 99mTc-phytate efficiency. Breast Cancer Research and Treatment. 2010.*


### *Prostate cancer*

- *Robotic-Assisted Laparoscopic Radical Prostatectomy (RALP)*
- *Laparoscopic Radial Prostatectomy (LRP)*
- *Radiation Therapy of Prostate Cancer*
- *Androgen Deprivation Therapy*
- *Chemotherapy of Prostate Cancer*


* *Expression of resistin in the prostate and its stimulatory effecton prostate cancer cell proliferation. BJU Int.. 2011.*

* *Expression of human β-defensin-2 in the prostate. BJU Int.. 2011.*

# EWHA WOMANS UNIVERSITY MEDICAL CENTER


* Address: EWHA WOMANS UNISERSITY MOKDING HOSPITALI, 911-1 MOKDONG, YANGCHEON-KU, SEOUL 158-710, KOREA
* Homepage: http://eng.eumc.ac.kr/
* Telephone: +82-2-5650-5890
* Fax: +82-2-2648-5890
* E-mail: int@eumc.ac.kr
* Counseling time: (Mon~Fri) 09:00~17:00




*Ewha woman's university medical center is the only one medical center run by woman's university in Korea. Stomach & colon cancer interdisciplinary center was awarded Medical Korea 2010. It is also the hospital of 'premium brand 2013' chosen by female patients, 'a good cancer center', 'no.1 satisfaction' according to Maeil business newspaper survey.*

### *Female cancer specialized hospital, stomach/colon cancer interdisciplinary center*

*Ewha female cancer center is the hospital that has the most knowledge of women's body and mind, serving women-friendly clinical service and supportive programss. There are one-stop service(examination, diagnosis, operation within a week)and non-stop service(admitting and testing patient from other hospital suspected or diagnosed cancer within a day), which are is provided to achieve fast, convenient patient -centered care. Also, environment-friendly 'lady ward' is dedicated to female cancer patient.*

### *Number of cancer patient treated in 2013*

| Cancer type | Out-patient | Inpatient |
|---|---|---|
| Liver cancer | - | - |
| Thyroid cancer | - | - |
| GB/Pancreatic cancer | - | - |
| Colon cancer | - | - |
| Bladder cancer | - | - |
| Stomach cancer | - | - |
| Breast cancer | - | - |
| Cervical cancer | - | - |
| Prostate cancer | - | - |
| Lung cancer | - | - |

***CANCER PATIENT STATUS OF HOSPITALS***
*KHIDI, 2014*
** Excluded the number of re-visited/re-admitted patients*

### *Number of operations by type of cancer*

| Cancer type | 2011 | 2012 | 2013 |
|---|---|---|---|
| Liver cancer | 14 | - | - |
| Thyroid cancer | 382 | - | - |
| GB/Pancreatic cancer | 124 | - | - |
| Colon cancer | 177 | - | - |
| Bladder cancer | 118 | - | - |
| Stomach cancer | 148 | - | - |
| Breast cancer | 534 | - | - |
| Cervical cancer | 179 | - | - |
| Prostate cancer | 52 | - | - |
| Lung cancer | 25 | - | |

***NUMBER OF SURGERY DONE IN RESPECTIVE HOSPITALS***
*(KHIDI, 2014, Unit:person*

Smart Care MEDICAL KOREA

### *Major high-tech equipments for cancer treatment*

| Equipment | | # |
|---|---|---|
| Full-field digital mammography | | 2 |
| Multi-slice CT | | 2 |
| PET-CT 128 channel | | 1 |
| Da Vinci / Aesop | | 1 / - |
| Tomotherapy | | 1 |
| Linear accelerator | Image-guided radiotherapy | 1 |
| | Intensity-modulated radiotherapy | 1 |
| | 3D conformal radiotherapy | 1 |
| | Volumetric-modulated Arc radiotherapy | 1 |
| | Stereotactic Body radiotherapy | - |
| | Tomosynthetic mammography | 1 |
| | Breast r Scan | 1 |
| High dose rate remote after loading system | | 1 |
| Gamma Knife / Cyber knife | | - / - |

***EQUIPMENT & FACILITY STATUS OF HOSPITALS***
*KHIDI, 2014*

### *International healthcare center and cooperation center for international patients*

*Ewha woman's university hospital provides international cooperation center, clinical office, hospital room, counter, religious facilities, coordinators dedicated to international patients.*

***Multilingual service provided***

| | Commu-nication | Paper Form | bro-chures | Infor-mation signs |
|---|---|---|---|---|
| English | Y | Y | Y | Y |
| Chinese | Y | N | Y | N |
| Russian | Y | N | Y | N |
| Arabic | Y | N | Y | N |
| Japanese | Y | N | Y | N |
| Mongolian | Y | N | Y | N |

### *Thyroid Cancer*
- *Unilateral thyroid lobectomy*
- *Total thyroidectomy*
- *Endoscopic thyroid lobectomy*
- *Robotic thyroidectomy*

### *Colon Cancer*
- *Hemicolectomy*
- *Laparoscopic hemicolectomy*
- *(Lower) Anterior resection*
- *Laparoscopic (lower) anterior resection*
- *(Laparoscopic) Abdominoperineal resection*
- *Hartmann's operation, Transanal excision*

### *Stomach Cancer*
- *Gastrectomy*
- *Laparoscopic(assisted) gastrectomy*
- *Robotic(assisted) gastectomy*
- *Endoscopic submucosal dissection*

### *Breast Cancer*
- *Breast conserving surgery*
- *Modified radical mastectomy*
- *Skin sparing mastectomy*
- *Sentinel lymph node biopsy*

### *Cervical Cancer*
- *Laparoscopic radical hysterectomy with bilateral pelvic and paraaortic lymph node dissection*
- *Laparoscopic radical trachelectomy*
- *Robotic radical radical hysterectomy with bilateral pelvic and paraaortic lymph node dissection*
- *Single port laparoscopic hysterectomy*
- *Total laparoscopic hysterectomy/ laparoscopic hysterectomy*

# HANYANG UNIVERSITY HOSPITAL


* Address: 222 WANGSIMINI-RO SEONGDONG-GU, SEOUL 133-792, KOREA
* Homepage: www.hyumc.com
* Telephone: +82-2-2290-9553
* Fax: +82-2-2298-4336
* E-mail: hospital@hyumc.com
* Counseling time: (Mon~Fri) 08:30~17:30




*Hanyang university hospital was established in 1972 as the largest hospital in eastern Asia. Medical activities were practiced through the founding philosophy of 'love in practice'. 1,000 medical staff, 800 medical support personnel and 825 hospital beds are prepared. Moreover, 26 clinical departments, cancer center, hematopoietic stem cell transplantation center, organ transplantation center, and gastroenterology center is serve for patient-centered care.*

### *Cancer center providing one-stop service*

*One-Stop service is provided for fast examination and admission of new patients. Oncology nurse specialists are standing by to provide personalized service suits for individual patients.*

### *Number of cancer patient treated in 2013*

| Cancer type | Out-patient | Inpatient |
|---|---|---|
| Thyroid cancer | - | 581 |
| Prostate cancer | - | 150 |

***CANCER PATIENT STATUS OF HOSPITALS***
*KHIDI, 2014*
** Excluded number of re-visited/re-admitted patients*

### *Number of operations by type of cancer*

| Cancer type | 2011 | 2012 | 2013 |
|---|---|---|---|
| Liver cancer | 14 | - | - |
| Thyroid cancer | 382 | - | - |

***NUMBER OF SURGERY DONE IN RESPECTIVE HOSPITALS***
*KHIDI, 2014*

### *Major high-tech equipments for cancer treatment*

| Equipment | | # |
|---|---|---|
| Full-field digital mammography | | 2 |
| Multi-slice CT | | 2 |
| PET-CT | | 1 |
| Da Vinci / Aesop | | 1 / - |
| Tomotherapy | | - |
| Linear accelerator | Image-guided radiotherapy | - |
| | Intensity-modulated radiotherapy | - |
| | 3D conformal radiotherapy | 2 |
| | Volumetric-modulated Arc radiotherapy | - |
| | Stereotactic Body radiotherapy | - |
| High dose rate remote after loading system | | - |
| Gamma Knife / Cyber knife | | / - |

***EQUIPMENT & FACILITY STATUS OF HOSPITALS***
*KHIDI, 2014*

### *International hospital for international patients*

*or convenience of international patients, Russian, English, French available dedicated coordinators are standing by to provide the best medical services.*

***Multilingual service provided***

| | Commu-nication | Paper Form | bro-chures | Infor-mation signs |
|---|---|---|---|---|
| English | Y | Y | Y | Y |
| Chinese | N | Y | Y | N |
| Russian | Y | Y | Y | Y |
| French | Y | N | N | N |
| Mongolian | N | Y | Y | N |

Smart Care MEDICAL KOREA

***Thyroid Cancer***

- *Conventional thyroidectomy*
- *Endoscopic thyroidectomy*
- *Robotic thyroidectomy*
- *Conventional neck dissection*
- *Robotic neck dissection*

* *Function voice and swallowing outcomes after robotic thyroidectomy by a gasless unilateral axillo-breast approach: comparison with open thyroidectomy.S URGICAL ENDOSCOPY AND OTHER INTERVENTIONAL TECHNIQUES. 2011.*

* *Clinical Efficacy of Sentinel Lymph Node Biopsy Using Methylene Blue Dye in Clinically Node-Negative Papillary Thyroid Carcinoma. Annals of Surgical Oncology. 2011.*

* *Reply to: Evolution of Endoscopic Thyroidectomy. SURGICAL ENDOSCOPY AND OTHER INTERVENTIONAL TECHNIQUES. 2011.*

* *Robotic Thyroidectomy by Gasless Unilateral Axillo-Breast or Axillary Approach: our early experience. SURGICAL ENDOSCOPY AND OTHER INTERVENTIONAL TECHNIQUES. 2011.*

***Prostate Cancer***

- *Robot assisted laparoscopic prostatectomy*
- *Radical retropubic prostatectomy*
- *Laparoscopic radical prostatectomy*

# KONKUK UNIVERSITY MEDICAL CENTER


* Address: 120-1 NEUNGDONG-RO, GWANGJIN-GU, SEOUL 143-729, KOREA
* Homepage: http://www.kuh.ac.kr/english
* Telephone: +82-2-2030-7221/8361
* Fax: +82-2-2030-7224
* E-mail: konkuh@gmail.com
* Counseling time: (Mon~Fri) 09:00~16:30


*Konkuk university medical center, originally founded in 1931 to cure poor people, was reborn in 2005, while founding philosophy is still practiced. It is a tertiary hospital with 456 doctors, 705 nurses on duty, 33 clinic departments, 879 beds, and 11 clinical centers including international healthcare center and cancer center.*

### *Cancer center winning grand prize of Medical Korea*

*Cancer center consists of colon cancer, breast cancer, thyroid cancer, stomach cancer, lung cancer, female cancer, head and neck cancer, and liver cancer center. Accurate diagnosis using cutting-edge equipment and cooperation between interdisciplinary specialists are made for personalized treatment.*
*Futhermore, breast cancer center and colon cancer center had been awarded grand prize of Medical Korea, respectively in 2010 and 2011.*

### *Number of cancer patient treated in 2013*

| Cancer type | Out-patient | Inpatient |
|---|---|---|
| Thyroid cancer | 1,791 | 592 |
| Colon cancer | 1,146 | 498 |
| Stomach cancer | 918 | 305 |
| Breast cancer | 890 | 441 |
| Cervical cancer | 129 | 47 |

***CANCER PATIENT STATUS OF HOSPITALS***
*KHIDI, 2014*
** Excluded number of re-visited/re-admitted patients*

### *Number of operations by type of cancer*

| Cancer type | 2011 | 2012 | 2013 |
|---|---|---|---|
| Thyroid cancer | 258 | 378 | 504 |
| Colon cancer | 218 | 336 | 337 |
| Stomach cancer | 170 | 191 | 152 |
| Breast cancer | 281 | 319 | 439 |
| Cervical Cancer | - | - | - |

***NUMBER OF SURGERY DONE IN RESPECTIVE HOSPITALS***
*KHIDI, 2014*

### *Major high-tech equipments for cancer treatment*

| Equipment | | # |
|---|---|---|
| Full-field digital mammography | | 2 |
| Multi-slice CT | | 4 |
| PET-CT | | 1 |
| Da Vinci / Aesop | | - / - |
| Tomotherapy | | - |
| Linear accelerator | Image-guided radiotherapy | 1 |
| | Intensity-modulated radiotherapy | 1 |
| | 3D conformal radiotherapy | 1 |
| | Volumetric-modulated Arc radiotherapy | - |
| | Stereotactic Body radiotherapy | - |
| High dose rate remote after loading system | | - |
| Gamma Knife / Cyber knife | | 1 / - |

***EQUIPMENT & FACILITY STATUS OF HOSPITALS***
*KHIDI, 2014*

***International healthcare center for international patients***

*Dedicated clinical office and religious facility is serve for international patients, international patients. English and Chinese available nurses, and dedicated coordinators who can speak English, Chinese and Japanese are standing by.*

***Multilingual service provided***

| | Commu-nication | Paper Form | bro-chures | Infor-mation signs |
|---|---|---|---|---|
| English | Y | Y | Y | Y |
| Chinese | N | Y | Y | Y |
| Russian | N | N | Y | N |
| Japanese | Y | Y | Y | N |
| Mongolian | N | N | Y | N |

***Thyroid Cancer***

- *Right hemicolectomy*
- *Transverse colectomy*
- *Left hemicolectomy*
- *Anterior resection*
- *Low anterior resection*
- *Abdomino-perineal resection*
- *Transanal excision*
- *Subtotal colectomy*
- *Total colectomy*
- *Multiorgan resection for metastatic colorectal cancer*
- *Chemotherapy for colorectal cancer*

***Stomach Cancer***

- *Total gastrectomy*
- *Subtotal gastrectomy*
- *Proximal gastrectomy*
- *Laparoscopy-assisted distal gastrectomy*
- *Laparoscopy-assisted pylorus preserving gastrectomy*

***Breast Cancer***

- *Breast Conserving Surgery and Sentinel Lymphnode biopsy*
- *Breast Conserving Surgery and Axillary LymphNode Dissection*
- *Modified Radical Mastectomy*
- *Oncoplastic Breast Surgery*
- *Subcutaneous Mastectomy and immediate Reconstruction*
- *DIEP free flap breast reconstruction*

***Cervical Cancer***

- *Radical hysterectomy*
- *Laparoscopic radical hysterectomy*
- *Radical trachelectomy*
- *Simple hysterectomy*
- *Conization*
- *Concurrent chemoradiation therapy*

# KOREA UNIVERSITY ANAM HOSPITAL


* Address: KOREA UNIVERSITY ANAM HOSPITAL, 73 INCHON-RO, SEOUL 136-750, KOREA
* Homepage: http://anam.kumc.or.kr/language/ENG/
* Telephone: +82-2-920-5677
* Fax: +82-2-920-6590
* E-mail: angela@kumc.or.kr
* Counseling time: (Mon~Fri) 09:00~17:00




*Korea University Anam Hospital is a representative tertiary hospital with 972 beds, 590 doctors, treating 876,420 outpatients, and 290,821 inpatients in 2011. There are world-standard cancer center, cardiovascular center, sleep center, cardiovascular center, sleep center, gastroenterology center, center of robot surgery, and international healthcare center. International healthcare center provides 24 hour reservation hotline that is available for every clinical department.*

### *Cancer center consisted of 4 interdisciplinary teams*

*Cancer center provides the best treatment through interdisciplinary team that consist of of gastroenterology team, breast cancer team, urology team, lung cancer team, and 6 supporting programs. One-stop clinical service is provided to maximize clinical efficiency and patient convenience.*

### *Number of cancer patient treated in 2013*

| Cancer type | Out-patient | Inpatient |
|---|---|---|
| Thyroid cancer | - | - |
| Colon cancer | - | - |

***CANCER PATIENT STATUS OF HOSPITALS***
*KHIDI, 2013*
** Excluded number of re-visited/re-admitted patients*

### *Number of operations by type of cancer*

| Cancer type | 2011 | 2012 | 2013 |
|---|---|---|---|
| Thyroid cancer | 513 | - | - |
| Colon cancer | 148 | - | - |

***NUMBER OF SURGERY DONE IN RESPECTIVE HOSPITALS***
*KHIDI, 2014*

### *Major high-tech equipments for cancer treatment*

| Equipment | | # |
|---|---|---|
| Full-field digital mammography | | 2 |
| Multi-slice CT | | 3 |
| PET-CT | | 1 |
| Da Vinci / Aesop | | 1 |
| Tomotherapy | | 3 |
| Linear accelerator | Image-guided radiotherapy | 3 |
| | Intensity-modulated radiotherapy | 3 |
| | 3D conformal radiotherapy | 3 |
| | Volumetric-modulated Arc radiotherapy | 3 |
| | Stereotactic Body radiotherapy | - |
| High dose rate remote after loading system | | 1 |
| Gamma Knife / Cyber knife | | - / - |

***EQUIPMENT & FACILITY STATUS OF HOSPITALS***
*KHIDI, 2014*

### *International healthcare center for international patients*

*Korea University Anam Hospital has international healthcare center which has 2 dedicated coordinators serving for international patients.*

*Multilingual service provided*

| | Commu-nication | Paper Form | bro-chures | Infor-mation signs |
|---|---|---|---|---|
| English | Y | N | Y | Y |
| Russian | Y | N | Y | Y |
| Arabic | N | N | N | N |
| Japanese | N | N | N | N |
| Mongolian | Y | N | Y | Y |

### *Thyroid Cancer*

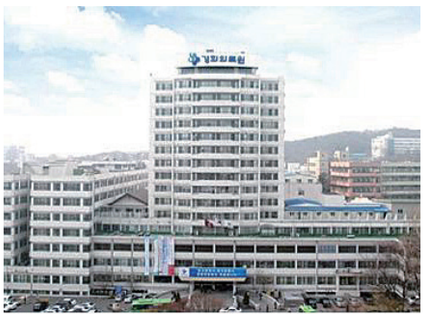
- *Robotic Thyroid Surgery*
- *Robotic Thyroid Surgery (unilateral gaseless axillary approach)*

### *Colon Cancer*

- *Robotic-assisted rectal cancer surgery*

# KYUNG HEE UNIVERSITY HOSPITAL


* *Address: #23 KYUNGHEEDAE-RO, DONGDAEMUN-GU, SEOUL 130-872, KOREA*
* *Homepage : http://www.khmc.or.kr/eng/*
* *Telephone: +82-2-958-9644*
* *Fax: +82-2-958-2980*
* *E-mail : talie928@naver.com*
* *Counseling time : (Mon~Fri) 08:30~17:30, (Sat) 08:30~12:30*

*Kyung hee university hospital is a tertiary hospital that has 850 beds(15 for international patients only), 447 doctors, 692 nurses. 2,600 staff including 190 professors who are treating 940,000 outpatients and 32,000 inpatient annually. Moreover, the hospital has new system with dental, oriental cooperative clinics.*

### *Cancer center emphasizing treatment outcome such as prevention and reduction of complication*

*Cancer center opened in March 2006, with its goal of increasing Quality of life as well as treatment outcome via complete care, relapse prevention, secondary cancer prevention, and reducing complications.*

### *Number of cancer patient treated in 2013*

| Cancer type | Out-patient | Inpatient |
|---|---|---|
| Liver cancer | - | - |
| Thyroid cancer | - | - |
| GB/Pancreatic cancer | - | - |
| Colon cancer | - | - |
| Bladder cancer | - | - |
| Stomach cancer | - | - |
| Breast cancer | - | - |
| Cervical cancer | - | - |
| Prostate cancer | - | - |
| Lung cancer | - | - |

***CANCER PATIENT STATUS OF HOSPITALS***
*KHIDI, 2012*
** Excluded number of re-visited/re-admitted patients*

### *Number of operations by type of cancer*

| Cancer type | 2011 | 2012 | 2013 |
|---|---|---|---|
| Liver cancer | 208 | - | - |
| Thyroid cancer | 304 | - | - |
| GB/Pancreatic cancer | 21 | - | - |
| Colon cancer | 166 | - | - |
| Bladder cancer | 36 | - | - |
| Stomach cancer | 230 | - | - |
| Breast cancer | 63 | - | - |
| Cervical cancer | 72 | - | - |
| Prostate cancer | 39 | - | - |
| Lung cancer | 45 | - | - |

***NUMBER OF SURGERY DONE IN RESPECTIVE HOSPITALS***
*KHIDI, 2014*

### *Major high-tech equipments for cancer treatment*

| Equipment | | # |
|---|---|---|
| Full-field digital mammography | | 2 |
| Multi-slice CT | | 3 |
| PET-CT 128 channel | | 1 |
| Da Vinci / Aesop | | 1 / - |
| Tomotherapy | | 1 |
| Linear accelerator | Image-guided radiotherapy | 1 |
| | Intensity-modulated radiotherapy | 2 |
| | 3D conformal radiotherapy | 1 |
| | Volumetric-modulated Arc radiotherapy | - |
| | Stereotactic Body radiotherapy | - |
| High dose rate remote after loading system | | - |
| Gamma Knife / Cyber knife | | 1 / - |

***EQUIPMENT & FACILITY STATUS OF HOSPITALS***
*KHIDI, 2014*

### *International healthcare center for international patients*

*There are 15 wards, 2 clinical offices, 2 resting rooms, 2 religious facilities for international patients only. And there are 4 full-time medical translators(English, Russian, Japanese available, and there are 10 more part-time translators) and 4 dedicated coordinators (English, Russian, Japanese available).*

***Multilingual service provided***

| | Commu-nication | Paper Form | bro-chures | Infor-mation signs |
|---|---|---|---|---|
| English | Y | Y | Y | Y |
| Chinese | Y | N | N | N |
| Russian | Y | Y | Y | Y |
| Japanese | Y | Y | Y | N |

# KYUNG HEE UNIVERSITY HOSPITAL



### *Liver Cancer*
- *Surgical open resection*
- *Laparoscopic resection*
- *Transarterial chemolipiodolization (TACE)*
- *Radiofrequency ablation (RFA)*
- *Tomotherapy*

### *Thyroid Cancer*
- *Convetional, radical (open) thyroidectomy*
- *Robotic radical thyroidectomy*

### *Gallbladder·Pancreatic Cancer*
- *Laparoscopic cholecystectomy*
- *Laparoscopic extended cholecystectomy*
- *Extended cholecystectomy*
- *Pyrolus preserving pancreaticoduodenectomy*
- *Pancreaticoduodenectomy*
- *Tomotherapy*

### *Colon Cancer*
- *Laparoscopic colorectal surgery*
- *Single-port laparoscopic colorectal surgery*
- *Robotic colorectal surgery*
- *Open colorectal surgery*
- *Transanal excision*
- *Endoscopic resection*

* *Endo-satinsky clamp for rectal transection during laparoscopic total mesorectal excision. Disease of Colon & Rectum. 2010.*
*Disease of Colon & Rectum. 2010.*

* *Epigenetic inactivation of the NORE1 gene correlates with malignant progression of colorectal tumors. BMC Cancer. 2010.*

* *Epigenetic Alteration of PRKCDBP in Colorectal Cancers and Its Implication in Tumor Cell Resistance to TNFa-Induced Apoptosis. Clinical Cancer Research. 2011.*

### *Bladder Cancer*
- *Transurethral resection of bladder tumor*
- *Partial cystectomy*
- *Radical cystectomy*

### *Stomach Cancer*
- *Endoscopic Submucosal Dissection*
- *Laparoscopic-assisted Gastrectomy*
- *Robot-assisted Gastrectomy*
- *Open Gasrectomy*

### *Breast Cancer*
- *Breast conserving surgery/ Modified radical mastectomy/ oncoplastic surgery*
- *Chemotherapy*
- *Target therapy*
- *Radiation therapy*
- *Endocrine therapy*

* *Locoregional recurrence of breast cancer in patients treated with breast conservation surgery and radiotherapy following neoadjuvant chemotherapy. Int J Radiat Oncol Biol Phys. 2011.*

### *Cervical Cancer*
- *Robotic Davinci Radical Hysterectomy*
- *Laparoscopic Radical Hysterectomy*
- *Chemoradiotherapy*

### *Prostate Cancer*
- *Radical retropubic prostatectomy*
- *Robot-assisted laparoscopic radical prostatectomy*
- *Laparoscopic radical prostatectomy*
- *Tomotherapy*
- *Transurethral resection of prostate*

### *Lung Cancer*
- *Open thoracotomy*
- *Video Assisted Thoracoscopic Surgery*
- *Tomotherapy*

* *Bee venom inhibits tumor angiogenesis and metastasis by inhibiting tyrosine phosphorylation of VEGFR-2 in LLC-tumor-bearing mice. Cancer Lett. 2010.*

* *Herbal compound farnesiferol C exerts antiangiogenic and antitumor activity and targets multiple aspects of VEGFR1 (Flt1) or VEGFR2 (Flk1) signaling cascades. Mol Cancer Ther. 2010.*

# SEOUL NATIONAL UNIVERSITY HOSPITAL

*The hospital of No.1 national university in Korea, Seoul National University Hospital is tertiary hospital with 1,722 beds, (extra 70 beds for cancer hospital), 1,337 doctors treating 1,700 inpatient and 8,100 outpatient everyday. It is a research centered hospital publishing more than 1,000 articles per year to SCI, which has the most authority in the academic field.*

### *Cacner hospital consisted of 27 centers*

*Cancer hospital consists of 27 centers including 16 cancer centers and 9 multidisciplinary cancer centers, and clinical trial center. The hospital provides personalized medical service, which is outpatient specialized and short-hospitalization based. Examination and tests are done in single day, and treatment schedule is arranged within 24 hours.*

### *Number of cancer patient treated in 2013*

| Cancer type | Out-patient | Inpatient |
|---|---|---|
| Liver cancer | 4,162 | 2,620 |
| Thyroid cancer | 6,500 | 1,363 |
| GB/Pancreatic cancer | 1,132 | 863 |
| Colon cancer | 4,642 | 1,730 |
| Bladder cancer | 1,063 | 545 |
| Stomach cancer | 5,072 | 1,601 |
| Breast cancer | 8,021 | 1,562 |
| Cervical cancer | 739 | 218 |
| Prostate cancer | 1,914 | 354 |
| Lung cancer | 2,991 | 1,403 |

***CANCER PATIENT STATUS OF HOSPITALS***
*KHIDI, 2014*
** Excluded number of re-visited/re-admitted patients*

### *Number of operations by type of cancer*

| Cancer type | 2011 | 2012 | 2013 |
|---|---|---|---|
| Liver cancer | 212 | 293 | 433 |
| Thyroid cancer | 1,137 | 1,068 | 1,183 |
| GB/Pancreatic cancer | 221 | 345 | 341 |
| Colon cancer | 989 | 1,262 | 1,338 |
| Bladder cancer | 603 | 731 | 759 |
| Stomach cancer | 844 | 1,016 | 986 |
| Breast cancer | 967 | 1,552 | 1,643 |
| Cervical cancer | 142 | 103 | 126 |
| Prostate cancer | 345 | 326 | 276 |
| Lung cancer | 465 | 638 | 613 |

***NUMBER OF SURGERY DONE IN RESPECTIVE HOSPITALS***
*KHIDI, 2014*

### *Major high-tech equipments for cancer treatment*

| Equipment | | # |
|---|---|---|
| Full-field digital mammography | | 3 |
| Multi-slice CT | | 9 |
| PET-MRI | | 1 |
| Da Vinci / Aesop | | 2 / - |
| Tomotherapy | | 2 |
| Linear accelerator | Image-guided radiotherapy | 6 |
| | Intensity-modulated radiotherapy | 6 |
| | 3D conformal radiotherapy | 6 |
| | Volumetric-modulated Arc radiotherapy | 2 |
| | Stereotactic Body radiotherapy | 2 |
| High dose rate remote after loading system | | 1 |
| Gamma Knife / Cyber knife | | 2 / - |

***EQUIPMENT & FACILITY STATUS OF HOSPITALS***
*KHIDI, 2014*

### *International healthcare center for international patients*

*Seoul National University Hospital runs International healthcare center for international patients, with 12 dedicated coordinators in charge.*

***Multilingual service provided***

| | Commu-nication | Paper Form | bro-chures | Infor-mation signs |
|---|---|---|---|---|
| English | Y | Y | Y | Y |
| Chinese | Y | N | Y | Y |
| Russian | Y | Y | Y | N |
| Arabic | Y | N | Y | N |
| Japanese | Y | N | Y | Y |
| Mongolian | Y | Y | Y | N |
| Spanish | Y | N | N | N |


- *Address: 101 DAEHAK-RO JONGNO-GU, SEOUL 110-744, KOREA*
- *Homepage: www.snuh.org/english*
- *Telephone: +82-2-2072-0505*
- *Fax: +82-2-2072-0785*
- *E-mail: ihs@snuh.org*
- *Counseling time: (Mon~Fri) 08:30~17:30 (Sat) 09:00~13:00*

SEOUL
NATIONAL
UNIVERSITY
HOSPITAL



### *Liver Cancer*

- *Transarterial Chemoembolization, TACE*
- *Radiofrequency ablation*
- *Percutaneous ethanol injection therapy*
- *Hepatectomy*
- *Liver transplantation (living donor, deceased donor)*

* *Transarterial chemoembolization can be safely performed in patients with hepatocellular carcinoma invading the main portal vein and may improve the overall survival. Radiology. 2011.*
* *The role of perfusion CT as a follow-up modality after transcatheter arterial chemoembolization: an experimental study in a rabbit model. Investigative radiology. 2010.*
* *Caudate lobe hepatocellular carcinoma treated with selective chemoembolization. Radiology. 2010.*
* *Dual-energy computed tomography to assess tumor response to hepatic radiofrequency ablation: potential diagnostic value of virtual noncontrast images and iodine maps. Investigative Radiology. 2011.*
* *Does adjuvant radiotherapy suppress the liver regeneration after partial hepatectomy?. INTERNATIONAL JOURNAL OF RADIATION ONCOLOGY BIOLOGY PHYSICS. 2009.*
* *Absence of symptom and intact liver function are positive prognosticators for patients undergoing radiotherapy for lymph node metastasis from hepatocellular carcinoma. International Journal of Radiation Oncology, Biology, Physics. 2010.*

### *Thyroid Cancer*

- *Thyroidectomy, Hemithyroidectomy, Thyroid lobectomy*
- *Oncoplastic thyroid surgery, BABA endoscopic thyroid surgery, BABA robotic thyroid surgery*
- *Radioactive iodine ablation and treatment*
- *USG-guided Ethanol Ablation*
- *USG-guided Radiofrequency Ablation*
- *Hereditary thyroid cancer counseling*
- *Voice clinic*
- *Cervical lymph node dissection, lateral lymph node dissection, Selective lateral neck dissection, Modified lateral neck dissection*

* *Core-Needle Biopsy Is More Useful Than Repeat Fine-Needle Aspiration in Thyroid Nodules Read as Nondiagnostic or Atypia of Undetermined Significance by the Bethesda System for Reporting Thyroid Cytopathology. Thyroid. 2012.*
* *Preoperative diagnosis of cervical metastatic lymph nodes in papillary thyroid carcinoma: comparison of ultrasound, computed tomography, and combined ultrasound with computed tomography. Thyroid. 2008.*
* *Endoscopic thyroidectomy via bilateral axillo-breast apprach (BABA): review of 512 cases in a single institute. Surg Endosc. 2011.*
* *S100A4 expression is associated with lymph node metastasis in papillary microcarcinoma of the thyroid. Modern Pathology. 2008.*
* *Wild-type p53 enhances the cytotoxic effect of radionuclide gene therapy using sodium iodide symporter in a murine anaplastic thyroid cancer model. Eur J Nucl Med Mol Imaging. 2010.*
* *Human sodium/iodide symporter-mediated radioiodine gene therapy enhances the killing activities of CTLs in a mouse tumor model. Mol Cancer Ther. 2010.*
* *A new PET probe, (18)F-tetrafluoroborate, for the sodium/iodide symporter: possible impacts on nuclear medicine. Eur J Nucl Med Mol Imaging. 2010.*
* *Combined therapy with (131)I and retinoic acid in Korean patients with radioiodine-refractory papillary thyroid cancer. Eur J Nucl Med Mol Imaging. 2011.*
* *Tumor size and age predict malignancy potential in Hürthle cell neoplasm of the thyroid: Influence on determining extent of surgery. Thyroid. 2010.*

Smart Care MEDICAL KOREA

### *Colon Cancer*

- *Colectomy or Proctectomy*
- *Laparoscopic colectomy or proctectomy*

* *Influence of preoperative chemoradiotherapy on the number of lymph nodes retrieved in rectal cancer. Annals of Surgery. 2010.*

* *Establishment and characterization of 13 human colorectal carcinoma cell lines: mutations of genes and expressions of drug-sensitivity genes and cancer stem cell markers. Carcinogenesis. 2010.*

### *Gallbladder·Pancreatic Cancer*

- *Cholecystectomy*
- *Chemotherapy*
- *Radiotherapy*
- *Pancreaticoduodenectomy*
- *Distal pancreatectomy*
- *Chemotherapy*
- *Radiotherapy*

* *Measurement of pancreatic fat by magnetic resonance imaging: predicting the occurrence of pancreatic fistula after pancreatoduodenectomy. Ann Surg. 2010.*

* *Analysis of prognostic factors and a proposed new classification for invasive papillary mucinous neoplasms. Ann Surg Oncol. 2011.*

* *Cyst growth rate predicts malignancy in patients with branch duct intraductal papillary mucinous neoplasms. Clin Gastroenterol Hepatol. 2011.*

* *Choledochal cyst and associated malignant tumors in adults: a multicenter survey in South Korea. Arch Surg. 2011.*

* *Is duodenal invasion a relevant prognosticator in patients undergoing adjuvant chemoradiotherapy for distal common bile duct cancer?. Int J Radiat Oncol Biol Phys. 2010.*

### *Stomach Cancer*

- *Distal gastrectomy (subtotal gastrectomy)*
- *Total gastrectomy*
- *Proximal gastrecotomy*
- *Pylorus-preserving gastrectomy*
- *Laparoscopy-assisted gastrectomy*
- *Endoscopic submucosal dissection*
- *Postoperative chemotherapy*
- *Targerted chemotherapy*

* *Trastuzumab in combination with chemotherapy versus chemotherapy alone for treatment of HER2-positive advanced gastric or gastro-oesophageal junction cancer (ToGA): a phase 3, open-label, randomised controlled trial. Lancet. 2010.*

* *Gene expression profiling of metaplastic lineages identifies CDH17 as a prognostic marker in early-stage gastric cancer. Gastroenterology. 2010.*

* *Mature chief cells are cryptic progenitors for metaplasia in the stomach. Gastroenterology. 2010.*

* *Near-Infrared Emitting Polymer Nanogels for Efficient Sentinel Lymph Node Mapping. ACS Nano. 2012.*

* *Nomogram predicting long term survival after D2 gastrectomy for gastric cancer. J Clin Oncol. 2012.*

### *Breast Cancer*

- *Breast conserving surgery, total mastectomy curative breast cancer resection*
- *Oncoplastic breast surgery*
- *Immediate breast reconstruction, delayed breast reconstruction*
- *Clinical trial*
- *Hereditary breast cancer counseling*
- *Lymphedema clinic- stellate ganlion block & complex decongestive therapy*
- *Breast image:Ultrasound elasotography, Post operative screening MRI, Stereotactic biopsy, Digital Breast Tomosynthesis*

SEOUL
NATIONAL
UNIVERSITY
HOSPITAL




* Poor outcome of hormone receptor-positive breast cancer at very young age is due to tamoxifen resistance: nationwide survival data in Korea--a report from the Korean Breast Cancer Society. J clin Oncol. 2007.
* Web-based tailored education program for disease-free cancer survivors with cancer-related fatigue: a randomized controlled trial. J Clin Oncol. 2012.
* Comparable survival between pN0 breast cancer patients undergoing sentinel node biopsy and extensive axillary dissection: a report from the Korean Breast Cancer Society. J Clin Oncol. 2010.
* Underweight and breast cancer recurrence and death: a report from the Korean Breast Cancer Society. J Clin Oncol. 2009.
* EZH2 Generates a Methyl Degron that Is Recognized by the DCAF1/DDB1/CUL4 E3 Ubiquitin Ligase Complex. Mol Cell. 2012.
* BRCA2 fine-tunes the spindle assembly checkpoint through reinforcement of BubR1 acetylation. Dev Cell. 2012.
* Risk of estrogen receptor-positive and -negative breast cancer and single-nucleotide polymorphism 2q35-rs13387042. J Natl Cancer Inst. 2009.


### *Cervical Cancer*

- *Radical hysterectomy*
- *Radical trachelectomy*
- *Laparoscopic pelvic lymph node dissection*
- *Concurrent chemoradiotherapy*
- *Pelvic exenteration*


* Preoperative [18F]FDG PET/CT maximum standardized uptake value predicts recurrence of uterine cervical cancer. Eur J Nucl Med Mol Imaging. 2010.
* Involvement of NF-kappaB and AP-1 in COX-2 upregulation by human papillomavirus 16 E5 oncoprotein. Carcinogenesis. 2009.
* Safe criteria for less radical trachelectomy in patients with early-stage cervical cancer: a multicenter clinicopathologic study. Ann Surg Oncol. 2012.
* Human papillomavirus type 16 E5 oncoprotein as a new target for cervical cancer treatment. Biochem Pharmacol. 2010.
* Matched-case comparison for the role of surgery in FIGO stage Ib1-IIa squamous cell carcinoma of cervix and suspicious para-aortic lymph node metastasis. Ann Surg Oncol. 2009.


### *Prostate Cancer*

- *Retropubic radical prostatectomy*
- *Robot-assisted laparoscopic radical prostatectomy*
- *Transurethral prostatectomy*
- *Androgen deprivation therapy*
- *Radiation therapy*


* Simvastatin induces apoptosis in castrate resistant prostate cancer cells by deregulating NF-kB pathway. J Urol. 2012.
* Can conventional magnetic resonance imaging, prostate needle biopsy, or their combination predict the laterality of clinically localized prostate cancer?. Urology. 2012.
* Inhibition of prostate cancer using RNA interference-directed knockdown of platelet-derived growth factor receptor. Urology. 2011.


### *Lung Cancer*

- *Thoracoscopic lobectomy in lung cancer*
- *Clinical Trials of Targeted Agents / Individualized Chemotherapy based on Molecular Targets*


* Clinicopathologic characteristics and outcomes of patients with anaplastic lymphoma kinase -positive advanced pulmonary adenocarcinoma: suggestion for an effective screening strategy for these tumors. J Thorac Oncl. 2011.
* Anaplastic lymphoma kinase translocation: a predictive biomarker of pemetrexed in patients with non-small cell lung cancer. J Thorac Oncol. 2011.
* Comparative analyses of overall survival in patients with anaplastic lymphoma kinase-positive and matched wild-type advanced nonsmall cell lung cancer. CANCER. 2012.


Smart Care MEDICAL KOREA

# SEOUL ST. MARY'S HOSPITAL, THE CATHOLIC UNIVERSITY OF KOREA

*Seoul St. Mary's Hospital of the Catholic University of Korea, opened in 1980, is a tertiary hospital with 1,338 beds(22 for international patients only), and 840 doctors. It is the biggest single building institute of 22 stories above and 6 below the ground, having world-class faculty and state-of-the-art medical systems. Also, it was re-certificated by JCI, proving world-standard medical system.*

### *Seoul St. Mary's Cancer Hospital, a hospital in a hospital*

*Cancer hospital consists of 11 multidisciplinary centers(stomach cancer, colon cancer, lung cancer, female cancer, breast cancer, thyroid cancer, etc.) and bone marrow transplantation center, the biggest in Asia. Specialized(organ-specific ward, specialized nurse) and integrated(caring body and soul) management has been practiced for cancer patients in multidisciplinary manner, while running 8 supportive programs together.*

### *Number of cancer patient treated in 2013*

| Cancer type | Out-patient | Inpatient |
|---|---|---|
| Liver cancer | - | 1.693 |
| Thyroid cancer | - | 1,763 |
| GB/Pancreatic cancer | - | 706 |
| Colon cancer | - | 2,718 |
| Bladder cancer | - | 298 |
| Stomach cancer | - | 2,191 |
| Breast cancer | - | 924 |
| Cervical cancer | - | 296 |
| Prostate cancer | - | 315 |
| Lung cancer | - | 1,834 |

***CANCER PATIENT STATUS OF HOSPITALS***
*KHIDI, 2014*
** Excluded number of re-visited/re-admitted patients*

### *Number of operations by type of cancer*

| Cancer type | 2011 | 2012 | 2013 |
|---|---|---|---|
| Liver cancer | - | 189 | 171 |
| Thyroid cancer | - | 1,341 | 1,149 |
| GB/Pancreatic cancer | - | 90 | 114 |
| Colon cancer | - | 839 | 760 |
| Bladder cancer | - | 152 | 235 |
| Stomach cancer | - | 535 | 486 |
| Breast cancer | - | 552 | 536 |
| Cervical cancer | - | 224 | 166 |
| Prostate cancer | - | 217 | 218 |
| Lung cancer | - | 267 | 276 |

***NUMBER OF SURGERY DONE IN RESPECTIVE HOSPITALS***
*KHIDI, 2014*

### *Major high-tech equipments for cancer treatment*

| Equipment | | # |
|---|---|---|
| Full-field digital mammography | | 4 |
| Multi-slice CT | | 9 |
| PET-CT 128 channel | | 3 |
| Da Vinci / Aesop | | 1 / - |
| Tomotherapy | | 1 |
| Linear accelerator | Image-guided radiotherapy | 4 |
| | Intensity-modulated radiotherapy | 4 |
| | 3D conformal radiotherapy | 3 |
| | Volumetric-modulated Arc radiotherapy | - |
| | Stereotactic Body radiotherapy | 1 |
| High dose rate remote after loading system | | 1 |
| Gamma Knife / Cyber knife | | - / 1 |

***EQUIPMENT & FACILITY STATUS OF HOSPITALS***
*KHIDI, 2014*

### *International healthcare center for international patients*

*Seoul St.Mary's Hospital has international healthcare center for international patients which provides international patients dedicated ward, clinical office, resting room, religious facility and 11 full-time dedicated coordinators.*

***Multilingual service provided***

| | Commu-nication | Paper Form | bro-chures | Infor-mation signs |
|---|---|---|---|---|
| English | Y | Y | Y | Y |
| Chinese | Y | N | N | N |
| Russian | Y | Y | Y | N |
| Arabic | Y | N | N | N |
| Japanese | Y | Y | Y | N |
| French | Y | N | N | N |


- *Address: 222 BANPODAE-RO SEOCHO-GU, SEOUL 137-701, KOREA*
- *Homepage: http://www.cmcseoul.or.kr*
- *Telephone: +82-2-2258-5745*
- *Fax: +82-2-2258-5752*
- *E-mail: ihcc@catholic.ac.kr*
- *Counseling time: (Mon~Fri) 08:00~17:00*

# SEOUL ST. MARY'S HOSPITAL, THE CATHOLIC UNIVERSITY OF KOREA



### *Liver Cancer*

- *Liver resection*
- *Liver transplantation (LT)*
- *Radiofrequency Ablation (RFA)*
- *Percutanesou Ethanol Injection (PEI)*
- *TransAterial ChemoEmbolization (TACE)*
- *TransAterial ChemoEmbolization (TACE) with drug-eluting bead*
- *Radioembolization with Yttrium90*
- *Hepatic artery infusion chemotherapy*
- *Radiotion Therapy (Tomotherapy, CyberKnife etc)*
- *Sorafenib*


* *STEREOTACTIC BODY RADIOTHERAPY FOR PATIENTS WITH UNRESECTABLE PRIMARY HEPATOCELLULAR CARCINOMA: DOSE-VOLUMETRIC PARAMETERS PREDICTING THE HEPATIC COMPLICATION. NTERNATIONAL JOURNAL OF RADIATION ONCOLOGY BIOLOGY PHYSICS. 2010.*
* *SOX4 overexpression regulates the p53-mediated apoptosis in hepatocellular carcinoma: clinical implication and functional analysis in vitro. CARCINOGENESIS. 2010.*
* *Benefit of downsizing hepatocellular carcinoma in a liver transplant population. ALIMENTARY PHARMACOLOGY & THERAPEUTICS. 2010.*
* *Silencing of 14-3-3 zeta over-expression in hepatocellular carcinoma inhibits tumor growth and enhances chemosensitivity to cis-diammined dichloridoplatium. CANCER LETTERS. 2011.*
* *Comparative study between doxorubicin-eluting beads and conventional transarterial chemoembolization for treatment of hepatocellular carcinoma. Journal of Hepatology. 2012.*
* *Benefit of downsizing hepatocellular carcinoma in a liver transplant population. Aliment Pharmacol Ther. 2010.*


### *Stomach Cancer*

- *Endoscopic submucosal dissection*
- *Laparoscopic gastrectomy*
- *Robot assisted gastrectomy*


* *Antitumor efficacy of viral therapy using genetically engineered Newcastle disease virus [NDV(F3aa)-GFP] for peritoneally disseminated gastric cancer. JOURNAL OF MOLECULAR MEDICINE-JMM. 2010.*
* *Follow-Up Strategy After Curative Resection of Gastric Cancer: A Nationwide Survey in Korea. ANNALS OF SURGICAL ONCOLOGY. 2010.*
* *Author Reply: Follow-Up for Gastric Cancer: How Extensive and Intensive Should It Be?. ANNALS OF SURGICAL ONCOLOGY. 2010.*
* *Successful palliation of a gastrocolic fistula secondary to gastric cancer by insertion of a covered colonic stent. GASTROINTESTINAL ENDOSCOPY. 2011.*
* *Use of laparoscopy as an alternative to computed tomography (CT) and positron emission tomography (PET) scans for the detection of recurrence in patients with gastric cancer: a pilot study. SURGICAL ENDOSCOPY AND OTHER INTERVENTIONAL TECHNIQUES. 2011.*
* *Effect of early oral feeding after gastric cancer surgery: A result of randomized clinical trial. SURGERY. 2011.*
* *Comparison of Gastric Cancer Survival Following R0 Resection in the United States and Korea Using an Internationally Validated Nomogram. Ann Surg. 2010.*
* *Validation of the seventh edition of the american joint committee on cancer TNM staging system for gastric cancer. Cancer. 2011.*
* *Laparoscopic wedge resection for gastric submucosal tumors: a size-location matched case-control study. J Am Coll Surg. 2011.*

***Bladder Cancer***

- *Open radical cystectomy*
- *Laparoscopic radical cystectomy*
- *Robot-assisted radical cystectomy*
- *Transurethral resection of bladder tumor*
- *Radiation therapy*
- *Chemotherapy*
- *Intravesical instillation*

***Prostate Cancer***

- *Laparoscopic radical prostatectomy*
- *Robot-assisted laparoscopic radical prostatectomy (RALP)*
- *Open radical prostatectomy*
- *Hormonal therapy*
- *Radiation therapy*
- *Chemotherapy*

***Cervical Cancer***

- *Radical hysterectomy or trachelectomy (laparotomy, laparoscopic, single-port, robotic assisted)*
- *Concurrent chemo-radiation therapy*
- *Chemotherapy*
- *Radiation*
- *Laparoscopic staging surgery (retroperitoneal lymph node sampling)*

* *A pilot study to investigate the treatment of cervical human papillomavirus infection with zinc-citrate compound (CIZAR®). Gynecologic oncology. 2011.*

* *ERCC1 (excision repair cross-complementation group 1) expression as a predictor for response of neoadjuvant chemotherapy for FIGO stage 2B uterine cervix cancer. Gynecologic oncology. 2011.*

***Breast Cancer***

- *Mastectomy(Simple mastectomy, Modified radical mastectomy)*
- *Breast conserving surgery (Quadrantectomy, Wide excision)*
- *Axillart Lymph node dissection (or Sentinel lymph node biopsy)*
- *Breast reconstruction (Implant procedure, Tissue flap procedure)*
- *Ultrasoud-guided breast biopsy, Stereotatic mammotome biopsy, MRI-guided biopsy*
- *Vaccum-assited biopsy(mammotome)*

* *F-18 FDG PET/CT Findings of Dedifferentiated Acinic Cell Carcinoma. CLINICAL NUCLEAR MEDICINE. 2010.*

SEOUL
ST. MARY'S
HOSPITAL,
THE CATHOLIC
UNIVERSITY
OF KOREA

# SEVERANCE HOSPITAL


* Address: 50-1 YONSEI-RO, SEODAEMUN-GU, SEOUL 120-752 KOREA
* Homepage: http://sev.iseverance.com/
* Telephone: +82-2-2228-5800
* Fax: +82-2-362-6835
* E-mail: ihcc@yuhs.ac
* Counseling time: (Mon~Fri)08:30~5:30 (Sat) 08:30~12:30




*The hospital of No.1 private university, Severance hospital is a tertiary hospital with total 2,471 beds, and 1,580 doctors. It was built in 1885 to be the first western style hospital. Cancer center consists of 16 respective cancer center by type of cancer, and there are international healthcare center for international patients. The Yonsei Cancer Center started as Korea's first dedicated cancer treatment facility in 1969, and reopened on April 30, 2014 with the vision of being Korea's premier cancer hospital. The Topnotch cancer specialists, upgraded treatment processes and caring services for patients and their families help patients recover physically and emotionally.*

### *Research institute of Severance cancer center*

*Severance cancer center had its 40th anniversary in 2009. It had become the best cancer center in Korea, treating 120,000 outpatients annually. Multidisciplinary cancer treatment was started from 1975, and 'Cancer research institute' was established in 1990 to study the cause, diagnosis, and treatment of cancer to apply knowledge directly to education and diagnosis.*

### *Number of cancer patient treated in 2013*

| Cancer type | Out-patient | Inpatient |
|---|---|---|
| Liver cancer | 2,025 | 1,326 |
| Thyroid cancer | 16,324 | 2,727 |
| GB/Pancreatic cancer | 628 | 587 |
| Colon cancer | 5,216 | 1,467 |
| Bladder cancer | 1,266 | 450 |
| Stomach cancer | 7,730 | 2,185 |
| Breast cancer | 5,917 | 897 |
| Cervical cancer | 2,253 | 309 |
| Prostate cancer | 3,930 | 730 |
| Lung cancer | 1,869 | 1,239 |

***CANCER PATIENT STATUS OF HOSPITALS***
*KHIDI, 2014*
** Excluded number of re-visited/re-admitted patients*

### *Number of operations by type of cancer*

| Cancer type | 2011 | 2012 | 2013 |
|---|---|---|---|
| Liver cancer | 280 | 120 | 156 |
| Thyroid cancer | 2,541 | 1,548 | 2,566 |
| GB/Pancreatic cancer | 210 | 45 | 90 |
| Colon cancer | 906 | 675 | 742 |
| Bladder cancer | 612 | 154 | 209 |
| Stomach cancer | 1,305 | 899 | 1,272 |
| Breast cancer | 725 | 396 | 591 |
| Cervical cancer | 172 | 87 | 71 |
| Prostate cancer | 685 | 365 | 520 |
| Lung cancer | 382 | 221 | 157 |

***NUMBER OF SURGERY DONE IN RESPECTIVE HOSPITALS***
*KHIDI, 2014*

### *Major high-tech equipments for cancer treatment*

| Equipment | | # |
|---|---|---|
| Full-field digital mammography | | 3 |
| Multi-slice CT | | 9 |
| PET-CT | | 5 |
| Da Vinci / Aesop | | 5 / - |
| Tomotherapy | | 4 |
| Linear accelerator | Image-guided radiotherapy | Possession |
| | Intensity-modulated radiotherapy | 4 |
| | 3D conformal radiotherapy | Possession |
| | Volumetric-modulated Arc radiotherapy | Possession |
| | Stereotactic Body radiotherapy | - |
| High dose rate remote after loading system | | 1 |
| Gamma Knife / Cyber knife | | 1 / - |

***EQUIPMENT & FACILITY STATUS OF HOSPITALS***
*KHIDI, 2014*

### *International healthcare center for international patients*

*International healthcare center for international patients consists of department of international clinic, department of management and department of visa. Also, 22 staff are in charge for full-time.*

*Multilingual service provided*

| | Communication | Paper Form | brochures | Information signs |
|---|---|---|---|---|
| English | Y | Y | Y | Y |
| Chinese | Y | Y | Y | Y |
| Russian | Y | Y | Y | Y |
| Arabic | Y | N | Y | N |
| Japanese | Y | Y | Y | N |
| French | Y | N | N | N |

Smart Care MEDICAL KOREA

### *Liver Cancer*

- *Liver transplantation*
- *Concurrent chemoradiotherapy for hepatoma*
- *Helical tomotherapy for bone metastasis*
- *Helical tomotherapy for hepatoma*
- *Transarterial chemoembolization for Hepatoma*
- *Radioembolization of Hepatoma*
- *Radiofrequency ablation of Malignant tumor*
- *Cryoablation of Malignant tumor*
- *Ethanol injection of Hepatoma*


* *Radiotherapeutic Parameters Predictive of Liver Complications Induced by Liver Tumor Radiotherapy. International Journal of radiation oncology, biology, physics. 2009.*
* *Is Local Radiotherapy Still Valuable for Patients With Multiple Intrahepatic Hepatocellular Carcinomas?. International Journal of radiation oncology, biology, physics. 2010.*
* *Usefulness of Positron Emission Tomography With Fluorine-18-Fluorodeoxyglucose in Predicting Treatment Response in Unresectable Hepatocellular Carcinoma Patients Treated With External Beam Radiotherapy. International Journal of radiation oncology, biology, physicsLiver international. 2012.*
* *Early Clinical Experience and Outcome of Helical Tomotherapy for Multiple Metastatic Lesions. International Journal of radiation oncology, biology, physicsLiver international. 2009.*


### *Thyroid Cancer*

- *Robotic thyroidectomy*
- *Robotic modified radical neck dissection for thyroid cancer*


* *Differences in postoperative outcomes, function, and cosmesis: open versus robotic thyroidectomy. SURGICAL ENDOSCOPY AND OTHER INTERVENTIONAL TECHNIQUES. 2010.*
* *Feasibility and safety of a new robotic thyroidectomy through a gasless, transaxillary single-incision approach. JOURNAL OF THE AMERICAN COLLEGE OF SURGEONS. 2010.*
* *Perioperative clinical outcomes after robotic thyroidectomy for thyroid carcinoma: a multicenter study. SURGICAL ENDOSCOPY AND OTHER INTERVENTIONAL TECHNIQUES. 2011.*
* *The Learning Curve for Robotic Thyroidectomy : A Multicenter Study. ANNALS OF SURGICAL ONCOLOGY. 2011.*
* *Comparison of endoscopic and robotic thyroidectomy. ANNALS OF SURGICAL ONCOLOGY. 2011.*
* *Excellence in robotic thyroid surgery: a comparative study of robot-assisted versus conventional endoscopic thyroidectomy in papillary thyroid microcarcinoma patients. ANNALS OF SURGERY. 2011.*
* *Multicenter study of robotic thyroidectomy: short-term postoperative outcomes and surgeon ergonomic considerations. ANNALS OF SURGICAL ONCOLOGY. 2011.*


### *Colon Cancer*

- *Colonoscopic diagnosis and treatment for colorectal tumor*
- *Chemotherapy*
- *Radiotherapy*
- *Colorectal surgery for colorectal cancer*
- *Laparoscopic surgery for colorectal cancer*
- *Robotic surgery for colorectal cancer*


* *Comparison of efficacies between stents for malignant colorectal obstruction: a randomized, prospective study. Gastrointest Endosc. 2010.*
* *Outcomes of secondary stent-in-stent self-expandable metal stent insertion for malignant colorectal obstruction. Gastrointest Endosc. 2011.*
* *Long-term outcome of palliative therapy for malignant colorectal obstruction in patients with unresectable metastatic colorectal cancers: endoscopic stenting versus surgery. Gastrointest Endosc. 2011.*
* *Clinical outcomes and risk factors for technical and clinical failures of self-expandable metal stent insertion for malignant colorectal obstruction. Gastrointest Endosc. 2011.*
* *Clinical outcomes and factors related to resectability and curability of EMR for early colorectal cancer. Gastrointest Endosc. 2011.*
* *Feasibility of salvage endoscopic mucosal resection by using a cap for remnant rectal carcinoids after primary EMR. Gastrointest Endosc. 2011.*
* *NA methylation predicts recurrence from resected stage III proximal colon cancer. CANCER. 2011.*
* *Rectal cancer: Comparison of accuracy of local-regional staging with local-regional dimensional preoperative 3-TMR imaging. Radiology. 2010.*

SEVERANCE HOSPITAL

106

### *Bladder Cancer*

- *Transurethral resection of bladder tumor*
- *Radical cystectomy*
- *Laparoscopic radical cystectomy*
- *Robot assisted laparoscopic radical cystectomy*
- *Radiation therapy*

### *Stomach Cancer*

- *Endoscopic submucosal dissection*
- *Radical (sub)total gastrectomy with lymph node dissection*
- *Laparoscopy assisted radical (sub)total gastrectomy with lymph node dissection*
- *Robot assisted radical (sub)total gastrectomy with lymph node dissection*

* *Predictive value of pretreatment metabolic activity measured by fluorodeoxyglucose positron emission tomography in patients with metastatic advanced gastric cancer: the maximal SUV of the stomach is a prognostic factor. European Journal of Nuclear Medicine and Molecular Imaging. 2012.*

* *Prognostic role of p-mTOR expression in cancer tissues and metastatic lymph nodes in pT2b gastric cancer. Int J Cancer. 2010.*

* *Dual inhibition of tumor energy pathway by 2-deoxyglucose and metformin is effective against a broad spectrum of preclinical cancer models. Mol Cancer Ther. 2011.*

* *External validation of nomogram for the prediction of recurrence after curative resection in early gastric cancer. Annuls of Oncology. 2012.*

* *A randomized phase II trial of S-1-oxaliplatin versus capecitabine-oxaliplatin in advanced gastric cancer. European Journal of Cancer. 2012.*

### *Breast Cancer*

- *Breast Conserving Surgery*
- *Total Mastectomy*
- *Total Mastectomy with immediate breast reconstruction*
- *Sentinel lymph node biopsy*

* *Comparison of treatment outcome between breast-conservation surgery with radiation and total mastectomy without radiation in patients with one to three positive axillary lymph nodes. Int J Radiat Oncol Biol Phys. 2011.*

* *Androgen receptor expression is significantly associated with better outcomes in estrogen receptor-positive breast cancers. Ann Oncol. 2011.*

* *Expression of androgen receptors in primary breast cancer. Annals of Oncology. 2010.*

### *Cervical Cancer*

- *Radical hysterectomy (abdominal/ laparoscopic/ robotic)*
- *Radical trachelectomy (abdominal/ laparoscopic/ robotic)*
- *Radiotherapy, tomotherapy*
- *Chemotherapy, concurrent chemoradiotherapy*

### *Prostate Cancer*

- *Robot assisted laparoscopic radical prostatectomy*
- *Radical prostatectomy*
- *Laparoscopic radical prostatectomy*
- *MR guided focused ultrasound*
- *Radiation therapy/ Brachytherapy*

* *Significance of Perineural Invasion, Lymphovascular Invasion, and High-Grade Prostatic Intraepithelial Neoplasia in Robot-Assisted Laparoscopic Radical Prostatectomy. Annals of Surgical Oncology. 2011.*

Smart Care MEDICAL KOREA

***Gallbladder·Pancreatic Cancer***

- *Endoscopic Approach to Early Diagnosis of Pancreatic Cancer*
- *Diagnostic and therapeutic uses of ERCP in pancreatic and biliary tract malignancies*
- *Radical pancreatectomy following neoadjuvant treatment*
- *Laparoscopic minimally invasive pancreatectomy*
- *Liver and bile duct resection, hepaticojejunostomy*
- *Neoadjuvant chemoradiation(TOMO) therapy in pancreatic cancer.*
- *Robotic function-preserving minimally invasive pancreatectomy*
- *Robotic modified anterior RAMPS (radical antegrade modular pancreatosplenectomy)*


* *High-dose Helical Tomotherapy with Concurrent Full-dose Chemotherapy for Locally Advanced Pancreatic Cancer. INT J RADIAT ONCOL.2012 Jan 26. [Epub ahead of print] 2012.*
* *A novel disposable, transnasal esophagoscope: a pilot trial of feasibility, safety, and tolerance. Endoscopy. 2012.*
* *Aberrant Hedgehog ligands induce progressive pancreatic fibrosis by paracrine activation of myofibroblasts and ductular cells in transgenic zebrafish. PLoS One. 2011.*
* *Differential features of pancreatobiliary- and intestinal-type ampullary carcinomas at MR imaging. Differential features of pancreatobiliary- and intestinal-type ampullary carcinomas at MR imaging. 2010.*
* *Active locomotion of a paddling-based capsule endoscope in an in vitro and in vivo experiment. Gastrointestinal Endoscopy. 2010.*


***Lung Cancer***

- *Lobectomy (thoracotomy)*
- *Lobectomy (video-assisted)*
- *Sleeve lobectomy*
- *Pneumonectomy*
- *Segmentectomy*
- *Lobectomy (Da Vinci Robot-assisted)*
- *Stereotactic body radiotherapy*
- *Image-guided Intensity-modulated*
- *radiation therapy using tomotherapy*


* *Fibroblast Growth Factor Receptor 1 Gene Amplification Is Associated With Poor Survival and Cigarette Smoking Dosage in Patients With Resected Squamous Cell Lung Cancer. Journal of Clinical Oncology. 2011.*
* *First-line systemic treatment of advanced stage non-small-cell lung cancer in Asia: consensus statement from the Asian Oncology Summit 2009. Lancet Oncology. 2011.*
* *Impact of Environmental Tobacco Smoke on the Incidence of Mutations in Epidermal Growth Factor Receptor Gene in Never-Smoker Patients With Non–-Small-Cell Lung Cancer. Journal of Clinical Oncology. 2010.*
* *Phase II Study of Erlotinib in Advanced Non–-Small-Cell Lung Cancer After Failure of Gefitinib. Journal of Clinical Oncology. 2011.*
* *Activation of IL-6R/JAK1/STAT3 Signaling Induces De Novo Resistance to Irreversible EGFR Inhibitors in Non–-Small Cell Lung Cancer with T790M Resistance Mutation. Molecular Cancer Therapeutics. 2011.*
* *Frequent Central Nervous System Failure After Clinical Benefit With Epidermal Growth Factor Receptor Tyrosine Kinase Inhibitors in Korean Patients With Nonsmall-Cell Lung Cancer. CANCER. 2010.*

# GACHON UNIVERSITY GIL MEDICAL CENTER


* *Address: 21, NAMDONG-DAERO 774 BEON-GIL, NAMDONG-GU, INCHEON*
* *Homepage: foreigner.gilhospital.com*
* *Telephone: +82-32-460-3213*
* *Fax: +82-32-461-3214*
* *E-mail: gihc@gilhospital.com*
* *Counseling time: (Mon~Fri) 08:00~17:00 (Sat) 09:00~12:00*




*Gachon university Gil medical center, opened in 1958, is a convergence medical center which has national designated cancer center, 5 subsidiary hospitals and international healthcare center. The institute is also preparing to be the world-class research centered hospital with the world-best research institute. Staffs of Gil medical center have the best knowledge and skills, and best caring services to put patient's health and faith in the first place.*

### *National designated cancer center*

*After establishment of'cancer center'in spring 2012, Ministry of Health and Welfare has appointed Gil medical center as'National designated cancer center', which was the first among private university hospitals. Project developing cancer screening, clinical practice, cancer research, and cancer management are on its progress under national cancer project.*

### *Number of cancer patient treated in 2013*

| Cancer type | Out-patient | Inpatient |
|---|---|---|
| Colon cancer | 1,236 | 616 |

***CANCER PATIENT STATUS OF HOSPITALS***
*KHIDI, 2014*
** Excluded number of re-visited/re-admitted patients*

### *Number of operations by type of cancer*

| Cancer type | 2011 | 2012 | 2013 |
|---|---|---|---|
| Colon cancer | 304 | 293 | 347 |

***NUMBER OF SURGERY DONE IN RESPECTIVE HOSPITALS***
*KHIDI, 2014*

### *Major high-tech equipments for cancer treatment*

| Equipment | | # |
|---|---|---|
| Full-field digital mammography | | 3 |
| Multi-slice CT | | 5 |
| PET-CT | | 2 |
| Da Vinci / Aesop | | - / - |
| Tomotherapy | | - |
| Linear accelerator | Image-guided radiotherapy | 2 |
| | Intensity-modulated radiotherapy | 2 |
| | 3D conformal radiotherapy | 2 |
| | Volumetric-modulated Arc radiotherapy | 1 |
| | Stereotactic Body radiotherapy | 2 |
| High dose rate remote after loading system | | 1 |
| Gamma Knife / Cyber knife | | - / - |

***EQUIPMENT & FACILITY STATUS OF HOSPITALS***
*KHIDI, 2014*

### *International healthcare center for international patients*

*Gacheon university Gil medical center has international healthcare center providing dedicated ward, clinical office, resting room, and religious facility for international patients. Medical translators and 5 dedicated coordinators are serving full-time. (English, Russian, Mongolian, Chinese available)*

***Multilingual service provided***

| | Commu-nication | Paper Form | bro-chures | Infor-mation signs |
|---|---|---|---|---|
| English | Y | N | Y | Y |
| Chinese | Y | N | Y | Y |
| Russian | Y | N | Y | N |
| Japanese | Y | N | N | N |
| Mongolian | Y | N | Y | N |

***Colon Cancer***

- *Transanal local excision*
- *Low anterior resection ± laparoscopy*
- *Anterior resection ± laparoscopy*
- *Right/Left hemicolectomy ± laparoscopy*
- *Endoscopic mucosal resection*


* *Oncological outcomes of laparoscopic colon resection for cancer after implementation of a full-time preceptorship. SURGICAL ENDO-SCOPY AND OTHER INTERVENTIONAL TECHNIQUES. 2011.*
* *Multicentric Study on Robotic Tumor-Specific Mesorectal Excision for the Treatment of Rectal Cancer. ANNALS OF SURGICAL ONCOLOGY. 2010.*
* *Totally laparoscopic right colectomy with transvaginal specimen extraction: the authors' initial institutional experience. SURGICAL ENDO-SCOPY AND OTHER INTERVENTIONAL TECHNIQUES. 2010.*
* *Oncologic Outcomes of Robotic-Assisted Total Mesorectal Excision for the Treatment of Rectal Cancer. ANNALS OF SURGERY. 2010.*
* *Robotic and laparoscopic total mesorectal excision for rectal cancer: a case-matched study. SURGICAL ENDO-SCOPY AND OTHER INTERVENTIONAL TECHNIQUES. 2011.*


GACHON
UNIVERSITY
GIL MEDICAL
CENTER

# INHA UNIVERSITY HOSPITAL


* Address: 27, INHANG-RO, JUNG-GU, INCHEON, 400-711, KOREA
* Homepage: http://inha.com/eng
* Telephone: +82-32-890-2080
* Fax: +82-32-890-2088
* E-mail: hyungji25@naver.com
* Counseling time: (Mon~Fri) 09:00~17:00 (Sat) 09:00~11:30




*Inha university hospital is the closest(25 minutes) hospital located near Incheon international airport, providing accessability to international patients. It is the first certificated medical institute among all airport medical centers. It is a tertiary hospital which has 906 beds(8 for international patients only), and 441 doctors. The hospital also has cancer center, female cancer center and international healthcare center for international patients.*

### *Cancer center including female cancer center*

*Inha university hospital cancer center consists of bone marrow transplantation center , female cancer center, lung cancer center, gastroenterology center, and cyberknife center. Especially, lung cancer center has advanced systems. Also, multidisciplinary clinics provide fast diagnosis and treatment by cutting-edge equipment. International research and video call conference are available.*

### *Number of cancer patient treated in 2013*

| Cancer type | Out-patient | Inpatient |
|---|---|---|
| Liver cancer | - | - |
| Thyroid cancer | - | - |
| GB/Pancreatic cancer | - | - |
| Colon cancer | - | - |
| Bladder cancer | - | - |
| Stomach cancer | - | - |
| Breast cancer | - | - |
| Cervical cancer | - | - |
| Prostate cancer | - | - |
| Lung cancer | - | - |

***CANCER PATIENT STATUS OF HOSPITALS***
*KHIDI, 2014*
** Excluded number of re-visited/re-admitted patients*

### *Number of operations by type of cancer*

| Cancer type | 2011 | 2012 | 2013 |
|---|---|---|---|
| Liver cancer | 32 | - | - |
| Thyroid cancer | 367 | - | - |
| GB/Pancreatic cancer | 21 | - | - |
| Colon cancer | 198 | - | - |
| Bladder cancer | 104 | - | - |
| Stomach cancer | 168 | - | - |
| Breast cancer | 190 | - | - |
| Cervical cancer | 39 | - | - |
| Prostate cancer | 19 | - | - |
| Lung cancer | 55 | - | - |

***NUMBER OF SURGERY DONE IN RESPECTIVE HOSPITALS***
*KHIDI, 2014*

### *Major high-tech equipments for cancer treatment*

| Equipment | | # |
|---|---|---|
| Full-field digital mammography | | Posses sion |
| Multi-slice CT | | 4 |
| PET-CT | | 2 |
| Da Vinci / Aesop | | - / - |
| Tomotherapy | | - |
| Linear accelerator | Image-guided radiotherapy | 1 |
| | Intensity-modulated radiotherapy | 1 |
| | 3D conformal radiotherapy | 1 |
| | Volumetric-modulated Arc radiotherapy | 1 |
| | Stereotactic Body radiotherapy | - |
| High dose rate remote after loading system | | 1 |
| Gamma Knife / Cyber knife | | - / - |

***EQUIPMENT & FACILITY STATUS OF HOSPITALS***
*KHIDI, 2014*

### *International healthcare center for international patients*

*Inha university hospital has international healthcare center providing dedicated ward, clinical office, resting room for international patients. 3 medical translators(English, Chinese, Russian available)and 5 dedicated coordinators are in charge.(English, Chinese, Russian available)*

***Multilingual service provided***

| | Commu-nication | Paper Form | bro-chures | Infor-mation signs |
|---|---|---|---|---|
| English | Y | Y | Y | N |
| Chinese | Y | Y | Y | N |
| Russian | Y | Y | Y | N |

Smart Care MEDICAL KOREA

# ARTICLES PUBLISHED MAJOR THERAPIES AND ABROAD



***Liver Cancer***
- *Hepatectic resection*
- *Laparoscopic hepatic resection*
- *Liver transplantation*
- *Radiofrequent ablation (RFA)*
- *Transarterial chemoembolization (TACE)*

* *Prognostic factors affecting survival after recurrence in adult living donor liver transplantation for hepatocellular carcinoma. liver tranplantation. 2010.*

***Thyroid Cancer***
- *Thyroid lobectomy*
- *Total thyroidectomy*
- *Modified radical neck dissection (Mod. RND)*
- *Iodine 131 ablation therapy*
- *Radiotherapy*

***Gallbladder·Pancreatic Cancer***
- *Open / Laparoscopic Cholecystectomy*
- *Extended Radical Cholecystectomy*
- *Standard / Pylorus-Preserving Pancreaticoduodenectomy*
- *Distal Pancreatectomy with Splenectomy*
- *Laparoscopic Distal Pancreatectomy*

***Colon Cancer***
- *Radical colectomy (Rt.hemi, Lt.hemi, Transverse)*
- *Radical (low) anterior resection*
- *Laparoscopic colectomy (anterior resection) (same as above)*
- *Transanal resection & Endoscopic submucosal dissection*
- *Adjuvant chemotherapy*
- *Neo-adjuvant chemoradiotherapy*

***Bladder Cancer***
- *Transurethral resection of bladder tumor (TURB)*
- *Partial cystectomy*
- *Radical cystectomy*
- *Chemotherapy(adjuvant, neoadjuvant)*
- *Radiotherapy*

***Stomach Cancer***
- *Radical Gastrectomy (subtotal, total, segmental)*
- *Laparoscopic Gastrectomy (same as above)*
- *Endoscopic submucosal resection*
- *Adjuvant chemotherapy*
- *Billroth I, II Roux en Y, long limb Roux en Y*

***Breast Cancer***
- *Modified radical mastectomy*
- *Breast Conserving Surgery*
- *Skin(or Nipple areolar complex) sparing mastectomy*
- *Breast Reconstruction(Immediate or Late)*
- *Preoperative chemotherapy*

***Cervical Cancer***
- *Radical Hysterectomy*
- *Laparoscopic Radical Hysterectomy*
- *Adjuvant Radiotherapy*
- *Concurrent Chemo-Radiotherapy*

***Prostate Cancer***
- *Radical prostatectomy*
- *Cyberknife*
- *Androgen deprivation therapy*
- *Transurethral Resection of prostate*

***Lung Cancer***
- *Personalized Chemotherapy*
- *Radiotherapy (Cyberknife, Rapid Arc)*
- *Surgical resection*
- *Therapeutic bronchoscopy (Photodynamic Therapy, Cryotherapy, Electrocautery, Rigid bronchoscopy)*

# YEUNGNAM UNIVERSITY MEDICAL CENTER


* Address: 170, HYEONCHUNG-RO, NAM-GU, DAEGU 705-703, KOREA
* Homepage: www.yumc.ac.kr
* Telephone: +82-53-623-4114
* Fax: +82-80-623-8001
* E-mail: international@med.yu.ac.kr
* Counseling time: (Mon~Fri) 08:30~17:30




*Established in 1979, Yeungnam university medical center is located in Southeastern city Daegu, which is 300km away from Seoul. It is a tertiary hospital providing the best medical service with 25 clinical departments, 9 centers, 908 beds and 2,000 staffs including 170 professors, 34 specialists, and 235 residents. The hospital also has a cancer center which has multidisciplinary system and International healthcare center for international patients.*

### *Cancer center practicing multidisciplinary based care*

*Cancer center provides the best care based on close multidisciplinary approach. Diagnosis is made by professor, and a cancer specialist. Patient can receive adequate treatment such as radiotherapy, chemotherapy and hormone therapy.*

### *Number of cancer patient treated in 2013*

| Cancer type | Out-patient | Inpatient |
|---|---|---|
| Liver cancer | - | - |
| Thyroid cancer | - | - |
| GB/Pancreatic cancer | - | - |
| Colon cancer | - | - |
| Bladder cancer | - | - |
| Stomach cancer | - | - |
| Breast cancer | - | - |
| Cervical cancer | - | - |
| Prostate cancer | - | - |
| Lung cancer | - | - |

***CANCER PATIENT STATUS OF HOSPITALS***
*KHIDI, 2014*
** Excluded number of re-visited/re-admitted patients*

### *Number of operations by type of cancer*

| Cancer type | 2011 | 2012 | 2013 |
|---|---|---|---|
| Liver cancer | 67 | - | - |
| Thyroid cancer | 948 | - | - |
| GB/Pancreatic cancer | 44 | - | - |
| Colon cancer | 304 | - | - |
| Bladder cancer | - | - | - |
| Stomach cancer | 304 | - | - |
| Breast cancer | 503 | - | - |
| Cervical cancer | 20 | - | - |
| Prostate cancer | - | - | - |
| Lung cancer | 58 | - | - |

***NUMBER OF SURGERY DONE IN RESPECTIVE HOSPITALS***
*KHIDI, 2014*

### *Major high-tech equipments for cancer treatment*

| Equipment | | # |
|---|---|---|
| Full-field digital mammography | | - |
| Multi-slice CT | | 3 |
| PET-CT / PET-MR | | 2 /1 |
| DaVinci Si | | 1 |
| Tomotherapy | | - |
| Linear accelerator | Image-guided radiotherapy | 1 |
| | Intensity-modulated radiotherapy | 3 |
| | 3D conformal radiotherapy | 3 |
| | Volumetric-modulated Arc radiotherapy | 1 |
| | Stereotactic Body radiotherapy | 1 |
| High dose rate remote after loading system | | - |
| Gamma Knife / Cyber knife | | - / - |

***EQUIPMENT & FACILITY STATUS OF HOSPITALS***
*KHIDI, 2014*

### *International healthcare center for international patients*

*Yeongnam university hospital has international healthcare center with resting room for international patients only. 1 Medical translator (English) and 2 dedicated coordinators are in charge(English).*

***Multilingual service provided***

| | Commu-nication | Paper Form | bro-chures | Infor-mation signs |
|---|---|---|---|---|
| English | Y | Y | Y | Y |
| Chinese | N | Y | Y | Y |
| Japanese | N | N | N | Y |

Smart Care MEDICAL KOREA

***Colon Cancer***

- *Convnetional colorectal cancer surgery*
- *Laparoscopic colorectal cancer surgery*
- *Chemotherapy*
- *Radiation therapy(+/- chemotherapy)*
- *Novalis traeatment*

***Breast Cancer***

- *Breast conserving surgery*
- *Modified radical mastectomy*
- *Subcutaneous mastectomy*
- *Arm node preserving surgery*
- *Chemotherapy*
  *(+/- target therapy, hormonal Tx.)*

# ARTICLES PUBLISHED MAJOR THERAPIES AND ABROAD

# PUSAN NATIONAL UNIVERSITY HOSPITAL


* Address: 179 GUDEOK-RO, SEO-GU, BUSAN, KOREA, 602-739
* Homepage: http://www1.pnuh.co.kr/coding/eng3/main2.html
* Telephone: +82-51-240-7472/7473
* Fax: +82-51-254-0192
* E-mail: ihcpnuh@naver.com
* Counseling time: (Mon~Fri) 09:00~17:30




*Pusan national university hospital is located at Pusan, a port city and the No.2 city of Korea. The hospital has 1,226 beds, (25 for international patients only, 402 beds for cancer center only), 246 doctors. 4,000 outpatients and 1,100 inpatients are treated everyday.*

### *Cancer center with integrated management system*

*Cancer center is now building personalized and integrated cancer treatment system(Patient registration, statistics, establishment of effective prevention strategy, 9 supportive programs related to cancer). For the best care and management, the hospital is running hematopoietic stem cell transplantation center, PET center, Gammaknife center, Hospice center and Tomothearpy center.*

### *Number of cancer patient treated in 2013*

| Cancer type | Out-patient | Inpatient |
|---|---|---|
| Liver cancer | 1,609 | 1,203 |
| Thyroid cancer | 6,020 | 951 |
| GB/Pancreatic cancer | 603 | 481 |
| Colon cancer | 2,593 | 1,276 |
| Bladder cancer | 613 | 201 |
| Stomach cancer | 4,005 | 1,795 |
| Breast cancer | 2,946 | 1,441 |
| Cervical cancer | 708 | 333 |
| Prostate cancer | 1,167 | 230 |
| Lung cancer | 1,642 | 1,508 |

***CANCER PATIENT STATUS OF HOSPITALS***
*KHIDI, 2014*
** Excluded number of re-visited/re-admitted patients*

### *Number of operations by type of cancer*

| Cancer type | 2011 | 2012 | 2013 |
|---|---|---|---|
| Liver cancer | 85 | - | - |
| Thyroid cancer | 629 | - | - |
| GB/Pancreatic cancer | 60 | - | - |
| Colon cancer | 485 | - | - |
| Bladder cancer | 234 | - | - |
| Stomach cancer | 474 | - | - |
| Breast cancer | 373 | - | - |
| Cervical cancer | 102 | - | - |
| Prostate cancer | 91 | - | - |
| Lung cancer | 125 | - | |

***NUMBER OF SURGERY DONE IN RESPECTIVE HOSPITALS***
*KHIDI, 2014*

### *Major high-tech equipments for cancer treatment*

| Equipment | | # |
|---|---|---|
| Full-field digital mammography | | 3 |
| Multi-slice CT | | 6 |
| PET-CT | | 3 |
| Tomotherapy | | 1 |
| Linear accelerator | Image-guided radiotherapy | 3 |
| | Intensity-modulated radiotherapy | 3 |
| | 3D conformal radiotherapy | 2 |
| | Volumetric-modulated Arc radiotherapy | 1 |
| | Stereotactic Body radiotherapy | - |
| High dose rate remote after loading system | | 1 |
| Gamma Knife / Cyber knife | | 1 / - |

***EQUIPMENT & FACILITY STATUS OF HOSPITALS***
*KHIDI, 2012-4*

### *International healthcare center for international patients*

*Pusan national university hospital has International healthcare center for international patients, with 3 dedicated coordinators in charge for full time.*

***Multilingual service provided***

| | Commu-nication | Paper Form | bro-chures | Infor-mation signs |
|---|---|---|---|---|
| English | Y | Y | Y | Y |
| Chinese | N | N | Y | Y |
| Russian | N | Y | Y | N |
| Japanese | N | Y | Y | N |
| Mongolian | N | N | Y | N |

Smart Care MEDICAL KOREA

# ARTICLES PUBLISHED MAJOR THERAPIES AND ABROAD

***Stomach Cancer***

- *Imaging & pathologic diagnosis of Benign or malignant Breast disease.*
- *Stereotactic Vaccuum assisted biopsy for microcalcification*
- *Breast Conserving Surgery & Sentinel Lymph node biopsy for early breast cancer*
- *Immediate reconstruction after skin sparing mastectomy for Breast Cancer treatment*

* *Impact of internal mammary lymph node drainage identified by preoperative lymphoscintigraphy on outcomes in patients with stage I to III breast cancer. Cancer. 2012.*

* *Does Blue Dye Contribute to Success of Sentinel Node Mapping for Breast Cancer?. Ann Surg Oncol. 2010.*

***Breast Cancer***

- *Endoscopic submucosal dissection*
- *Endoscopic mucosal resection*

***Prostate Cancer***

- *Laparoscopic radical prostatectomy*

# CHONNAM NATIONAL UNIVERSITY HWASUN HOSPITAL


* Address: 322 SEOYANG-RO, HWASUN-GUN, JEOLLANAM-DO, 519-763, KOREA
* Homepage: www.cnuhh.com/eng
* Telephone: +82-61-379-8599/7892
* Fax: +82-61-379-7894
* E-mail: cuhealth@hanmail.net
* Counseling time: (Mon~Fri) 09:00~18:00




*Opened in 2004, Chonnam national university hwasun hospital is the only one tertiary hospital in Korea that is practicing in up-to-date medical service located in a provincial city. It is a cancer specialized hospital which has 701 beds (10 for international patients), 244 doctors and it is certificated by JCI. The hospital has treated 209,539 outpatients and 111,562 inpatients in 2011, selected as one of big 5 hospital in 6 major cancer statistics. 'Medical tour with sharing' was planned in 2011 for Uzbekistan, Mongolia, Vietnam patients and international medical center for international patients is provided.*

### *Cancer center with 14 cancer specialized clinic*

*Cancer center consists of 14 cancer specialized clinics(Stomach cancer, Colon cancer, Breast cancer, Lung cancer), and cooperates with 26 clinical departments and 6 specialized centers, serving the best medical service. And the hospital is the only one among provincial hospitals placed in 10th in number of operations for 6 major cancers, according to 2009 data of Health Insurance Review & Assessment Service.*

### *Number of cancer patient treated in 2013*

| Cancer type | Out-patient | Inpatient |
|---|---|---|
| Liver cancer | - | - |
| Thyroid cancer | - | - |
| GB/Pancreatic cancer | - | - |
| Colon cancer | - | - |
| Bladder cancer | - | - |
| Stomach cancer | - | - |
| Breast cancer | - | - |
| Cervical cancer | - | - |
| Prostate cancer | - | - |
| Lung cancer | - | - |

***CANCER PATIENT STATUS OF HOSPITALS***
*KHIDI, 2014*
** Excluded number of re-visited/re-admitted patients*

### *Number of operations by type of cancer*

| Cancer type | 2011 | 2012 | 2013 |
|---|---|---|---|
| Liver cancer | 69 | - | - |
| Thyroid cancer | 1,213 | - | - |
| GB/Pancreatic cancer | 64 | - | - |
| Colon cancer | 675 | - | - |
| Bladder cancer | 86 | - | - |
| Stomach cancer | 896 | - | - |
| Breast cancer | 445 | - | - |
| Cervical cancer | 69 | - | - |
| Prostate cancer | 45 | - | - |
| Lung cancer | 165 | - | - |

***NUMBER OF SURGERY DONE IN RESPECTIVE HOSPITALS***
*KHIDI, 2014*

### *Major high-tech equipments for cancer treatment*

| Equipment | | # |
|---|---|---|
| Full-field digital mammography | | 1 |
| Multi-slice CT | | 3 |
| PET-CT | | 2 |
| Da Vinci / Aesop | | Posses sion |
| Tomotherapy | | 1 |
| Linear accelerator | Image-guided radiotherapy | 2 |
| | Intensity-modulated radiotherapy | 5 |
| | 3D conformal radiotherapy | 5 |
| | Volumetric-modulated Arc radiotherapy | - |
| | Stereotactic Body radiotherapy | - |
| High dose rate remote after loading system | | 1 |
| Gamma Knife / Cyber knife | | 1 / - |

***EQUIPMENT & FACILITY STATUS OF HOSPITALS***
*KHIDI, 2014*

### *International medical center for international patients*

*Chonnam national university hwasun hospital has religious facilities, medical translators, dedicated coordinators for international patients.*

*Multilingual service provided*

| | Commu-nication | Paper Form | bro-chures | Infor-mation signs |
|---|---|---|---|---|
| English | Y | Y | Y | Y |
| Chinese | Y | N | N | Y |
| Russian | Y | Y | Y | N |
| Japanese | Y | N | N | N |
| Spanish | Y | N | N | N |

Smart Care MEDICAL KOREA

# ARTICLES PUBLISHED MAJOR THERAPIES AND ABROAD



***Liver Cancer***
- *Right/Left hemihepatectomy*
- *Right anterior/posterior sectionectomy*
- *Left lateral sectionectomy*
- *Segmentectomy of liver*
- *Wedge resection of liver*

***Thyroid Cancer***
- *Total thyroidectomy*
- *Thyroid lobectomy*
- *Central lymph node dissection*
- *Modified radical neck lymph node dissection*

***Gallbladder·Pancreatic Cancer***
- *Radical cholecystectomy*
- *Laparoscopic cholecystectomy*
- *Simple cholecystectomy*
- *Rt hepatectomy with extrahepatic bile duct resection, T-colon wedge resection*
- *Pylorus preserving pancreaticoduodenectomy*
- *Whipple's operation*
- *Distal pancreatectomy*
- *Total pancreatectomy*
- *Palliative bypass operation or diagnostic biopsy*

***Colon Cancer***
- *Laparoscopic colorectal surgery*
- *Single port laparoscopic surgery*
- *Robotic surgery*
- *HIPEC*

***Bladder Cancer***
- *TUB-BT (Transurethral resection of bladder tumor)*
- *Radical cystectomy*
- *Partial cystectomy*
- *Chemotherapy*
- *Radiotherapy*

***Stomach Cancer***
- *Radical distal gastrectomy*
- *Laparoscopic distal gastrectomy*
- *Radical total gastrectomy*
- *Laparoscopic total gastrectomy*
- *Robot assisted gastrectomy*

***Breast Cancer***
- *Modified radical mastectomy*
- *Breast conserving surgery*
- *Axillary lymph node dissection*
- *Sentinel lymph node dissection*

***Cervical Cancer***
- *Hysterectomy*
- *Laparoscopic hysterectomy*
- *Radical hysterectomy*
- *Laparoscopic radical hysterectomy*

***Prostate Cancer***
- *Radical prostatectomy*
- *Laparoscopic radical prostatectomy*
- *Robot assisted laparoscopic radical prostatectomy*
- *Hormone therapy*
- *Chemotherapy*

***Lung Cancer***
- *Lobectomy*
- *Pneumonectomy*
- *Segmentectomy or wedge resection*

# CHEIL GENERAL HOSPITAL & WOMEN'S HEALTHCARE CENTER


* Address: 1-19, MUKJEONG-DONG, JUNG-GU, SEOUL 100-380, KOREA
* Homepage: http://www.cheilmc.co.kr/cheilmcenglish
* Telephone: +82-2-2000-7351
* Fax: +82-2-2000-7685
* E-mail: cheilhospital@cgh.co.kr
* Counseling time: (Mon~Fri) 08:00~17:00




*Cheil general hospital was founded in 1963, starting from the first female specialized hospital. Now the hospital has become a general hospital of 300 beds(100 more beds for cancer center), and 163 doctors. The hospital treated 125,803 outpatients, and 16,802 inpatients in 2011. With department of OBGY as its center, 17 clinical departments are focusing on female medicine such as pregnancy, delivery, infertility, female cancer and menopausal disorder, providing female patients with total medical service.*

### *The first female cancer center in Korea*

*Cheil hospital female cancer center is the first female cancer specialized center in Korea, which diagnose, treat and manage female cancer. Clinical system is well made to diagnose disease within one day, and admission to surgery is done in a week. Every female cancer such as uterus cancer, breast cancer, thyroid cancer is treated with minimally invasive laparoscopic surgery, minimizing scars and shortening hospitalizing days.*

### *Number of cancer patient treated in 2013*

| Cancer type | Out-patient | Inpatient |
|---|---|---|
| Thyroid cancer | - | 118 |
| Breast cancer | - | 1.222 |
| Cervical cancer | - | 406 |

***CANCER PATIENT STATUS OF HOSPITALS***
*KHIDI, 2014*
** Excluded number of re-visited/re-admitted patients*

### *Number of operations by type of cancer*

| Cancer type | 2011 | 2012 | 2013 |
|---|---|---|---|
| Thyroid cancer | 108 | 123 | 88 |
| Breast cancer | 196 | 277 | 275 |
| Cervical cancer | 92 | 78 | 92 |

***NUMBER OF SURGERY DONE IN RESPECTIVE HOSPITALS***
*KHIDI, 2014*

### *Major high-tech equipments for cancer treatment*

| Equipment | | # |
|---|---|---|
| Full-field digital mammography | | 3 |
| Multi-slice CT | | 3 |
| PET-CT | | 1 |
| Da Vinci / Aesop | | - / - |
| Tomotherapy | | - |
| Linear accelerator | Image-guided radiotherapy | - |
| | Intensity-modulated radiotherapy | 1 |
| | 3D conformal radiotherapy | 1 |
| | Volumetric-modulated Arc radiotherapy | 1 |
| | Stereotactic Body radiotherapy | - |
| High dose rate remote after loading system | | 1 |
| Gamma Knife / Cyber knife | | - / - |

***EQUIPMENT & FACILITY STATUS OF HOSPITALS***
*KHIDI, 2014*

### *International healthcare center for international patients*

*The hospital has International healthcare center for international patients, providing a number of dedicated coordinators who speak English, Japanese, Russian, Mongolian, Chinese, Arabic, Spanish.*

***Multilingual service provided***

| | Commu-nication | Paper Form | bro-chures | Infor-mation signs |
|---|---|---|---|---|
| English | Y | Y | Y | Y |
| Chinese | Y | Y | Y | N |
| Russian | Y | Y | Y | Y |
| Arabic | Y | N | N | N |
| Japanese | Y | Y | Y | N |
| Mongolian | Y | Y | Y | N |

Smart Care MEDICAL KOREA

***Thyroid Cancer***

- *Thyroidectomy*
- *Endoscopic thyroidectomy*

***Breast Cancer***

- *Oncoplastic surgery for breast cancer*
- *Breast conserving surgery*
- *Modified radical mastectomy*

* *Treatment of osteoporosis and reduction in risk of invasive breast cancer in postmenopausal women with raloxifene. Expert opinion on pharmacotherapy. 2011.*

***Cervical Cancer***

- *Laparoscopic Radical hysterectomy with pelvic and paraarotic lymph node dissection.*
- *Vaginal Hysrerectomy*
- *Laparoscopic tumor debulking operation.*

* *Adenoma malignum of the uterine cervix: ultrasonographic findings in 11 patients. Ultrasound in obstetrics & gynecology. 2011.*

# ARTICLES PUBLISHED MAJOR THERAPIES AND ABROAD

# MIZMEDI WOMAN'S HOSPITAL


* *Address: 701-4 NAEGALSAN-DONG, GANGSEO-GU, SEOUL 157-723, KOREA*
* *Homepage: https://www.mizmedi.com/eng/main/main.asp*
* *Telephone: +82-2-2007-1245*
* *Fax: +82-2-2007-1249*
* *E-mail: enquiries@mizmedi.com*
* *Counseling time: (Mon~Fri) 09:00~17:00 (Sat) 09:00~12:00*




*Opened in 2000, Mizmedi woman's hospital is a hospital specialized in diagnosing and treating female diseases. It has 100 beds, 70 doctors, 500 staff and specialized centers including breast & thyroid cancer center and gastroenteric center which manage Stomach cancer, Liver cancer, Colon cancer. The hospital is running 6 specialized centers and specialized clinics for precise examination and diagnosis.*

### *Breast · thyroid cancer center providing one-stop, optimal care*

*Mizmedi hospital breast·thyroid cancer center provides one-stop medical service and optimal care, treating over 12,000 breast cancer patients. There are 5 surgical specialists, 7 radiologic specialists, and 4 breast pathology specialists serving in breast center to perform breast cancer surgery(Breast conserving surgery, radical mastectomy), Sentinel lymph node biopsy(Minimizing pain) and breast reconstruction(rehabilitation).*

### *Number of cancer patient treated in 2013*

| Cancer type | Out-patient | Inpatient |
|---|---|---|
| Thyroid cancer | - | - |
| Breast cancer | - | - |

***CANCER PATIENT STATUS OF HOSPITALS***
*KHIDI, 2014*
** Excluded number of re-visited/re-admitted patients*

### *Number of operations by type of cancer*

| Cancer type | 2011 | 2012 | 2013 |
|---|---|---|---|
| Thyroid cancer | 25 | - | - |
| Breast cancer | 60 | - | - |

***NUMBER OF SURGERY DONE IN RESPECTIVE HOSPITALS***
*KHIDI, 2014*

### *Major high-tech equipments for cancer treatment*

| Equipment | | # |
|---|---|---|
| Full-field digital mammography | | 4 |
| Multi-slice CT | | 1 |
| PET-CT | | - |
| Da Vinci / Aesop | | - / - |
| Tomotherapy | | - |
| Linear accelerator | Image-guided radiotherapy | - |
| | Intensity-modulated radiotherapy | - |
| | 3D conformal radiotherapy | - |
| | Volumetric-modulated Arc radiotherapy | - |
| | Stereotactic Body radiotherapy | - |
| High dose rate remote after loading system | | - |
| Gamma Knife / Cyber knife | | - / - |

***EQUIPMENT & FACILITY STATUS OF HOSPITALS***
*KHIDI, 2014*

### *International healthcare team for international patients*

*There are International healthcare team for international patients, and there are 4 dedicated coordinators(Russian, Mongolian).*

***Multilingual service provided***

| | Commu-nication | Paper Form | bro-chures | Infor-mation signs |
|---|---|---|---|---|
| English | Y | Y | Y | Y |
| Russian | Y | Y | Y | Y |
| Mongolian | Y | Y | Y | N |

### *Breast Cancer*

- *Radical / Modified radical mastectomy*
- *Breast conserving surgery (Breast Caner)*
- *Oncoplastic surgery (Breast Caner)*
- *Breast reconstructive surgery*
- *Sentinel lymph node biopsy*
- *Lymph edema*
  *- Supermicro lymphaticovenular bypass surgery*
- *Breast benign surgery*

Smart Care MEDICAL KOREA

# BUNDANG JESAENG GENERAL HOSPITAL

*Bundang jesaeng general hospital is making effort to be 'hospital like a neighbor, medical staff like family', and persue the goal 'society without disease'. It is a general hospital of 605 beds, 24 clinical departments, 10 specialized centers and 118 medical specialists, providing patients and staff with fast and accurate information by constructing information-oriented medical system by unification, which includes development of prescription transfer system, medical image transfer system, and electric medical record system.*


* *Address: 255-2 SEOHYEON-DONG, BUNDANG-GU, SENGNAM-SI, GYEONGGI-DO, KOREA*
* *Homepage: http://www.dmc.or.kr/global*
* *Telephone: +82-31-779-5015*
* *Fax: +82-31-779-5015*
* *E-mail: sjh0112@dmc.or.kr*
* *Counseling time: (Mon~Fri) 09:00~17:30 (Sat) 09:00~12:00*


## *Major high-tech equipments for cancer treatment*

| Equipment | | # |
|---|---|---|
| Full-field digital mammography | | 1 |
| Multi-slice CT | | 1 |
| PET-CT | | 1 |
| Da Vinci / Aesop | | - / - |
| Tomotherapy | | - |
| Linear accelerator | Image-guided radiotherapy | - |
| | Intensity-modulated radiotherapy | - |
| | 3D conformal radiotherapy | - |
| | Volumetric-modulated Arc radiotherapy | - |
| | Stereotactic Body radiotherapy | - |
| High dose rate remote after loading system | | - |
| Gamma Knife / Cyber knife | | - / - |

***EQUIPMENT & FACILITY STATUS OF HOSPITALS***
*KHIDI, 2014*

## *Number of cancer patient treated in 2013*

| Cancer type | Out-patient | Inpatient |
|---|---|---|
| Liver cancer (Hepatocellular carcinoma) | - | - |

***CANCER PATIENT STATUS OF HOSPITALS***
*KHIDI, 2014*
** Excluded number of re-visited/re-admitted patients*

## *Number of operations by type of cancer*

| Cancer type | 2011 | 2012 | 2013 |
|---|---|---|---|
| Liver cancer | - | - | - |

***NUMBER OF SURGERY DONE IN RESPECTIVE HOSPITALS***
*KHIDI, 2014*

### *Liver Cancer*

- *Transarterial chemoembolization*
- *Radiofrequency ablation*
- *Percutaneous enthanol injection*
- *Radiotherapy*
- *Surgical resection*

# KONYANG UNIVERSITY HOSPITAL


* Address: KONYANG UNISERSITY HOSPITAL 158 GWANJEODONG-RO, SEO-GU, DAEJEON, KOREA
* Homepage: http://www.kyuh.ac.kr/eng/index.asp
* Telephone: +82-42-600-6654
* Fax: +82-42-600-6657
* E-mail: kihcc@kyuh.ac.kr
* Counseling time: (Mon~Fri) 09:00~17:00





*Konyang university hospital is located at Daejeon, which is 150km(50 minutes by KTX) away from Seoul. It has opened on February 2000 and it was official hospital of world cup 2002, and 'leading provincial medical institute of international patient invitation' elected by Ministry of Health and Welfare. It has 886 beds(4 for international patients only), 262 doctors, cancer center with cutting-edge equipment and VIP rooms which opened on April 2011 and international healthcare center for international patients.*

### *Brain tumor and 9 other special teams serving cancer center*

*Konyang cancer center has 9 special teams consisting of stomach cancer team, liver cancer team, cholangio-pancreatico cancer team, colon cancer team, thyroid cancer team, breast cancer team, lung cancer team, female cancer team, prostate cancer team, and brain tumor team. Integrated medical service prepares treatment schedule all together, to avoid visiting every other clinical departments. Also, the hospital has cutting-edge equipments such as robot cyberknife(radiotherapy equipment), and RapidArc(32 times faster than conventional CT).*

### *Number of cancer patient treated in 2013*

| Cancer type | Out-patient | Inpatient |
|---|---|---|
| Liver cancer | - | - |
| Thyroid cancer | - | - |
| GB/Pancreatic cancer | - | - |
| Colon cancer | - | - |
| Bladder cancer | - | - |
| Stomach cancer | - | - |
| Breast cancer | - | - |
| Cervical cancer | - | - |
| Prostate cancer | - | - |
| Lung cancer | - | - |

***CANCER PATIENT STATUS OF HOSPITALS***
*KHIDI, 2014*
** Excluded number of re-visited/re-admitted patients*

### *Number of operations by type of cancer*

| Cancer type | 2011 | 2012 | 2013 |
|---|---|---|---|
| Liver cancer | 24 | - | - |
| Thyroid cancer | 153 | - | - |
| GB/Pancreatic cancer | 18 | - | - |
| Colon cancer | 112 | - | - |
| Bladder cancer | 27 | - | - |
| Stomach cancer | 94 | - | - |
| Breast cancer | 41 | - | - |
| Cervical cancer | 15 | - | - |
| Prostate cancer | 23 | - | - |
| Lung cancer | 30 | - | - |

***NUMBER OF SURGERY DONE IN RESPECTIVE HOSPITALS***
*KHIDI, 2014*

### *Major high-tech equipments for cancer treatment*

| Equipment | | # |
|---|---|---|
| Full-field digital mammography | | 1 |
| Multi-slice CT | | 4 |
| PET-CT | | 1 |
| Da Vinci / Aesop | | - / - |
| Tomotherapy | | - |
| Linear accelerator | Image-guided radiotherapy | 1 |
| | Intensity-modulated radiotherapy | 1 |
| | 3D conformal radiotherapy | 1 |
| | Volumetric-modulated Arc radiotherapy | 1 |
| | Stereotactic Body radiotherapy | - |
| High dose rate remote after loading system | | - |
| Gamma Knife / Cyber knife | | - / 1 |

***EQUIPMENT & FACILITY STATUS OF HOSPITALS***
*KHIDI, 2014*

### *nternational healthcare center for international patients*

*Konyang university hospital has international healthcare center providing dedicated ward, clinical office, resting room, and religious facility for international patients. There are 3 medical translators and coordinators(English, Chinese, Russian, 2 languages per 1 translator)*

***Multilingual service provided***

| | Commu-nication | Paper Form | bro-chures | Infor-mation signs |
|---|---|---|---|---|
| English | Y | Y | Y | Y |
| Chinese | Y | Y | Y | N |
| Russian | Y | Y | Y | N |

Smart Care MEDICAL KOREA

***Liver Cancer***
- *Anatomical liver resection*
- *Laparoscopic liver resection*
- *Liver transplantation*
- *TACE(Trans-arterial chemo-embolization)*
- *RFA ablation(percutaneous, Laparoscopy )*

***Thyroid Cancer***
- *Lobectomy of thyroid*
- *Total thyroidectomy*
- *Neck dissection (selective, modified, central neck...)*
- *Parathyroid autotransplantation*
- *Neurorrhaphy*

***Gallbladder·Pancreatic Cancer***
- *Pancreatoduodenectomy*
- *Laparoscopic pancreatectomy*
- *Extended cholecystectomy*
- *Laparoscopic extended cholecystectomy*

***Colon Cancer***
- *Conventional colectomy*
- *Laparoscopic colectomy*
- *Radiofrequency abrasion*
- *Colonic stent*
- *Cyber-knife / conventional radiation therapy*

***Bladder Cancer***
- *Transurethral resection of bladder tumor*
- *Radical cystectecmy and ileal conduit*
- *Radical cysteectomy and orthotopic neobladder*
- *Partial cystecomtomy*

***Stomach Cancer***
- *Transurethral resection of bladder tumor*
- *Radical cystectecmy and ileal conduit*
- *Radical cysteectomy and orthotopic neobladder*
- *Partial cystecomtomy*

***Breast Cancer***
- *Modified radical mastectomy*
- *Breast conservation surgery (lumpectomy, quadrantectomy...)*
- *Subcutaneous mastectomy and implant insertion*
- *Sentinel lymph node dissection*
- *Axillary LN dissection*

***Cervical Cancer***
- *Laparoscopic radical hysterectomy*
- *Abdominal radical hysterectomy*
- *Concurrent chemo-radiation therapy*

***Prostate Cancer***
- *Radical retropubic prostatectomy*
- *Laparoscopic radical prostatectomy*

***Lung Cancer***
- *Pneumonectomy & video-assisted pneumonectomy*
- *Lobectomy & video-assisted lobectomy*
- *Segmental resection & video-assisted segmental resection*
- *Wedge resection & video-assisted wedge resection*
- *Bronchoplasty*

# ARTICLES PUBLISHED MAJOR THERAPIES AND ABROAD

# GOO HOSPITAL


* Address: 141 GAMSAMBUG-GIL, DALSEO-GU, DAEGU 704-954, KOREA
* Homepage: http://www.gooh.co.kr/english
* Telephone: +82-53-560-9114
* Fax: +82-53-560-9090
* E-mail: tencj0329@hanmail.net
* Counseling time: (Mon~Fri) 09:00~18:00 (Sat) 09:00~13:00





*Goo hospital is a general hospital located in Daegu, a city that is 293km(1hour and 40 minutes by KTX) away from Seoul. It has been designated as colorectal disease specialized hospital in 2011. It is also the only colorectal specialized provincial hospital which consisted of 8 departments including surgery, internal medicine, radiology; and colorectal specialized team (11 surgical specialists, 4 internal medicine specialists, 3 radiologists, and 3 anesthesiologists). The motto "Only fast and definitive surgery saves patient's life" and "hospital like home, physician like family" are practiced to achieve the goal "kind hospital providing better medical service".*

### *Colorectal specialized hospital*

*Based on operation and clinical experience exceeding 5,000 patients every year, the hospital is actively publishing journal articles. And it made medical cooperation contract with Samsung Seoul hospital, Seoul St.Mary's Hospital, and hospitals in Kyungnam and Yeongnam provinces. Colorectal center with 6-story building is built at the end of 2012 to provide medical service in  better quality.*

### *Number of cancer patient treated in 2013*

| Cancer type | Out-patient | Inpatient |
|---|---|---|
| Thyroid cancer | 490 | 209 |
| Colon cancer | 464 | 308 |

***CANCER PATIENT STATUS OF HOSPITALS***
*KHIDI, 2014*
** Excluded number of re-visited/re-admitted patients*

### *Number of operations by type of cancer*

| Cancer type | 2011 | 2012 | 2013 |
|---|---|---|---|
| Thyroid cancer | 194 | 211 | 209 |
| Colon cancer | 130 | 179 | 308 |

***NUMBER OF SURGERY DONE IN RESPECTIVE HOSPITALS***
*KHIDI, 2014*

### *Major high-tech equipments for cancer treatment*

| Equipment | | # |
|---|---|---|
| Full-field digital mammography | | 1 |
| Multi-slice CT | | - |
| PET-CT | | - |
| Da Vinci / Aesop | | - / - |
| Tomotherapy | | - |
| Linear accelerator | Image-guided radiotherapy | - |
| | Intensity-modulated radiotherapy | - |
| | 3D conformal radiotherapy | - |
| | Volumetric-modulated Arc radiotherapy | - |
| | Stereotactic Body radiotherapy | - |
| High dose rate remote after loading system | | - |
| Gamma Knife / Cyber knife | | - / - |

***EQUIPMENT & FACILITY STATUS OF HOSPITALS***
*KHIDI, 2014*

### *Thyroid Cancer*

- *Lobectomy with central neck node dissection*
- *Total thyroidectomy with central neck node dissection*
- *Total thyroidectomy with modified radial neck dissection*
- *Selective neck dissection*
- *Endoscopic thyroidectomy*

### *Colon Cancer*

- *Laparoscopic Low Anterior Resection*
- *Laparoscopic Anterior Resection*
- *Laparoscopic Hemicolectomy*

Smart Care MEDICAL KOREA

# CANCER PATIENTS VISITING KOREA

*Increasing number of International patients*
*Touched by patients-centered care, surprised by reasonable cost*
*Hematologic cancer patient sent from the Health Authority-Abu Dhabi*

Chapter

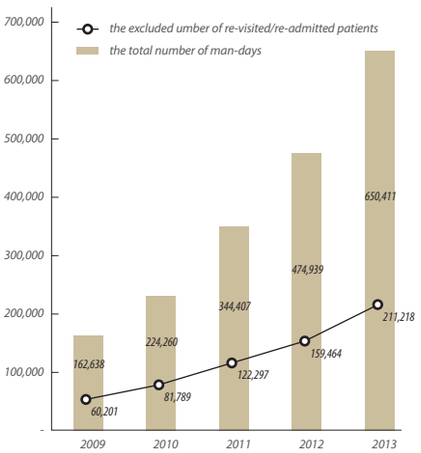
**04**

# INCREASING NUMBER OF INTERNATIONAL PATIENTS



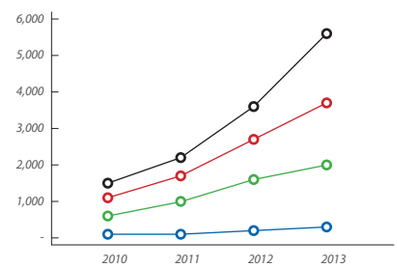
### *Severely ill patients visiting Korea*

*The number of international patients has been consistently increasing with 35% growth each year since 2009 and the number of severe patients who cannot receive proper treatment in their own countries accounts for 12 to 13% of the total international patients since 2010.*




***INTERNATIONAL PATIENTS PER YEAR***
*KHIDI, 2014*


***INTERNATIONAL PATIENTS WITH AN ADVANCED DISEASES PER YEAR***
*KHIDI, 2014*




| | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|
| Cancer | 1,525 | 2,293 | 3,767 | 5,604 |
| Heart disease | 1,101 | 1,759 | 2,736 | 3,717 |
| Cerebrovascular disease | 675 | 1,006 | 1,571 | 2,050 |
| Severe burn | 68 | 100 | 150 | 226 |

***THE NUMBER OF INTERNATIONAL PATIENTS WITH MAJOR SEVERE DISEASES***
*KHIDI, 2014*

### *Cancer patients, the largest population among severe patients*

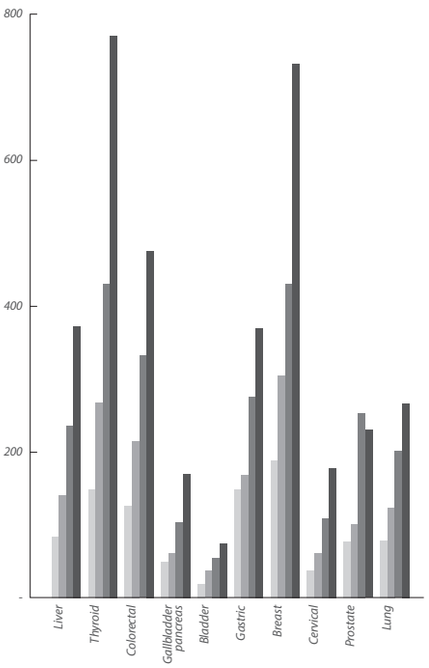
*The largest population among severe international patients is patients with cancer and the increase rate of this population is faster than that of the total international patients (more than 35% a year).*

### *Proportion of breast cancer and thyroid cancer is the highest*

*The number of international patients is increasing in all cancer types according to 10 major cancer types. In 2013, proportion of thyroid cancer and breast cancer is respectively 21.2% and 20.1% marking the highest among the total international cancer patients. It is followed by colon cancer(13.1%), liver cancer(10.2%), stomach cancer(10.2%), lung cancer(7.3%), prostate cancer(6.3%) and cervical cancer(4.9%).*

### *Significant increase in Russian patients*

*According to statistics of international cancer patients treated in Korea, Russia(the highest), U.S, China, Mongolia and Japan accounts for large portion. And the number of patients from Russia shows a remarkable growth, ranked 3rd in 2009, 2nd in 2010, and the 1st from 2011 until now.*




***NUMBER OF INTERNATIONAL PATIENTS ACCORDING TO 10 MAJOR CANCER TYPES***
*KHIDI, 2010~2013*

Smart Care MEDICAL KOREA

# TOUCHED BY PATIENTS-CENTERED CARE, SURPRISED BY REASONABLE COST

127

***Kidney cancer found after medical check-up***

*Igor Kovalenko(48), living in Kamchatka, Russia, was running a fishing business. He had visited Pusan, is the biggest port city in Korea, on September 2012 to have a medical check-up, introduced by an acquaintance. The result was surprising : it was kidney cancer. He had no symptom in his daily life so he suspected that there might be something wrong in exam results, but there wasn't any mistake.*

***Visitation to Pusan National University Hospital visited by recommendation from acquaintances***

*In order to receive a surgery, Mr. Kovalenko searched for hospitals, together with his friends. Recommended by a friend, Mr. Kovalenko visited Pusan National University Hospital on November 2012. Although he had several visits to Korea, it was not easy for him to visit the hospital by himself. Being a stranger and a cancer patient, he was anxious on his first day in hospital.*

***Arrangement of a dedicated coordinator for Russian patients***

*Relieving the patient was the first thing to do. Pusan National University Hospital(PNUH) International Healthcare Services has arranged a Russian-dedicated coordinator and eliminated the inconvenience caused by language difference.*
*An attending professor explained kindly and specifically about the surgery for kidney cancer so that the patient could overcome his fear. He was assured in professional medical standard of PNUH and trust was formed between him and professor. Eventually he decided to have the surgery in PNUH.*

***Successful laparoscopic partial nephrectomy***

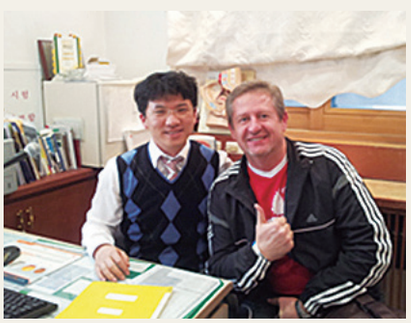
*On Nov 22, 2012, Mr. Kovalenko was admitted in the foreigner-only ward in Pusan National University Hospital International Healthcare center. He was welcomed by Russian-dedicated coordinator, ward nurses and the attending professor. Therefore he was able to cope with the surgery at ease even without his family. After he heard that partial nephrectomy was successful, he had a smile with satisfaction.*

***Surprised by reasonable cost of treatment***

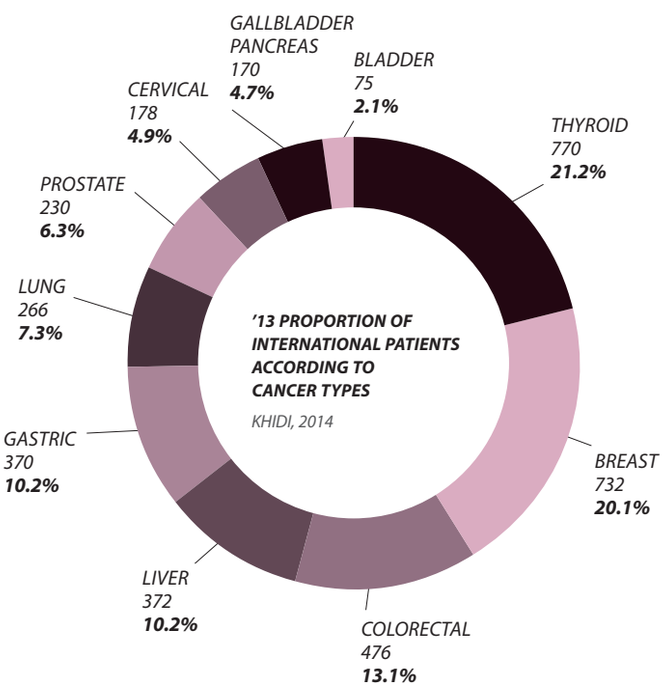
*Mr. Kovalenko stated that he was satisfied by surgery outcome and devotion of every staff, for a foreigner receiving medical care in a country which is not familiar. He was also surprised by the low cost of treatment. He was discharged on Dec 3, 2012 with smile that he didn't have when he visited the hospital for the first time.*

***Revisiting hospital for ongoing health monitoring***

*After his return to Russia, regular contact was made with international healthcare center to receive consultation and management. Mr. Kovalenko revisited the hospital on March 2013. There was no relapse and metastasis. He became an evangelist who recommends Pusan National University Hospital to his own friends. He also brought his wife to the dermatology clinic, showing his confidence to the hospital.*



*Igor Kovalenko with professor, Ha Honggu (Department of Urology)*



# HEMATOLOGIC CANCER PATIENT SENT FROM THE HEALTH AUTHORITY-ABU DHABI



***Patients referral agreement with the Health Authority - Abu Dhabi***

*The Abu Dhabi Health Authority of Arab Emirates refers 3,000 patients to foreign hospitals who cannot be properly treated in the country with a full support within the country. So far, most of the patients were referred to Europe or U.S., but there has been a change after the chair of the Health Authority - Abu Dhabi visited Korea in late 2011 and noted Korea's high quality medical standards and made a patient referral agreement. Since then, there has been constant patient referral to Korea.*

***Hematologic cancer patient sent from the Health Authority - Abu Dhabi***

*Seoul St.Mary's Hospital, International Health Care Center which signed on patient treatment agreement with the Health Authority-Abu Dhabi (HAAD) received a call about a patient with acute lymphocytic leukemia to be referred to Seoul St.Mary's Hospital which has the Bone Marrow Transplant Center. Sara Saad and Ghaly Saad (24) from Egypt visited Korea.*

***Broken artificial joint found during medical checkup***

*On February 2013, Mrs. Saad entered Korea with her parents and was admitted for tests for bone marrow transplant. During these tests, medical staffs of Seoul St.Mary's Hospital found that there was a right hip joint fracture around the location where Sara felt pain. Previously Mrs. Saad received arthroplasty around the hip joint and found that the artificial joint was broken. A prompt surgery was necessary. Tests for bone marrow transplant got holt, and she was transferred to Department of Orthopedics for a surgery.*

***Total Hip Replacement Arthroplasty with priority***

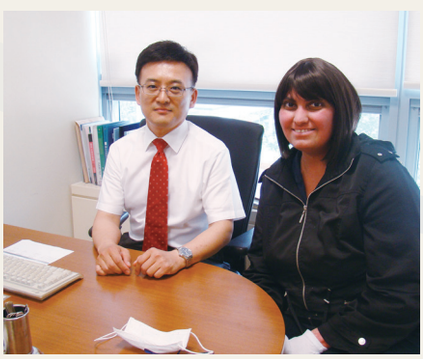
*Two days after broken artificial joint was found, Mrs. Saad received a total hip replacement surgery in Department of Orthopedics. The surgery was successful with no complications found after a week and she was discharged on February 27th. After that, since there was no abnormal finding, she was prepared for bone marrow transplant.*

***Unrelated donor hematopoietic stem cell transplantation performed***

*On March 31st, she was admitted for bone marrow transplant in Seoul St. Mary's Hospital and received a surgery on April 10th. The surgery that she received was unrelated hematopoietic progenitor cell transplant, a surgery that transplants hematopoietic progenitor cells from a donor who is not a family member. The transplant was successful and no complication was found.*

***Management of Graft-Versus-Host Disease(GVHD)***

*After the surgery, management for graft-versus-host disease took place. This rarely occurs after bone marrow transplant but once it happens, it can be fatal. So prevention becomes important. Afterwards, she recovered with no abnormal finding and was discharged on Apr 30th. She visits the outpatient clinic weekly and she is scheduled to fly back to her country around October.*



*Sara Saad with professor, Lee Suk*


# KHIDI IS



***KHIDI, Global Leader in HT***

*Since its establishment in 1999, Korea Health Industry Development Institute (KHIDI) has taken a role as an institution specialized in promoting health industry development and advancing health care services.*
*Poised to lead national economy in the 21st century, KHIDI is committed to contributing to the public health betterment and increasing Korean health care industry's international competitiveness by professionally and systematically supporting businesses and projects to promote health industry development and advancement and improvement of health services.*

Smart Care MEDICAL KOREA

## *Overseas expansion of health industry*

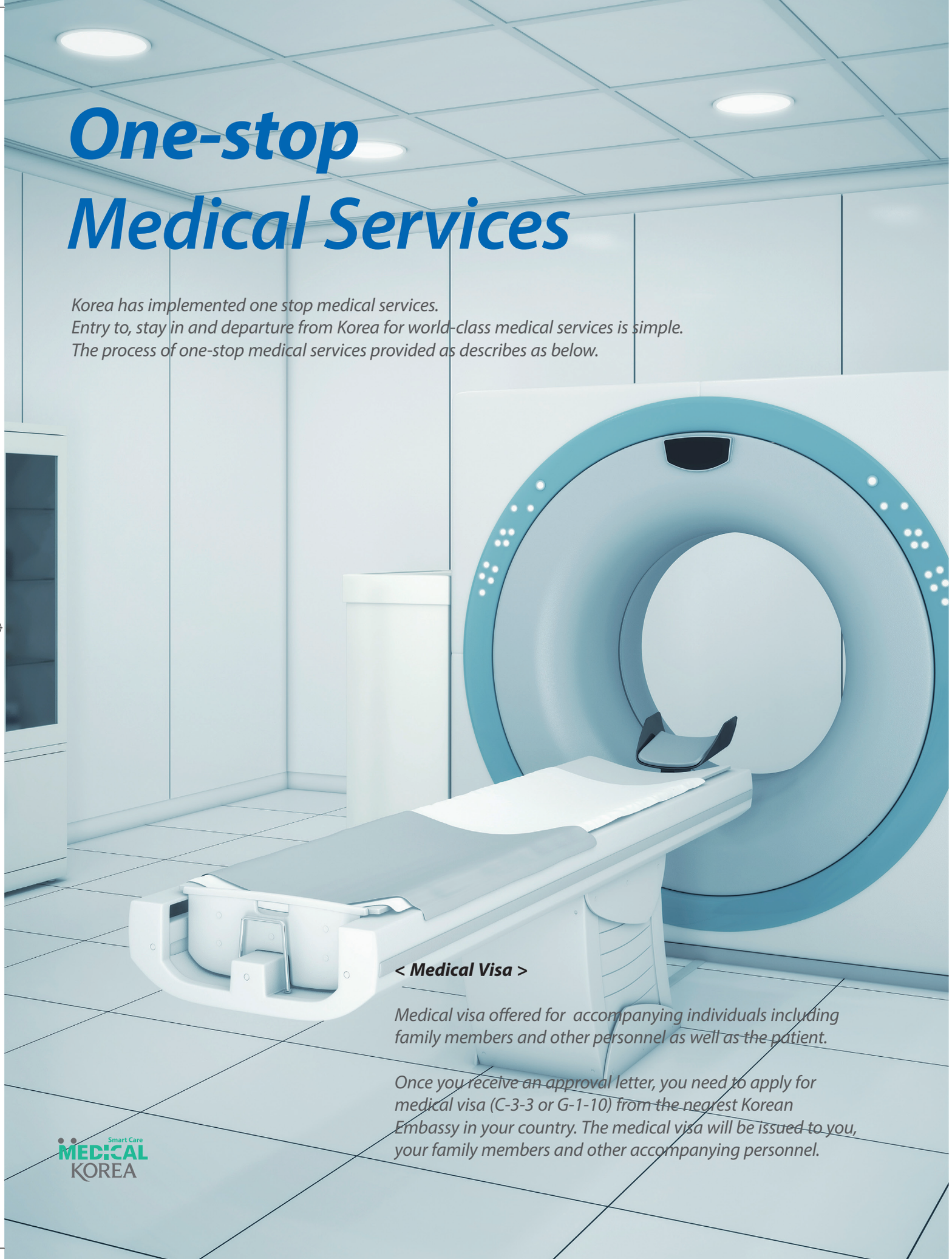
*Developed nations have already increased their global health care market entry, while medical services exchange among nations has become greater. Securing utmost competitiveness in the global health care market has become one of the most critical national industry priorities.*
*Recognizing this importance, KHIDI has put significant efforts into the international growth of domestic medical service industry as well as overseas expansion of its health industry, including hospitals and the pharmaceutical industry. With a comprehensive support system, particularly with regards to information service and consulting related to overseas expansion and global network building, the institute continues to challenge restlessly towards achieving domestic health industry's 'Global Dream'.*


### *Contact information of KHIDI Overseas headquarters*

*U.S.A. (New York) 1-646-783-6090*
*Singapore (Singapore) 65-6884-7926*
*China (Beijing) 86-10-8531-0763*
*U.K. (London) 44-20-8528-1613*
*UAE (Abu Dhabi) 971-2-443-1565*
*Kazakhstan (Astana) 7-7172-79-0711*

# One-stop Medical Services

*Korea has implemented one stop medical services.*
*Entry to, stay in and departure from Korea for world-class medical services is simple.*
*The process of one-stop medical services provided as describes as below.*



**< *Medical Visa* >**

*Medical visa offered for accompanying individuals including family members and other personnel as well as the patient.*

*Once you receive an approval letter, you need to apply for medical visa (C-3-3 or G-1-10) from the nearest Korean Embassy in your country. The medical visa will be issued to you, your family members and other accompanying personnel.*

Smart Care MEDICAL KOREA

## *One-stop Medical Services for Foreign Patients*

### *Pre-arrival*

*Real-time Online System & Concierge Services*


*One-click Medical Portal Website for medical information, consultation and reservation.*

*http://www.medicalkorea.or.kr/*

*After treatment reservation is confirmed Korean hospital will send a concierge service request.*

### *On Arrival*

*Fast Track Immigration & Airport Pick-up*

*Fast Track Immigration Services are available at Incheon airport.*


*Ambulance accompanied by medical staff and accommodation transfer is provided with request*

### *During Stay*

*Customized Services for Patients and Families*

*< Medical Services >*

*Medical related services are provided by each designated hospitals such as escort to medical appointments and examinations, interpretation(Arabic, English, Korean, etc.)*


*< Non-Medical Services >*

*Center for Middle East provides Non-medical Services such as visa extension, 24/7 medical call, help desk, monitoring and reporting for patients and family.*

### *Post-departure*

*Post-care Services*

*U-Healthcare System allows medical care staying cooperated with patients' doctor in their home countries*
*Temedicine centers to strengthen post-care services*

# ACTIVITIES OF MEDICAL KOREA



## 2007

03 *Established the Council for Korea Medicine Overseas Promotion(CKMP) as Public-Private Joint Conference Group*
05 *Hosted CKMP promotion program in L. A.*
09 *Hosted the 1st FAM Tour (5 countries)*
11 *Hosted the 2nd FAM Tour (3 counries)*
11 *Signed MOU with Thailand Center of Excellence for Life Sciences (TCELS)*

## 2008

03 *Participated in Medical Tourism Asia 2008 Exclusive Conference as a Bag Sponsor*
05 *Signed MOU with MTA (Medical Tourism Association), USA*
05 *Hold 2008 Korea Medical Tourism Conference*
08 *Signed MOU with the Ministry of Health of Peru*
09 *Signed MOU with China Entrepreneur Health Project(CEHP)*
09 *Supported World Medical Tourism and Global Health Congress 2008 (San Francisco)*
10 *Signed MOU with Government of Ontario, Canada*
10 *Signed MOU with Montgomery County, USA*
10 *Opening of the Overseas Headquarters (KHIDI-USA,KHIDI-Singapore, KHIDI-China)*
11 *Signed MOU with JETRO, Japan*
11 *Established APEC Harmonization Center in Korea*
11 *Hosted 2008 Korea International Medical Travel Convention (KIMTC)*

*2008 World Medical Tourism*

# 2009

- 03 Hosted the Korean Medical FAM Tour
- 04 Hosted 2009 Global Healthcare Conference
- 05 Revised Medical Services Actand started the Registration forattracting foreign patients
- 05 Opened Medical Korea Information Center
- 06 Hosted the Korean Medical FAM Tour
- 07 Hosted the Promotion for the Korean Medicine in the USA
- 07 Signed MOU with the Chinese Medical Doctor Association(CMDA) for the cooperation in healthcare
- 07 Signed LOI with United Health International
- 10 Supported World Medical Tourism and Global Health Congress 2009 (Los Angeles)
- 10 Hosted 2009 Korea International Medical Travel Convention (KIMTC)
- 10 Broadcasting promotion documentary film at KBS World channel for Korean (70 countries)
- 12 Hosted 'Smart Care, Medical Korea' Brand declaration event
- 12 Signed LOI with the President's Affairs Medical Center of the R Kazakhstan. (PMCRK)
- 12 Reached 60,201 foreign patients in 2009

# 2010

- 04 Singed MOU with the President's Affairs Medical Center of the R Kazakhstan.(PMCRK)
- 04 Hosted Global healthcare & Medical Tourism Conference2010
- 04~07 Hosted the 1st Medical Korea Academy program
- 04~12 Hosted the Korean Medical FAM Tours (total 11 countries,116 persons)
- 09 Hosted Korea-Kazakhstan Korean Medical promotion & Seminar
- 09 Supported World Medical Tourism and Global Health Congress 2010 (Los Angeles)
- 09~12 Hosted the 2nd Medical Korea Academy program
- 10 Supported World Medical Tourism & Global Healthcare Congress
- 10 Hosted 2010 Korea International Medical Travel Convention (KIMTC)
- 11 Signed MOU with Huston. USA
- 12 Hosted Korea-China Medical exchange Seminar in Beijing
- 12 Reached 81,789 foreign patients in 2010

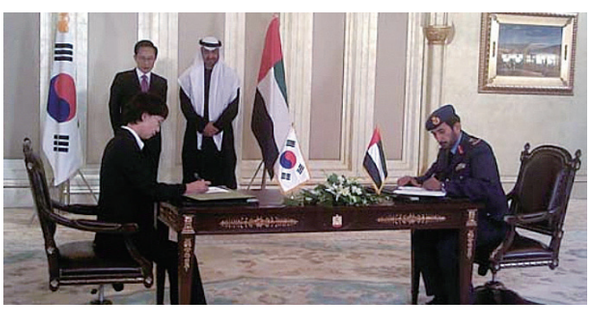

Launching the Medical Korea Brand

# 2011

02 Signed MOU with the Department of health of Primorsky Territory
03 Signed MOU with the Ministry of UAE, the HAAD and the DHA
04 Hosted 2011 Medical Korea Conference
04~09 Hosted the Korean Medical FAM Tours (total 10 Countries, 76persons)
06 Signed MOU with CIGNA International Corporation (Giobal Insurance company)
08 Supported the Seoul convention hosted by Korea American Medical Association(KAMA)
10 Supported the 4th World Medical Tourism & Global Healthcare Congress 2011(Chicago)
10 Hosted Health Seminar for US Asian (US Headquarter)
10 Hosted Medical CharityProgram
11 Hosted 2011 Korea International Medical Travel Convention (KIMTC)
11 Signed Agreement with the HAAD (Health Authority - Abu Dhabi)
11 Hosted Korea-China Medical exchange Seminar in Seoul
12 Reached 122,297 foreign patients in 2011

# 2012

01 Signed MOU with CIGNA INTERNATIONAL
04 Hosted 2012 Medical Korea Conference
04 Signed MOU with Wellness Center of Massimov
05 Hosted Medical Korea in UAE (Opening ceremony of Pre-Post Care Center)
05 Hosted '2012 Medical Korea in Central Asia' in Kazakhstan and Uzbekistan
05 Signed MOU with Medical center of Presidents Affairs Republic of Kazakhstan
05 Signed MOU with UZBEKISTAN MEDICAL ASSOCIATION
05 Signed MOU with DAMAN(UAE National Insurance Company) for the Direct billing contract between UHI and Korean Hospitals
05 Contracted Hospital Service between Health Authority - Abu Dhabi and Korean hospitals
06 Signed MOU with Educational Clinical center of Kazakhstan
09 Signed MOU with Index Holdings(UAE)
10 Hosted the Promotion for the Korean Medicine in the Indonesia
11 Hosted the Medical Korea–Kazakhstan Project 2012
11 Hosted the Promotion for the Korean Medicine in the USA
11 Signed MOA with UAE Armed Forces (Healthcare cooperation)
12 Hosted the 4th Korea-China Medical exchange Seminar in Beijing
12 Reached 159,464 foreign patients in 2012



Signed MOU on healthcare cooperation with the UAE Armed Forces

# 2013

01 *Signed MOU with United Healthcare International for the Direct billing contract between UHI and Korean Hospitals*
02 *Signed MOU with World Vision for the Korean Medical Charity Program*
03 *Hosted Medical Korea and Cultural Event in Qatar and UAE*
04 *Hosted 2013 Medical Korea Conference*
04 *Signed MOU with UAE Armed Forces for the Healthcare cooperation*
04 *Signed MOU with Saudi Ministry of Health*
07 *Signed MOU with Aetna for the Direct billing contract between UHI and Korean Hospitals*
09 *Singed Implementation Plan on Medical Training Program with Saudi Ministry of Health*
09 *Hosted '2013 Medical Korea in Kyrgyzstan' in Kyrgyzstan*
09 *Signed MOU with CIGNA Corporation*
10 *Signed MOU with Republic of Buryatia, Russia*
11 *Hosted 'Korea-Kazakhstan Healthcare Investment Forum' in Kazakhstan*
11 *Signed MOU with Health Centre of the President of the Kyrgyz Republic*
11 *Signed MOU with Republican Center for Health Development of Kazakhstan*
11 *Hosted 'Korea Week 2013 in UAE' in UAE*
12 *Hosted the 5th Korea-China Medical exchange Seminar in Qingdao*
12 *Developed the Foreigner's Medical Exam Safety Insurance*
12 *Reached 211,218 foreign patients in 2013*

# 2014

02 *Singed MOU with Sharjah Health Authority(UAE)*
03 *Singed MOU with AstraZeneca (Oncology Research Program )*
04 *Hosted 'Korea-China Healthcare cooperation Forum' in Shaanxi Province*
05 *Hosted 2014 Bio & Medical Korea Conference*
05 *Singed Implementation Plan on Dentist Training Program with Saudi Ministry of Health*
05 *Signed MOU with VPS Healthcare Group(UAE)*
07 *Hosted 'Korea-China Healthcare cooperation Forum' (East-North Three in North-East China Province)*
07 *Singed MOU with Heilongjiang province(National Health and Family Planning Commission) of China*
09 *Singed MOU with UK Medical Research Council*
09 *Singed Agreed Minutes with Health Authority - Abu Dhabi*
09 *Singed MOU with Sichuan province(National Health and Family Planning Commission) of China*

*(Estimated) Reached 250,000 foreign patients in 2014*


*2014 Medical Korea Conference*


*Medical Korea Training for Saudi Arabia Physicicians*