Role of Government in Cancer Care in Korea

National Cancer Control Program
Overview, Progress, and Challenge

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Cancer Burden
Healthcare system
National Cancer Control Program in Korea
Korea Ranks High in Cancer Burden

- Cancer has been the leading cause of death in Korea ever since 1983


Korea Ranks High in Cancer Burden

Global (2018)
- Population: 7,633 M
- Incidence: 18.1 M
- Mortality: 9.6 M
- Prevalence: 43.8 M

Korea (2018)
- Population: 51 M (0.67%)
- Incidence: 277,075 (1.53%)
- Mortality: 86,281 (0.90%)
- Prevalence: 748,954 (1.70%)

Source: GLOBOCAN 2018, IARC
Distribution by Cancer Sites and Sex, 2015

(Unit: %)

1. Stomach
2. Lung
3. Colorectum
4. Liver
5. Prostate

(Unit: %)

1. Thyroid
2. Breast
3. Colorectum
4. Stomach
5. Lung
Summary of PAF of Causes in Korea for Both Sex 2009

<table>
<thead>
<tr>
<th>PAF</th>
<th>Smoking</th>
<th>Alcohol drinking</th>
<th>Infectious agents</th>
<th>Excess body weight</th>
<th>Physical inactivity</th>
<th>Reproductive factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incidence</td>
<td>11.9 %</td>
<td>1.8 %</td>
<td>20.1 %</td>
<td>1.8 %</td>
<td>0.7 %</td>
<td>1.6 %</td>
</tr>
<tr>
<td>Mortality</td>
<td>22.8 %</td>
<td>1.8 %</td>
<td>23.6 %</td>
<td>1.3 %</td>
<td>0.3 %</td>
<td>0.9 %</td>
</tr>
</tbody>
</table>

* The overall PAF of the listed factors (smoking, alcohol drinking, excess body weight and physical inactivity, infection, and reproductive factors) was calculated by taking into account the overlapping proportion for each factor.
Healthcare System in Korea

- Universal coverage, single payer system since 2000
- Value-based fee-for-service system with co-payment ceiling
- Lower co-payment and more benefits for cancer patients
Reducing the Cancer Burden
National Cancer Control Program

• How to reduce the cancer burden
  • Primary Prevention
    • Lifestyle modification
    • Education and Legislation
    • Vaccination for HBV and HPV
  • Secondary Prevention
    • Screening and Early Detection
    • Prevention of 2nd Primary among LTS
  • Better Treatment, “Precision Medicine”
    • Technical advances and New therapy development
    • QOL and End-of-Life Care
• Ultimate Goal: ↓ Incidence, ↓ Mortality, ↑ Survival

“March 21, Cancer Prevention Day”
Role of Government in National Cancer Control

- Planning and Governance
- Legislative Support
- Infrastructure & Capacity building
- Program Development
- Funding for Program Operation & Research

WHO Position on Cancer
Cancer is to a large extent Avoidable

- Many cancers can be prevented.
- Others can be detected early in their development, treated and cured.
- Even with late stage cancer,
  - the pain can be reduced,
  - the progression of the cancer slowed,
  - and patients and their families helped to cope.

Cited from Introduction to the Cancer Control Series of “Cancer Control: Knowledge into Action, WHO guide for effective programmes”, World Health Organization 2006


- Reduction of Cancer Burden
  - Incidence ↓
  - Mortality ↓
  - Survival ↑

Cancer Control Programs
- Primary prevention
- Onset
- Early Detection

Supportive Programs
- Registry & Evaluation
- Education & Advocating
- Expanding Capacities

Research
- Understand cancer biology/pathology
- Develop new diagnosis & treatment
- Provide evidence for policy-makers

Basic / Translational / Clinical / Policy
National Actions for Cancer Control in Korea

- 1989  National Cancer Center Plan formulated
- 1992  Construction of NCC hospital started
- 1996  First 10-Year Plan for Cancer Control (‘96~‘05)
- 1999  National Cancer Screening Program started
- 2000  National Cancer Center Act promulgated
- 2000  Set up Cancer Control Division in MOHW
- 2001  National Cancer Center opened
- 2003  Cancer Control Act promulgated
- 2004  MOHW designated Regional Cancer Centers
- 2006  Second 10-Year Plan for Cancer Control (‘06~‘15)
- 2010  “Cancer Control Act” totally revised
- 2016  Third 5-Year Plan for National Cancer Control (‘16~‘20)
Main Contents of Cancer Control Act

- Central and regional government must establish “Plan for Cancer Control” every 5 years
- Establish the National Cancer Control Committee
- Designation of March 21st (3-2-1) as “Cancer Prevention Day”
- Support for Cancer Research & New therapy development
- Start National Cancer Screening Program
- Home Care Service and Palliative Care for cancer patients
- Support for financial burden of cancer patients
- Cancer information Service, Epidemiology study
- Central and Regional Cancer Registry; Regional Cancer Center
- Merge of “National Cancer Center Act” (2010.5.31)
- Amend Cancer Registration law based on “Statistics Law”- exempt from “Personal Information Protection Law” (2015.12.29)

http://www.law.go.kr/법령/암관리법
10-Year Cancer Control Plans in Korea

**1st 10-Year Plan for Cancer Control (’96-’05)**
- Constructing Infra-structure of CC
  - Building Capacity of Cancer Control
  - Setting Program of Cancer Control

**2nd 10-Year Plan for Cancer Control (’06-’15)**
- Operating CC Program effectively and efficiently
  - ↓ Cancer mortality by 19.4 %
  - ↑ 5-year Survival rate from 45.9% to 54.0%
Building Hardware for NCC
Major Functions of NCC Korea

RESEARCH
Creating a new Frontiers in Cancer Research

PATIENT CARE
Setting the best example of quality patient care through Innovative clinical practices

EDUCATION & TRAINING
Raising the next-generation of cancer specialists

SUPPORT for Nat’l Cancer Control Programs
‘Think & Do Tank’ in formulating & implementing national cancer control programs

National Headquarters in Conquering Cancer
Constructing Infra-structure
12 Regional Cancer Centers (RCCs)

* 12 RCCs were designated since 2004
* Financial and technical support by the Central and Local government (USD 20 million for each RCC)
  (National budget 50% : Local budget 20% : Hospital expense 30%)

<table>
<thead>
<tr>
<th>Year</th>
<th>Designation Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>Jeonbuk, Jeonnam, Gyeongnam</td>
</tr>
<tr>
<td>2005</td>
<td>Busan, Daejeon, Daegu/Gyeongbuk</td>
</tr>
<tr>
<td>2006</td>
<td>Gangwon, Chungbuk, Jeju</td>
</tr>
<tr>
<td>2011</td>
<td>Incheon, Gyeonggi, Ulsan (Functional)</td>
</tr>
</tbody>
</table>
Population-based Cancer Registry
Essential for Cancer Control Plan and Evaluation

Korea Central Cancer Registry (KCCR)

- Headquarters: NCC
- Started in 1980 as hospital-based cancer registry

Survey for NHI claims - Medical Record review for unregistered cancer cases

Coverage: Over 98% of all cancer cases

11 Regional Cancer Registry

- Busan
- Daegu/Kyongbuk
- Gwangju/Jeonnam
- Incheon
- Daejeon (Chungnam, Sejong)
- Ulsan
- Jejudo
- Kangwon
- Chungbuk
- Kyongnam
- Jeonbuk
Cancer Statistics

- Incidence (1999~2015)
- Survival (1993~2015)
- Prevalence reported since 2009 (‘06~’07)
- Survival by SEER stage since 2013 (‘06~’10)

Information Release

<table>
<thead>
<tr>
<th>Homepage URL</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://kccrsurvey.cancer.go.kr/index.do">http://kccrsurvey.cancer.go.kr/index.do</a></td>
</tr>
<tr>
<td><a href="http://stat.mw.go.kr/">http://stat.mw.go.kr/</a></td>
</tr>
<tr>
<td><a href="http://www.cancer.go.kr">http://www.cancer.go.kr</a></td>
</tr>
<tr>
<td><a href="http://ncc.re.kr">http://ncc.re.kr</a></td>
</tr>
<tr>
<td><a href="http://kosis.kr">http://kosis.kr</a></td>
</tr>
<tr>
<td><a href="http://www.index.go.kr/">http://www.index.go.kr/</a></td>
</tr>
<tr>
<td><a href="http://globocan.iarc.fr/">http://globocan.iarc.fr/</a></td>
</tr>
</tbody>
</table>

Cancer Statistics in Korea: Incidence, Mortality, Survival and Prevalence in 2015

Prediction of Cancer Incidence and Mortality in Korea, 2018


IICC-3: International Incidence of Childhood Cancer


Survival: colon, breast, cervix
Revised Objectives for the 2nd 10-Year Cancer Control Plan

Cancer Morality Rate
112.2 → 94.1 (88.0)

5-year Survival Rate
50.8 % → 54.0 % (67.8 %)
Age-standardized Cancer Incidence & Mortality Rates
All sites in Korea, 1983-2015

* Age standardization was based on the world standard population.

Cancer Res Treat. 2018;50(2):303-316
https://doi.org/10.4143/crt.2018.143
**Trends in Cancer Mortality Rates for Major Cancer Sites 1983-2015 in Korea**

Annual Age-standardized Cancer Mortalities of Selected Cancers

* Age standardization was based on the world standard population.

Cancer Res Treat. 2018;50(2):303-316
https://doi.org/10.4143/crt.2018.143
Trends in 5-Year Relative Survival Rates
All Cancers by Sex

National Cancer Statistics Korea 2015
http://www.ncc.re.kr/main.ncc?uri=english/sub04_Statistics
## Five-year Survival of Major Cancer Sites: Both Sexes

<table>
<thead>
<tr>
<th>Cancer Type</th>
<th>'93-'95</th>
<th>'96-'00</th>
<th>'01-'05</th>
<th>'06-'10</th>
<th>'11-'15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stomach</td>
<td>42.8</td>
<td>46.6</td>
<td>57.8</td>
<td>68.1</td>
<td>75.4</td>
</tr>
<tr>
<td>Colon and Rectum</td>
<td>54.8</td>
<td>58.0</td>
<td>66.7</td>
<td>73.5</td>
<td>76.3</td>
</tr>
<tr>
<td>Thyroid</td>
<td>94.2</td>
<td>94.9</td>
<td>98.4</td>
<td>99.9</td>
<td>100.3</td>
</tr>
<tr>
<td>Lung</td>
<td>11.3</td>
<td>12.7</td>
<td>16.5</td>
<td>20.1</td>
<td>26.7</td>
</tr>
<tr>
<td>Breast</td>
<td>77.9</td>
<td>83.2</td>
<td>88.6</td>
<td>91.1</td>
<td>92.3</td>
</tr>
<tr>
<td>Liver</td>
<td>10.7</td>
<td>13.2</td>
<td>20.4</td>
<td>28.1</td>
<td>33.6</td>
</tr>
<tr>
<td>Prostate</td>
<td>55.9</td>
<td>67.2</td>
<td>80.4</td>
<td>91.1</td>
<td>94.1</td>
</tr>
<tr>
<td>Pancreas</td>
<td>9.4</td>
<td>7.6</td>
<td>8.4</td>
<td>8.4</td>
<td>10.8</td>
</tr>
<tr>
<td>Gallbladder etc.</td>
<td>17.3</td>
<td>19.7</td>
<td>23.1</td>
<td>26.8</td>
<td>29.1</td>
</tr>
<tr>
<td>Kidney</td>
<td>62.0</td>
<td>66.1</td>
<td>73.6</td>
<td>78.4</td>
<td>82.2</td>
</tr>
</tbody>
</table>

### Table Notes:

1) Major sites selected based on 2015 crude rates

* difference in the cancer survival probability between '93-'95 and '11-'15
International Comparison of 5-year Relative Survival

Korea Ranked No. 1 for Cervix and Colorectal Cancer

※ Source: OECD Health Statistics 2013
# International Comparison of Five-year Relative Survival

<table>
<thead>
<tr>
<th>Cancer Sites</th>
<th>Korea ('96-'00)</th>
<th>Korea ('01-'05)</th>
<th>Korea ('11-'15)</th>
<th>USA¹) ('07-'13)</th>
<th>Canada²) ('06-'08)</th>
<th>Japan³) ('06-'08)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All cancers</td>
<td>44.0</td>
<td>54.0</td>
<td>70.7</td>
<td>69.0</td>
<td>60</td>
<td>62.1</td>
</tr>
<tr>
<td>Stomach</td>
<td>46.6</td>
<td>57.8</td>
<td>75.4</td>
<td>31.1</td>
<td>25</td>
<td>64.6</td>
</tr>
<tr>
<td>Colon and Rectum</td>
<td>58.0</td>
<td>66.7</td>
<td>76.3</td>
<td>66.2</td>
<td>64</td>
<td>71.1</td>
</tr>
<tr>
<td>Thyroid</td>
<td>94.9</td>
<td>98.4</td>
<td>100.3</td>
<td>98.3</td>
<td>98</td>
<td>93.7</td>
</tr>
<tr>
<td>Lung</td>
<td>12.7</td>
<td>16.5</td>
<td>26.7</td>
<td>18.7</td>
<td>17</td>
<td>31.9</td>
</tr>
<tr>
<td>Breast</td>
<td>83.2</td>
<td>88.6</td>
<td>92.3</td>
<td>90.8</td>
<td>87</td>
<td>91.1</td>
</tr>
<tr>
<td>Liver</td>
<td>13.2</td>
<td>20.4</td>
<td>33.6</td>
<td>18.1</td>
<td>19</td>
<td>32.6</td>
</tr>
<tr>
<td>Prostate</td>
<td>67.2</td>
<td>80.4</td>
<td>94.1</td>
<td>99.3</td>
<td>95</td>
<td>97.5</td>
</tr>
<tr>
<td>Pancreas</td>
<td>7.6</td>
<td>8.4</td>
<td>10.8</td>
<td>8.5</td>
<td>8</td>
<td>7.7</td>
</tr>
<tr>
<td>Cervix uteri</td>
<td>80.0</td>
<td>81.4</td>
<td>79.9</td>
<td>68.8</td>
<td>73</td>
<td>73.4</td>
</tr>
</tbody>
</table>


²) Canadian Cancer Society, Statistics Canada and Provincial/Territorial Cancer Registry. Canadian Cancer Statistics 2017

³) Center for Cancer Control and Information Services, National Cancer Center, Monitoring of Cancer Incidence in Japan - Survival 2006-2008 report 2017

National Cancer Statistics Korea 2015
http://www.ncc.re.kr/main.ncc?uri=english/sub04_Statistics
Recent Progress in National Cancer Control Activities in Korea
Primary Prevention
Cancer Information Services

- **Website**
  - Users: 1.2 million / year
- **Call centers**
  - Callers: 55 thousand
- **Social media**
  - Facebook: 13 thousand
  - Twitter: 26 thousand
  - Blog: 1.3 million
Strengthening control of preventable risks
10 codes for cancer prevention in Korea (updated in 2015)

- Don't smoke and avoid smoke-filled environments
- Consume sufficient amounts of fruits and vegetables and balance your diet with a wide range of healthy foods
- Limit your salt intake from all sources, and avoid burnt or charred foods
- Avoid alcohol consumption for cancer prevention
- Engage in at least 30 minutes of regular, moderate physical activity on most days of the week
- Maintain your body weight within a healthy range
- **Ensure vaccination against HBV & HPV as schedule**
- Engage in safe sexual behavior to avoid sexually transmitted diseases
- Follow all health and safety instructions at work places aimed at preventing exposure to known cancer-causing agents
- Undergo routine check-ups following the cancer screening programs
Practical guidelines for cancer prevention

- For public education with the evidence based information
- For Positive behavior change with the advocacy

Practical guidelines for 10 major risk factors of cancer development

Practical guidelines for prevention of 11 major cancers
Campaigns for cancer prevention

- Cancer Prevention Day (21st March)
- Mass media campaign
- Off-line campaign
- Dissemination of campaign materials
Implementation of FCTC Guidelines

- Adoption of various tobacco control policies and programs since ratification of WHO FCTC in 2005
- Adult smoking prevalence (19 years or more): 39.3%(M), 5.5%(F), 4% reduction among male in 2015 mainly due to tax increase

> Smoke-free law and campaign

- Internet Cafe
- Restaurant
- Pub & Bar

Selection of Warning Labels
March 31, 2016
To be implemented on 12/23/2016

Media campaign on tobacco harm and offering cessation
Adult population smoking daily by gender
2015 (or nearest year)

Source: OECD Health Statistics 2017
HBV Vaccination: Primary Prevention of HCC

In 1985, started on a temporary basis
In 1995, included in Nationwide Childhood Immunization

Shift in HBsAg-Positivity Rates by Age Group

# Screening and Early Detection

## National Cancer Screening Program

<table>
<thead>
<tr>
<th>Cancer</th>
<th>Age</th>
<th>Interval</th>
<th>Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stomach</td>
<td>≥40</td>
<td>2 years</td>
<td>Gastro-endoscopy or UGI</td>
</tr>
<tr>
<td>Liver</td>
<td>≥40 high risk group*</td>
<td>6 months</td>
<td>Liver sonography &amp; AFP</td>
</tr>
<tr>
<td>Colorectum</td>
<td>≥50</td>
<td>1 year</td>
<td>FOBT, if positive → colonoscopy or DCBE</td>
</tr>
<tr>
<td>Breast</td>
<td>≥40, women</td>
<td>2 years</td>
<td>Mammography &amp; CBE</td>
</tr>
<tr>
<td>Cervical</td>
<td>≥20, women</td>
<td>2 years</td>
<td>Pap smear</td>
</tr>
</tbody>
</table>

* 40 & over with HBsAg positive or anti-HCV positive or liver cirrhosis
** Revised & implemented in 01/2016
Milestones of NCSP in Korea

1999  Started with screening for stomach, breast, cervix cancer for Medicaid recipients (low-income group)

2002  Target population expanded to cover the NHI beneficiaries in lower 20% bracket

2003  Liver cancer added NCSP and target population expanded to cover the NHI beneficiaries in lower 30% bracket

2004  Colorectal cancer added to NCSP

2005  Target population expanded to cover the NHI beneficiaries in lower 50% bracket (Overall coverage rate : 56%)

2015  Screening Guidelines were revised to
- shorten the liver cancer screening interval to every 6 months
- lower the starting age for Pap smear to ≥20 years
- add LD-CT for lung cancer screening for high-risk smokers
- NOT recommend thyroid cancer screening for general public
Pilot Project for LD-CT Screening for Lung cancer

- Government supported a pilot project using Health Promotion Funds in 2017~18
- Feasibility and effectiveness of LD-CT screening are evaluated among heavy smokers

Preliminary results (2018.03)
- 5,719 screened, 29 found lung cancer
- 56% (14/25) had stage I or II cancer (vs. 21% for historical control)


NLST results

20.0% reduction in lung cancer deaths (95% CI 6.8~26.7) (p=0.004)
Managed by 2 systems depending on cost coverage

- Lower 50% of income level & Medicaid: National Cancer Screening Program (Without payment)
- Upper 50% of income level: NHI Cancer Screening Program (NHI beneficiaries)
Performance of NCSP of Korea
Increase in Organized Screening 2004-2016

Source: Cancer Facts and Figures, 2017
Cancer Screening Compliance Rates
Screening per NCSP Guidelines

Source: Cancer Facts and Figures, 2016
Changes in Reasons for Not Undergoing Cancer Screening 2004-2016

Source: Cancer Facts and Figures, 2017
Challenges of NCSP

- Increasing the screening rate
- Evaluating and improving the quality of screening
- Evaluating the effectiveness of the screening program
- Modifying the pitfalls in the management of the people with abnormal findings and “over-diagnosis”
- Assessing the cost-effectiveness
Preferred Modality for Gastric Cancer Screening 2002-2011

Endoscopy is more preferred than UGI.
(from 31.2% in 2002 to 72.6% in 2011)

Upper Endoscopy Reduced Gastric Cancer Mortality in Comparison with Never-screened Individuals

**ORs of death from gastric cancer**
- 0.79 (95% CI, 0.77–0.81) for ever-screened

**0.53 (95% CI, 0.51–0.56) for Endoscopy**
- 0.98 (95% CI, 0.95–1.01) for UGI Series

As the number of Endoscopic screening ↑, ORs decreased.

https://doi.org/10.1053/j.gastro.2017.01.029

Gastroenterology 2017;152:1319–1328
Colonoscopy is Preferred Follow-up Procedure after Positive FOBT Result

* DCBE : Double contrast barium enema
Trends in Age-standardized Incidence of Selected Cancers in Men 1999-2015

![Graph showing trends in age-standardized incidence rates for selected cancers in men from 1999 to 2015.](image)

<table>
<thead>
<tr>
<th>Cancer Sites</th>
<th>Trend 1</th>
<th>Trend 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Period</td>
<td>APC (%)</td>
</tr>
<tr>
<td>Stomach</td>
<td>1999-2011</td>
<td>-0.4*</td>
</tr>
<tr>
<td>Lung</td>
<td>1999-2005</td>
<td>0.0</td>
</tr>
<tr>
<td>Colon and Rectum</td>
<td>1999-2011</td>
<td>5.8*</td>
</tr>
<tr>
<td>Liver</td>
<td>1999-2009</td>
<td>-1.9*</td>
</tr>
<tr>
<td>Prostate</td>
<td>1999-2009</td>
<td>13.5*</td>
</tr>
<tr>
<td>Thyroid</td>
<td>1999-2012</td>
<td>23.6*</td>
</tr>
</tbody>
</table>

1) Major sites selected based on 2015 crude rates

2) Age-standardized incidence Rate (ASR) was standardized to the Korean standard population (year 2000)
Trends in Age-standardized Incidence of Selected Cancers in Women 1999-2015

1) Major sites selected based on 2015 crude rates
2) * Age-standardized incidence Rate (ASR) was standardized to the Korean standard population (year 2000)
Most common cancers differ by country and region

Korea is the only country where thyroid cancer is the most common cancer among women

Why? Overdiagnosis!

Pitfalls of Cancer Screening

Source: GLOBOCAN 2018
http://gco.iarc.fr
The Increasing Impact of Overdiagnosis
Worldwide Thyroid Cancer Epidemic

Observed versus Expected Changes in Age-specific Incidence of Thyroid Cancer per 100,000 Women, 1988–2007

The magnitude of overdiagnosis in women between 1988 and 2007
228,000 cases in USA
65,000 in Italy
46,000 in France
36,000 in Japan
10,000 in Australia
7,000 in England and Scotland
6,000 in Nordic countries
(Denmark, Finland, Norway, and Sweden)

Among South Korean women, overdiagnosis accounted for approximately 77,000 extra cases of thyroid cancer between 1993 and 2007.

Breast Cancer Incidence Pattern in Korea Different from Other Countries

- The breast cancer mortality pattern in Korea is explained predominantly by a birth cohort effect.
Medical Care

Financial Aid Program for Cancer Patients

- Financial support to the lower income group
  - Medicaid recipients
  - Participants of NCSP
  - Under age 18

- Co-payment ceiling system

- Provide 30-70% of out of pocket medical expenditure
Palliative Care

- Supporting hospice care facilities
- Providing home-based care of Public Health Center
- Providing education program to the health care providers for palliative care
- Publishing cancer pain control guideline for providers and patients
Current and Future Challenges in NCCP in Korea
3rd National Cancer Control Plan ’16~’20

Mortality rate/100 thousand persons

- 2013: 90.4
- 2020: 82.3

Survival rate (%)

- 2013: 59.4%
- 2020: 64.0%

Based on the cancer registry data and estimation with joint point regression model

- Cancer surveillance & establishment of big data
- Quality assurance in primary & secondary prevention
- Precision medicine
- Supporting survivors
- Research planning & implementation
Supporting programs for Cancer Survivors

- Supporting system for survivors: Health care, Social rehabilitation, Primary prevention, and early detection of second primary cancer

Prevalence counts 1,234,879

- Thyroid, 21.0%
- Stomach, 16.8%
- Colon and rectum, 14.0%
- Breast, 10.7%
- Lung, 4.3%
- Liver, 4.2%
- Prostate, 4.0%
- Cervix uteri, 3.5%
- Non-Hodgkin lymphoma, 2.1%
- Kidney, 2.1%
- Others, 17.3%

(Prevalence in 2015: 1,611,487 cases)
Cancer Big Data Initiative: Surveillance

Merging the data from each National Cancer Control Programs

ETL : Extract Transform Load, WAS : Web Application Server, WEB : Web Server
ODS : Operational Data Store, Temporary store
Outcome Research for Cancer Control Activities

NHIS
Data of Medical Use

NHIS
National Health Examination Data

KCCR
Cancer Registry data

NHIS
Cancer Screening data

KOSTAT
Data of Cancer death

Data of Hospice & palliative care use
A Prospective Placebo-controlled Intervention Trial to Evaluate the Effects of H. Pylori Eradication on Gastric Cancer was Launched in Collaboration with IARC

11,000 healthy adults
   Aged 40-65
   NCSP participants

Upper endoscopy with H. pylori test

H. pylori +
Randomization
N=6,600

H. pylori -

Group 1: H. pylori treatment
Group 2: Placebo
Unexposed group: No intervention

Follow-up for 10 years for gastric cancer incidence

Main comparison
Natural history

A written agreement was signed on March 4, 2014.
In EGC patients, *H. pylori* treatment could prevent metachronous gastric cancer.

**Placebo Group**
- 13.4% (27/202)

**Treated Group**
- 7.2% (14/194)

**Persistent**
- 14.0% (32/228)

**Eradicated**
- 5.4% (9/167)

Median follow-up: 5.9 years
GCSP wants to train future leaders specialized in cancer area and to build a global network particularly focused on Asia-Pacific and African region.
Between 2014-2018, 154 students entered

72 students graduated (39 M.P.H. and 33 M.S.)
In Closing,

- Firm commitment of government is the key for the success of national cancer control program (NCCP)
- National Cancer Registry is essential for planning and evaluation of NCCP
- National Cancer Screening is an effective and integral part of comprehensive NCCP
- The effects of cancer screening should be monitored and evaluated on a regular basis
- Pitfalls of over-detection of indolent cancers by screening should be avoided
Expansion Plan for NCC Korea

Thank you for your Attention!