Digital Gov’t System for COVID-19 TREATMENT

The Integrated Infectious Disease Management Information System

Donghan LEE, Ph.D. | Director, Division of Infectious Disease Control
Korea Disease Control & Prevention Agency
This course is designed to help you understand the integrated infectious disease management information system in Korea. We have built a unified system by integrating individual computing systems carrying out separate roles such as patient surveillance, epidemiological investigation, and patient management, and established one that provides citizens with the collected information related to infectious diseases. We also provided an automatic reporting system by linking the electronic medical record (EMR) of healthcare institutions.
Course Structure

1. Background/Process of System Development
2. Overview of Integrated Disease Management System
3. The Integrated Infectious Disease Management Information System
4. Automatic Infectious Disease Reporting Program
5. Infectious Disease Portal (for the public)
6. Outcome
Course Objectives

To learn the progress on establishment of the infectious disease management information system and background of building an integrated information system

To figure out the integrated infectious disease management information system

To understand the automatic infectious disease reporting system and the infectious disease portal
01 Background/Process of System Development

Emergence of novel infectious diseases and resurgence of infectious diseases

- Recent outbreaks of new types of infectious diseases such as COVID-19, MERS, avian influenza, etc.
- Resurgence of infectious diseases including Hepatitis A, Cholera, SFTS, Scrub typhus, Malaria, etc.

Limitations to provide the quality information and services regarding the prevention and control of infectious diseases due to separate operation of related departments

- Separated operation of information on infectious diseases as well as data analysis system
- Lack of interoperability of each information system

Necessity of management system for just-in-time response

- A need for an adequate information base to respond to changes in infectious disease prevention management activities
- A need for an integrated information management system for prompt response in time of emergency
01 System Development Progress

1995  ● Developed the infectious disease mandatory reporting system

2002  ● Developed the sentinel surveillance network

2003~2014  ● Developed the pathogen surveillance system for contact tracing and surveillance using DNA fingerprinting (Pulse Net)

2010  ● Developed the sentinel surveillance system on infectious ocular diseases, influenza, and healthcare-associated infections
        ● Developed the vector surveillance network
        ● Developed the epidemiological investigation system

2011  ● Developed reporting system for suspected cases of infectious diseases and mass outbreaks

2015~2017  ● Developed the infectious disease control integrated information system

2018~2019  ● Upgraded and develop the integrated infectious disease management information system
02 Overview of Integrated Disease Management System

Integrated Disease Management System

- Procurement mgmt.
- Performance mgmt.
- Quarantine mgmt.
- Bioethics information management
- Integrated information on infectious diseases
- Surveillance of people suspected of hepatitis C infection

Information system integrating 100 departments

Common
- Menu control
- Agency (dept.) control
- Homepage control
- User control
- Login / access control
- Authority control

Integrated DATABASE
- Integrated commonDB
- Integrated user DB
- Integrated agency DB
- WorkDB

Independent DATABASE
- CMSDB
- VSDDB
- PISDB

Secure screen access control system
- Session management
- User control

Integrated login system
- Integrated authority and menu

Public key certificate

User

- KCDC
- NIH
- Govt agencies/ city & provincial health depts.
- Health centers
- Hospitals, health institutions
- Quarantine station / Shipping companies / airlines
- Blood centers
- Etc.

Laboratory networks
- Lab devices

Link with internal servers
- Joint sharing of the infrastructure

Link with external servers
- Linked servers
  - Mobile verification
  - HIRA
  - Mobile messages
  - MOIS
  - MPSS
  - MOJ
The Integrated Infectious Disease Management Information System

Infectious disease control
- Internal user
  - KCDC
  - Internal network
  - Internal user channel
  - Internet
- External user
  - Health & Environment Research Institute
  - City/provincial health depts.
  - Health centers in cities, provinces
  - Medical institutions
  - External network
  - Data collection
    - Webpage (UR totalCount)
    - Linked solutions (Linking Agent)
    - Email
    - Document download

Integrated Disease Management System
- Surveillance system monitoring
- Status board (work activities)
  - Infectious disease statistical analysis
    - Disease index list
    - Statistics by disease, region
    - Annual statistics
    - Other support system statistics
    - Sentinel surveillance statistics
  - Influenza pandemic animals mgt.
  - Tracing/mgmt. of patients with COVID-19 infection
    - Quarantine/Isolation reporting/notice mgt.
    - Entrants status mgt.
    - Travel history mgt.
    - Baseline disease surveillance statistics
  - Mass outbreak reporting management
    - Daily reporting management
    - Mass outbreak management
    - Statistical management
    - Baseline data management
  - Infectious disease integrated DB
    - Patient monitoring DB
    - Epidemiological investigation DB
    - Pathogen identification DB
    - Patient management DB
    - Lab monitoring DB
  - Statistical DB

Infectious disease portal
- Data portal for public access regardless of platforms

Personal data protection
- Internal user access & log management
- Database encryption
- Building a security network
- Concluding the personal info. consignment agreement

External systems
- Link with external systems
  - MFDS
  - NFA
  - QIA
  - NMC
  - Data sharing
  - HIRA
  - MOE
  - Data Portal
Automatic Infectious Disease Reporting Program

Infectious disease report (mandatory reporting, sentinel surveillance, report on pathogen, request for test)

Previous way of auto reporting:
Maintain API, URL Link Service (parallel operation)

New way of reporting:
Developed a standard module

Web reporting
Infectious disease control integrated information system

FAX

Medical institutions

URL Link Service
Automatic infectious disease reporting system

Open API

Automatic reporting support program

Standard module

Epidemiological investigation
Mass outbreak management

Patient management
Infectious disease mgmt. by hospitals

Resource mgmt.
Infectious disease mgmt. regarding mass gatherings

Lab management
Infectious disease portal mgmt.

Link with other agencies, mgmt.
System management
Statistical status management
Program application/download
05 Infectious Disease Portal (for the public)

http://www.cdc.go.kr/npt/
**06 Outcome**

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<th>Medical Community</th>
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<td>- Vitalize infectious disease reporting</td>
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<td>- Reduce workload on infectious disease reporting</td>
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**Government**
- Increase report rate of infectious disease
- Improve effectiveness of infectious disease management

**Citizen**
- Check information on infectious disease in real-time

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**Early detection and blockage of outbreak and spread of infectious disease**

**Keep Korea safe and secure from disease threats**
Thank You