Digital Gov't System for COVID-19 QUARANTINE & TRACING

COVID-19 : SMART QUARANTINE SYSTEM

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The purpose of this course is to introduce the quarantine system of Korea, which has upgraded significantly since the outbreak of MERS in Korea in 2015.

Specifically, this lecture focuses on the country’s upgraded and flexible entry control system to prevent the inflow and spread of COVID-19 from foreign countries in response to the outbreak of the disease in 2020.

In addition, this course will help you understand the establishment and operation of smart infectious disease control and prevention system of Korea based on the linkage between the entry control system and infectious disease management measures of local communities.
Course Structure

1. What We Went through in MERS
2. What We Changed after MERS
3. Overview of SMART Quarantine System
4. Electronic Quarantine Inspection Unit
5. Status of COVID-19 Imported Cases
6. Effort to Flatten the COVID-19 Curve
7. Way Forward
8. #ThanksToYou
To introduce the quarantine system of Korea, which has upgraded significantly since the outbreak of MERS in Korea in 2015.

To find out the status of COVID-19 in Korea regarding confirmed cases come from abroad, entry screening responses, and countermeasures.
01 What We Went through in MERS

1 Patient #1, the first domestic MERS patient
14 Patient #14 spread the virus to more than 80 people
600Km Traveled by Patient #132 in search of negative pressure isolation room
186 Total MERS patients (39 of whom were hospital workers)
38 Total MERS deaths
23 Highest daily case count
19.35% Korea MERS case fatality rate
2,704 Kindergartens and schools closed
16,693 Total isolated
993,826 Level D PPE supplies provided
1,510,280 N95 masks supplied

Reorganize the National Disease Prevention and Control System and the Entry Screening System of immigration office
## What We Changed after MERS

<table>
<thead>
<tr>
<th>Before MERS (2015)</th>
<th>After MERS</th>
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<tbody>
<tr>
<td><strong>Quarantine information system</strong></td>
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<tr>
<td>- General quarantine counter</td>
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<td>- Relied on passport information</td>
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<td><strong>Quarantine investigation</strong></td>
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<td>- Manual quarantine</td>
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<td><strong>Infrastructure</strong></td>
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<td>- Non-negative pressure units</td>
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<td>- Management of BL2 Lab</td>
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<td><strong>Communication</strong></td>
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<td>- Distribution of leaflets at the airport</td>
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<td><strong>Quarantine law revision</strong></td>
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<td><strong>Operation electronic quarantine unit with IT technology</strong></td>
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<tr>
<td>- Establishment of SMART quarantine info system</td>
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<td><strong>SMS service and providing travel history to medical institution</strong></td>
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<tr>
<td><strong>Electronic quarantine counter</strong></td>
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<tr>
<td><strong>More negative pressure units for patients</strong> (at Incheon International airport)</td>
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<tr>
<td><strong>Operation of diagnostic system for high-risk pathogens such as MERS</strong></td>
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<td><strong>KCDC Call Center (1339)</strong></td>
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<td><strong>Raising people’s awareness of overseas infectious disease</strong></td>
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<td><strong>Use of official blog and online communication meeting of university students</strong></td>
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03 Overview of SMART Quarantine System

Source: KCDC Quarantine Management Team
03 Overview of SMART Quarantine System

Traveler’s information | Quarantine in PoE | Monitoring during the latent period of infection diseases

- **Not-contaminated region**
  - Strengthened Quarantine (at hardstands)
  - General Quarantine (at checkpoints)

- **Contaminated region**
  - Fever Screening (Ear drum Thermometer)
  - Check Health Questionnaire
  - Go home

- **A person showing symptoms**
  - Sharing of traveler’s information: DUR(Health Insurance Review & Assessment Service) / Qualification inquiry for a person to be examined (National Health Insurance Corporation)

- **Report**
  - (KCDC Call Center #1339)

Source: KCDC Quarantine Management Team
03 Electronic Quarantine Inspection Unit

- Automatic temperature measurement
- Automatic storage: Health declaration
- Quarantine procedure reminder

- Automatic closed contact generation
- Rapid scanning of passport & securing residence
  * linking to the Ministry of the Interior and Safety
- Automatic notification of closed contact list for KCDC, city and province
- Automatic SMS service for entrants

Pictures provided by KCDC Quarantine Management Team
## Electronic Quarantine Inspection Unit

### General Quarantine Unit

### Electronic Quarantine Unit

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Time</th>
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<tbody>
<tr>
<td>Identification of closed contact</td>
<td>More than 4 hours</td>
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<tr>
<td>Notification to city and province</td>
<td>More than 1 hour</td>
</tr>
<tr>
<td>Securement contact list and sending SMS service</td>
<td>Manual</td>
</tr>
<tr>
<td>Sending time of SMS service</td>
<td>More than 1 hour</td>
</tr>
</tbody>
</table>

Images provided by KCDC Quarantine Management Team
04 Electronic Quarantine Inspection Unit

Video provided by KCDC Quarantine Management Team
05 Status of COVID-19 Imported Cases

| Weekly Confirmed COVID-19 Imported Cases |

* Source: COVID-19 status in Korea [Press Release], KCDC, July 1 (Wed), 2020
05 Status of COVID-19 Imported Cases

COVID-19: Imported Cases - Where they Were Confirmed

* Source: COVID-19 status in Korea [Press Release], KCDC, July 1 (Wed), 2020
05 Status of COVID-19 Imported Cases

| COVID-19 : Changes in the Number of Imported Cases by Country |

* Source: COVID-19 status in Korea [Press Release], KCDC, July 1 (Wed), 2020
05 Status of COVID-19 Imported Cases

| Confirmed COVID-19 imported cases per 10,000 entrants

* Source: KCDC Quarantine Management Team
06 Efforts to Flatten the COVID-19 Curve

Evolution of quarantine (entry screening) measures

*Source: Osong Public Health Research Perspectives 2020, 11(3):133-139*
06 Efforts to Flatten the COVID-19 Curve

COVID-19 Entry screening procedure (airport)

**With Symptoms**

- With symptoms
  - Get tested at port of entry
    - Positive
      - Hospital or temporary treatment center
    - Negative
      - **Domestic resident & Long-term traveler**
        - Home-quarantine
      - **Short-term traveler**
        - Quarantine at facility (active monitoring only by exceptions)

**Without symptoms**

1. Domestic resident & Long-term traveler

- Without symptoms
  - Home-quarantine (14 days)
  - Receive diagnostic test within 3 days of entry
    - Positive
      - Hospital or temporary treatment center
    - Negative
      - Home-quarantine

*Source: COVID-19 quarantine guidelines (9th edition), KCDC, July, 2020*
06 Efforts to Flatten the COVID-19 Curve

COVID-19 Entry screening procedure (airport)

Without symptoms

2 Short-term traveler

- Without symptoms
  - Get tested within quarantine station

  - Positive: Hospital or temporary treatment center
  - Negative: Home-quarantine

* Travelers are required to undergo diagnostic test within 3 days from the entry. As for the Incheon International Airport, their specimens are collected at open-type screening centers from 9AM to 7PM, and at temporary residential facilities from 7PM to 9AM

3 Persons eligible for self-quarantine exemption

- A1 (diplomat on duty), A2 (government official on duty), or with ‘self-quarantine exemption’ issued in advance prior to entering Korea

  - self-quarantine exemption
    - Get tested within quarantine station

    - Positive: Hospital or temporary treatment center
    - Negative: Active monitoring via self-health check app, call confirmation

* Source: COVID-19 quarantine guidelines (9th edition), KCDC, July, 2020
06 Efforts to Flatten the COVID-19 Curve

Special Entry Procedure

- **Entry**
- **Quarantine**

**Special Entry Procedure**

- Travel Record Declaration (contact, address in Korea etc.)
- Install self-health check app

Phone number checked on site

Quarantine confirmation certificate

Entry

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*Entry may be denied if contact information cannot be confirmed on site during Special Entry Procedure*
06 Efforts to Flatten the COVID-19 Curve

Monitoring through Self-health check app

Install and Open the app

Fill in the Special Quarantine Form

Proceed with Daily Self-health check

Check Local Screening Clinics
Plan to establish the ICT-based paperless quarantine inspection process for entry screening

**Before entry**
(Entrants) Install the self-health check app for entry
- Submit the information for quarantine declaration ➔ QR code generation

**During entry**
(Entrants) QR code scanning
(Inspector) Check the submitted data in quarantine declaration, designate the monitoring target (for self-health check and self-quarantine)
- (System) Send the isolation notice to each monitoring target via self-health check app or self-quarantine app
* Persons under self-quarantine are linked with self-quarantine system upon designation (in real-time)

**After entry**
- **Persons under self-quarantine** (via self-quarantine app)
- **Persons required to conduct self-health check** (via self-health check app)

**MOIS** (self-quarantine app system management), **MOHW, KCDC** (participate in activities to improve the app functions)
08 #ThanksToYou

# Thank you Medical Staff

# Thank you Public

Source: KCDC
Thank You
• KCDC, Quarantine activities guidelines, 2020.

• COVID-19 quarantine guidelines (9th edition), KCDC, July, 2020

• Osong Public Health and Research Perspectives 2020;11(3):128-132

• COVID-19 status in Korea [Press Release], KCDC (for official briefing)