CASE STUDY

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Preparing for the Pandemic: Strengthening Epidemiological Investigations in The Republic of Korea, 2015-20

KDI SCHOOL
KDI School of Public Policy and Management

PROJECT DATA

Author Yechan Moon	**Country** Republic of Korea
Region East Asia	**Sector** Health
Implementation Years 2015 to 2020	**Implementing Agencies** Korea Disease Control and Prevention Agency (KDCA), previously known as the Korea Centers for Disease Control and Prevention (KCDC)
Development Challenge Preventing the spread of infectious disease	**Delivery Challenges** Lack of Regulation or Legislation, Lack of Skilled Human Resources

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Executive Summary

When the epidemic of Middle East Respiratory Syndrome (MERS) hit the Republic of Korea in 2015, the government found that its infectious disease management system was woefully inadequate. At the time, the government faced legal limitations in collecting information to track how viruses spread from person to person and medical information (such as hospital admissions) about those infected. In addition, the country's epidemiological investigators—the officials tasked with tracking the spread of the virus—did not have the capacity to manage a large outbreak.

As a result of these constraints, MERS continued to spread through the population, infecting nearly 200 people nationwide. Following the MERS epidemic—which resulted in 38 deaths—the government realized it needed to establish a legal foundation for epidemiological investigation and boost capacity. In 2015, South Korea revised laws and laid the foundations for improved epidemiological investigations. When COVID-19 arrived in Korea in January 2020, epidemiological investigators were better prepared to track infections and prevent a widespread outbreak of the new infectious disease. Korea's case conveys the importance of a strong institutional basis for virus management.

This case study was prepared by Yechan Moon based on desk research and fieldwork carried out in 2021. The case study was supported by the Korea Development Institute School of Public Policy and Management, and is aligned with the case study program of the Global Delivery Initiative. Many people assisted in the preparation of this case study; the author would like to thank in particular the stakeholders interviewed during fieldwork, who generously shared their time and insights about the program.

Introduction

In 2003, when an outbreak of a new and deadly disease called Severe Acute Respiratory Syndrome (SARS) devastated East Asia, the Republic of Korea recognized that preventing epidemics needed to become a major national priority. The National Assembly took steps to create a legal basis for responding to infectious diseases, and quickly conducted a revision of the Quarantine Act, a law that aimed to prevent epidemics and protect the public from infectious diseases. In line with the revised law, the government established an independent institution for managing epidemics called the Korea Centers for Disease Control and Prevention (KCDC), which became operational in 2004. KCDC was the main agency handling all types of infectious diseases in Korea.

The agency faced its first major test in 2015, when Korea experienced an outbreak of Middle East Respiratory Syndrome (MERS), a disease caused by MERS-CoV, a coronavirus. Though the KCDC wanted to inform the public and had the capacity to do so, it could not release information on MERS patients and the medical institutions they visited to the public as the law did not allow it to do so. With little information on the virus publicly available, rumors and fake news spread like wildfire. One commonly believed myth was that the virus could spread from person to person while traveling on the subway, but the virus could not spread through the air and only spread from person to person through very close contact.

The Ministry of Health and Welfare underestimated MERS' infectiousness and allocated few human resources to the initial response. In particular, there were problems with epidemiological investigations. An epidemiological investigation involves tracking the cause of infection, how the virus spreads from person to person, and collecting medical records from confirmed cases. Health workers can then test and isolate infected individuals, thus limiting the number of people the virus can spread to. At the time of MERS, a lack of investigators meant the ministry was unable to manage the volume of suspected cases.

Government messaging claimed that risk from the virus was low, but that message did not reflect the situation on the ground. From May to December 2015, 186 people caught MERS and 38 people died (Ministry of Health and Welfare, 2016), and the Korean public felt threatened by the virus. Ultimately the public lost trust in the government's response to the disease.

The experience of MERS was an opportunity to recognize the importance of epidemiological investigations and reorganize the country's system for managing future disease outbreaks.

Delivery Challenges

After MERS, the government had to overcome two main delivery challenges to prepare for the next infectious disease outbreak.

Lack of Regulation or Legislation

Epidemiological investigators aimed to identify the movement of those infected and identify any individuals at risk of contracting the virus. But due to an absence of legislation, the government was powerless to trace patients or collect information about them.

The government needed a legal basis for disclosure since patient information contained private information. Medical institutions rarely cooperated with the government because of fears that doing so could negatively impact their reputation or income. Existing laws were insufficient to force such institutions to disclose information.

Lack of Skilled Human Resources

Korea introduced an epidemiological investigator system in 1999, with the investigators beginning their work in 2000 following a pilot project. During the 2015 MERS outbreak, just 34 investigators had to track the spread of the virus across the country. Due to the lack of epidemiological investigators, it was difficult for the government to counteract the spread of the virus (Kim, 2015).

After MERS, the government recognized the need to expand epidemiological investigators for virus tracking. A survey of officials involved in the MERS response identified 'expanding epidemiological investigators' as the most important task to improve the response to new infectious diseases (Ministry of Health and Welfare, 2016).

Tracing the Implementation Process

Revising the Law to Allow Information Disclosure

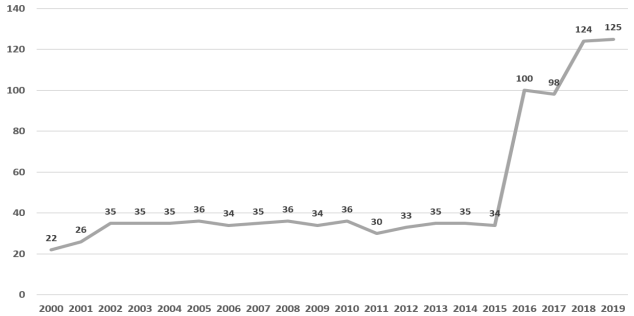
A major weakness in the MERS response was that there was no legal basis for epidemiological investigators to access information such as infection routes and medical records. To solve this problem, the national assembly changed the contents of the Infectious Disease Control and Prevention Act in cooperation with the Ministry of Health and Welfare. After the revision in June 2015, the government was able collect information on the route of patient movement, confirmed cases, hospital visits, and other information required for tracing viruses. The revised law also allowed the government to disclose information related to confirmed infectious diseases and to establish hospitals specializing in infectious diseases.

Meanwhile, the government strengthened the protection of personal information by revising the law when the privacy issue regarding the tracking of confirmed people arose in the COVID-19 Pandemic. Through the Act's revision in December 2020, the government decided to exclude personal information such as name, gender, age, and specific address unrelated to infectious diseases.

Expanding Capacity for Epidemiological Investigations

Revision of the law also addressed the issue of epidemiological investigators. The number of epidemiological investigators was expanded from 34 in 2015 to 125 in 2019 (see Graph 1), with the related budget increasing from 700 million won (about US$600,000) to 2 billion won (about US$1,700,000). The government also strengthened the expertise of epidemiological investigators by providing training courses on data analysis and statistics, infectious disease diagnosis, and epidemiological investigation case review. At least one epidemiological investigator in the city or province had to have experience working as a doctor. By February 2020, there were 134 investigators working nationwide.

Graph 1: Number of Epidemiological Investigators



Reference: Korea Disease Control and Prevention Agency (2020)

Responding to the COVID-19 pandemic

In early 2020, a new infectious disease called COVID-19 began spreading globally, and the KCDC was quick to respond. The agency held daily briefings to deliver information on COVID-19 beginning in January and confirmed the number of cases and deaths every day. Epidemiological investigators gathered information on the spread of virus and provided accurate information. The briefing also conveyed important public health information, including recommendations to practice social distancing and mask wearing.

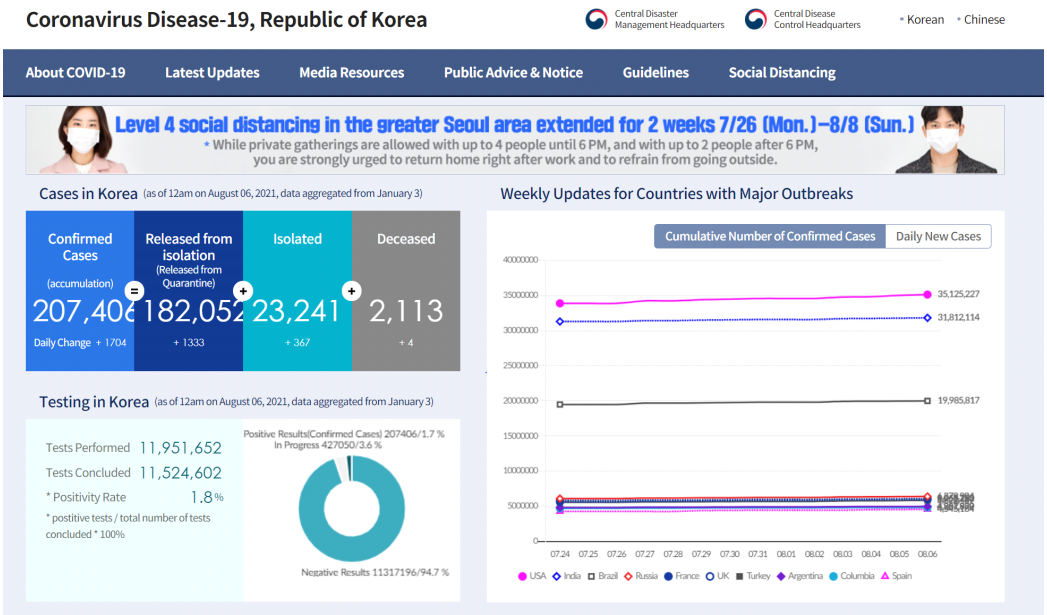
After the revision of the law, the government could collect information from confirmed cases and the government also operated a COVID-19 monitoring website that provided comprehensive information on the status of confirmed cases and mask supply from medical institutions, daily briefing issues, and fact checked COVID-19-related rumors (see Image 1). In addition, the website continuously updated the movements of confirmed cases of COVID-19. The KCDC also sent geo-targeted mobile messages to citizens with information on confirmed cases including dates and places visited.

Outcomes

Korea's experience responding to COVID-19 in 2020 showed that it had overcome the lack of legislation and skilled human resources that had hampered its response to MERS. "South Korea's rapid response to coronavirus has been attributed to MERS lessons," said Cheon Kwon Yoo, director of the KCDC, which changed its name to the Korea Disease Control and Prevention Agency in late 2020.

Korea's COVID-19 response showed improvements in the government's epidemic management system. The government reported information on confirmed cases quickly. In addition, citizens could access information through text messages and on a specific COVID-19 website. Easily accessible information enabled the public to avoid the particular places patients had visited.

Image 1: COVID-19 Monitoring Website



Reference: COVID-19 Monitoring Website

Publicly disclosing information on infected individuals did raise concerns regarding patient privacy however, so in December 2020 the government strengthened the protection of personal information by revising the law to exclude personal information such as name, gender, age, and addresses from any information being disclosed. Furthermore, through rapid information disclosure, Korea minimized the number of confirmed cases compared to other countries in the initial phase

Lessons Learned

Forward-thinking legal changes laid the foundation for improved epidemiological investigations

When MERS hit Korea in 2003, a lack of legal basis for epidemiological investigations hampered the government's ability to respond effectively to the epidemic. Following MERS, the government prepared for future disease outbreaks by revising the law to allow information disclosure for virus management. Those law changes meant Korea was able to respond quicker and more effectively when the COVID-19 pandemic hit.

A well-prepared epidemiological investigation system reduced the need for more-restrictive public health measures

Many countries enacted strict measures to reduce the spread of COVID-19, for example by imposing stringent lockdowns with fines for violations. However, in Korea, the spread of the virus could be continuously tracked through epidemiological investigations. As a result, the Korean government did not need to use lockdowns and avoided the extreme reduction in economic activity that lockdowns caused.

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