Korea-WBG Partnership on COVID-19 Preparedness and Response

Case Study of the Republic of Korea
Epidemiology & Socio-economic impact of the COVID-19
Preparedness
Response
COVID-19 and the progress of UHC
Lessons for other countries
On January 20, 2020, the first COVID-19 case was confirmed

'Social Distancing Policy' instead of a draconian lockdown was introduced on February 29, 2020
  • The number of daily confirmed cases rapidly increased due to local outbreaks, exceeding 10 per million people

Vaccination started on February 26, 2021

A ‘Gradual Return to Normal’ strategy was implemented from November 1, 2021
  • The number of daily confirmed cases increased to 30 per million people in September and to 50 per million people in October

The recent outbreak of Omicron variant dwarfed the previous waves, with the number of daily confirmed cases reaching almost 8,000 per million people in March 2022
Epidemiology of COVID-19

Figure 1. COVID-19 pandemic and government measures in South Korea

Note: The red box represents two national holidays in Korea: the Lunar New Year holidays in the first half and the Chuseok (thanksgiving) holidays in the second half of the year.
Source: The authors processed raw data from Korea Disease Control and Prevention Agency (KDCPA) and Our-World-in-Data (OWID)
Epidemiology of COVID-19
International comparison

As of April 19, 2022, South Korea had relatively low case fatality rate (0.13%) after the surge triggered by the Omicron variant.

Cumulative confirmed cases per million were 323 thousand in South Korea and 64 thousand on world average, while total deaths per million were 419.4 in South Korea and 787.7 on world average.

Social distancing policy instead of lockdown mandates enabled continuous production activities and business cycle with support of relief funds.

Like other advanced countries, the Korean government’s fiscal policy has kept an expansionary stance to cushion the economic effects of the pandemic.

Economic activity, particularly exports of high-tech products, recovered shortly after the second quarter of 2020 as business cycle and international trade was maintained (Figure 5)

However, private consumption continued struggling across the year
Korea’s economic contraction in 2020 was smaller than in most OECD countries, with real GDP declining by 1 percent in 2020

- smaller than in most countries including: UK (-9.4%), India (-7.3%), South Africa (-6.4%), Thailand (-6.1%), Malaysia (-5.6%), Japan (-4.5%), US (-3.4%), and the world (-3.1%) (IMF, 2022)

- With substantial COVID-19 response measures, the overall fiscal deficit for 2020 widened to an estimated 4.1 percent of GDP (IMF, 2021)

Figure 4. Total cases and deaths by COVID-19 and GDP growth rate in 2021
Socioeconomic Impact of COVID-19

Figure 5. COVID-19 and economy recovery in Korea

Preparedness
Disease control mechanism

- Level 4 of the national infectious disease crisis was declared on February 23, 2020
  - Blue: level 1, attention
  - Yellow: level 2, caution
  - Orange: level 3, warning
  - Red: level 4, serious

- The Korean government has been sustaining a Central Disaster and Safety Countermeasure Headquarters (CDSCHQ), headed by the prime minister

- Korean Disease Control & Prevention Agency (KDCA), the former Korean Center for Disease Control & Prevention (KCDC), provides key technical information to CDSCHQ

- The pan-government crisis response system has pursued evidence-based policymaking with advisory committees, and strengthened autonomy of local governments
Preparedness
Legal framework and policy measures

- The **Infectious Disease Control and Prevention Act (IDCPA)** is the primary law to prevent, respond to, monitor, and evaluate infectious diseases in Korea, having designated specific roles and responsibilities to government bodies since **MERS outbreak in 2015**

- As the IDCPA law including underlying ordinances and rules was updated several times during the COVID-19 pandemic to facilitate flexible response and systematic adjustment including **data collection** from various sources (e.g., the Korean National Police Agency and telecommunication companies) and **information disclosure** to the public

- Based on the law, COVID-19 was classified as a first-class legal infectious disease, and diagnostic tests and medical services for suspected patients were provided free of charge. Moreover, the legal basis allowed the Korean government to deploy various measures including testing mandates, price control for public masks, and recruitment of epidemiological investigation personnel and healthcare providers during different phases of the pandemic
Preparedness
Health system

• There is no financial burden on patients for the tests and treatment of COVID-19 as they are exempt from copayments for communicable diseases, which the government is mandated to fund.

• Telemedicine had not been introduced in Korea prior to the pandemic of the COVID-19 mainly because of the opposition of the Korean Medical Association.
Response
Testing, tracing, treating, and vaccinating

- Vaccination started in late February 2021
- Intermittent shortage of vaccine supply
- Based on the vaccination roll-out strategy that prioritized the protection of high-risk groups and the social distancing policy based on testing and tracing, South Korea has been able to minimize the intensive care demand, infection transmission, and death toll.

Figure 7. Testing and treating trend against the COVID-19

Figure 8. Vaccination rates by the number of jabs

Response
Testing, tracing, treating, and vaccinating

Figure 9. Share of people considered fully vaccinated by country (as of April 19, 2022)


• As of April 19, 2022, 86.8% of people in South Korea were fully vaccinated
• KDCA defined classification criteria using the Modified Early Warning Score (MEWS) for encouraging diagnostic tests, monitoring clinical severity and facility availability, and assigning patients diagnosed with COVID-19.

• The Living Treatment Center (LTC) is a quarantine facility for low-risk or asymptomatic COVID-19 patients who are unable to self-isolate at home. Medical providers stayed at LTCs and checked vital signs twice a day to transfer patients to hospitals if their symptoms worsened.

Figure 10. Patient flow for confirmed cases of COVID-19

Since January 2020, Korean central and local governments have taken various measures to disclose real-time information to alert individuals a risk of viral transmission as well as inform them how to reduce the risk.

Three types of information have been disseminated to the public on a daily basis:

### Diagnostic Information

*To inform citizen of current status of COVID-19*

- Daily and cumulative numbers of newly tested, diagnosed, expired persons
- Daily number of those in quarantine and the release of quarantine, in treatment, and deaths
- Characteristics of infection clusters and investigation status
- Major indicators and values for risk management including basic reproduction number (R0) and positive diagnostic information

### Prognostic Information

*To deliver how to reduce the possibility of infection transmission and negative consequences*

- Key guidelines and recommendations
- Detailed information of how to get COVID-19 tests, treatments, and vaccinations
- New evidence regarding the effective measures such as mask wearing and ventilation

### Policy-related Information

*To encourage civil participation and protect affected or vulnerable population*

- Levels and rules of social distancing measures and related recommendations
- Legal, financial, and social supports for the affected population (e.g., emergency disaster relief funds)
- Policy changes regarding COVID-19 responses
Response
Information and Communication Technologies (ICTs)

• An integrated ICT-based network centered on the KCDC developed to establish a real-time information sharing system

• Smart Quarantine Information System (SQIS): using overseas roaming data information to find inbound passengers from high-risk regions and to review them during the period of potential latent infection

• Self-Diagnosis Mobile Application: to monitor signs and symptoms of inbound passengers and to provide them with quick clinical advice

• Cellular Broadcasting Service (CBS): Through cooperation with mobile carriers, to send emergency warning text messages on COVID-19 outbreaks to individual mobile phones for timely delivery of public information

• A digital entry-exit list system based on QR codes for infection-prone facilities introduced in June 2020

• A public mask-purchasing system was implemented through NHI’s DUR, which gave on-the-spot information on one’s purchasing history at any pharmacy

Response
Information and Communication Technologies (ICTs)

• Potential alternatives to or substitutes for screening stations were discussed to manage the consumption of physical and spatial resources and the risk of cross-infection

• **Drive-thru screening system** was introduced from a working group having ideas from drug distribution system in the event of bioterrorism

• In the case operated by the Seoul Metropolitan Government, it is known that up to 1,000 people can be tested a day

Table 1. Disaster Relief Funds as fiscal measures by the Korean government

<table>
<thead>
<tr>
<th>Time</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>4th</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 2020</td>
<td>September 2020</td>
<td>January 2021</td>
<td>March 2021</td>
<td></td>
</tr>
<tr>
<td>Budget</td>
<td>KRW 14.3 trillion</td>
<td>KRW 7.8 trillion</td>
<td>KRW 9.3 trillion</td>
<td>KRW 4.1 trillion</td>
</tr>
<tr>
<td>Revenue source</td>
<td>2nd supplementary budget + local taxes</td>
<td>4th supplementary budget</td>
<td>reserve fund</td>
<td>1st supplementary budget</td>
</tr>
<tr>
<td>Approach</td>
<td>Universal Payment (fixed amount per person)</td>
<td>Selective cash benefits and tax reductions</td>
<td>Customized package (include debts and loan support)</td>
<td>Extensive customized package (include voucher and scholarship)</td>
</tr>
<tr>
<td>Target group</td>
<td>General Population</td>
<td>Small business owners and vulnerable pop</td>
<td>Those who suffered enormous damage</td>
<td>Those experiencing severe income loss</td>
</tr>
<tr>
<td>Details</td>
<td>A cash payment of KRW250,000 (about USD 210) per household member to the householder’s account</td>
<td>* Cash benefits and tax reductions for: small business owners, households with preschool children, casual workers, freelancers, the unemployed, low-income households, corporate taxi drivers</td>
<td>* Beneficiaries and support methods are diversified to: home care workers, and business owners following the social distancing policy</td>
<td>* Beneficiaries and support methods are further extended for: chartered bus driver, street vendor, college student, tenant farmer, childcare leave worker, and agriculture-related worker</td>
</tr>
</tbody>
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Note: Authors summarized main points utilizing the government press release.
The UHC index is a composite index that covers all 4 areas of Reproductive, maternal, newborn and child health, Infectious disease control, Noncommunicable diseases, and Service capacity and access.

In 2019, out of 18 tracer indicators in 4 areas, Korea received the lowest score of 55 in 'smoking' in Noncommunicable disease.

There were 3 indicators that South Korea scored 100 out of 100: 'at least basic sanitation' in Infectious disease, ‘hospital bed density’ and ‘health worker density’ in Service capacity and access (WHO, 2019).

Figure 12. Changes in Health Expenditures by Type of Medical Institution

- Tertiary Hospital
- General Hospital
- Hospital
- LTC Hospital
- Clinic
- Dentist
- Traditional Medicine
- Public Health Center
- Pharmacy

2010 2019 2020 YoY rate CAGR (10^-19')

Change Rates

Health Expenditures (Billion US$)

Figure 13. Changes in Health Expenditures by Type of Ambulatory Clinic

- Internal Medicine
- Psychiatry
- Surgery
- Orthopedics
- Anesthesiology
- OB/GYN
- Pediatrics
- Ophthalmology
- ENT
- Dermatology
- Urology
- Rehabilitation
- GP
- Others

2010 2019 2020 YoY rate CAGR (10^-19')

Change Rates

Health Expenditures (Billion US$)

Note: Out-of-pocket payment for uninsured services were not included in the health expenditure.
Lessons learned
Best Practice

• A centralized control tower and coordination system between central and local governments were prepared from the previous experiences.

• The rapid response should be supported by the revisability of the legal framework.

• ICT innovations contributed to alleviating the burden on testing and tracing, operating living treatment centers (LTCs), and supply procurement.

• The patient classification system along with the designation of LTCs helped tremendously to reduce the burden on hospital facilities.
Lessons learned

Challenges

• Infodemic has put the policy measures at the risk of public mistrust and miscommunication
  • Side-effects of vaccination were exaggerated by some media and politicians to a great extent
  • It is imperative to restore the public's trust in the media to efficiently manage and cease the pandemic.

• The prolonged pandemic revealed some shortages of healthcare workers
  • It has been argued that not all beds for COVID-19 patients may be immediately operated mainly because of lack of health professionals
  • It is necessary to recruit and retain enough health manpower, and to ensure their efforts compensated properly and timely

• Acceptable risk should have been measured and agreed upon as early as possible to minimize the unequal socio-economic costs in addition to saving more lives
  • COVID-19 related policies may have negative effects on the health of the population through reduced income
Thank you