

Brief Report

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COVID-19 in South Korea: Proper Timing for Easing Mask Mandates After COVID-19 Vaccination

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Abstract

Objective: As of July 25, 2021, the Korea Disease Control and Prevention Agency reported 1,422 new coronavirus disease 2019 (COVID-19) cases, 188,848 total cases, and 2,073 total deaths (1.10% fatality rates). Since the first severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) case was reported, efforts to find a treatment and vaccine against COVID-19 have been widespread.

Methods: Four vaccines are on the World Health Organization's (WHO's) emergency use listing and are approved of their usage; BNT162b2, mRNA-1273, AZD1222, and Ad26.COVS.2.S. Vaccines against SARS-CoV-2 need at least 14 d to achieve effectiveness. Thus, people should abide by prevention and control measures, including wearing masks, washing hands, and social distancing.

Results: However, a lot of new cases were reported after vaccinations, as many people did not follow the prevention control measures before the end of the 14-d period. There is no doubt we need to break free from mask mandates.

Conclusions: But let us not decide the timing in haste. Even if the mask mandates are eased, they should be changed depending on the number of reported cases, vaccinations, as well as prevention and control measures on how circumstances are changing under the influence of mutant coronavirus.

The coronavirus disease 2019 (COVID-19) pandemic, which began in December 2019, spread rapidly across Asian countries in January and February 2020 and again after March 2020. COVID-19, caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), is characterized by fever, cough, and dyspnea.¹ As of July 25, 2021, the Korea Disease Control and Prevention Agency reported 1,422 new COVID-19 cases, 188,848 total cases, and 2,073 total deaths (1.10% fatality rates). Since the first coronavirus case was reported, efforts to find a treatment and vaccine against SARS-CoV-2 has been widespread in various areas. The clinical tests were chosen for a quick strategy to develop a treatment and conducted on previously approved or about to be approved antiviral or other drugs.² Within months after identifying the virus and its nucleotide sequences, several vaccine candidates were in a clinical test phase, thanks to efforts to find effective vaccines for COVID-19, including active cash aids on research and private-public partnership programs at an unprecedented speed.³

Four vaccines were on the WHO's emergency use listing and are approved for use: BNT162b2, mRNA-1273, AZD1222, and Ad26.COVS.2.S. The vaccines were examined for their immunogenicity and safety at phase 1 and 2 trials and identified their vaccine efficacy and adverse events at phase 3 trials. At phase 3 trials, Ad26.COVS.2.S was approved as single-dose, while the other 3 were approved as 2-dose vaccines (Table 1). The vaccines are all injected into muscles. Authorized vaccination ages are: BNT162b2 more than 16 y; mRNA-1273, AZD1222, and Ad26.COVS.2.S more than 18 y. South Korea approved BNT162b2 (Pfizer-BioNTech) and AZD1222 (AstraZeneca) among the 4. The committee on immunization practices reported as of 0 o'clock, July 25, a total of 16,891,553 people have received the first dose, and 6,858,588 are fully vaccinated (Table 2).

Under the continuing global COVID-19 pandemic, it is important to increase the number of persons immunized against SARS-CoV-2 in the population to achieve herd immunity and contain the spread. An antibody requires at least 14 d to be produced during natural immunity acquisition.⁴ Vaccines against the coronavirus also need at least 14 d to achieve effectiveness. Before this period, the antibody titer is not sufficient to protect vaccinated individuals. Thus, people should abide by prevention and control measures, including wearing masks, washing hands, and practicing social distancing.

After vaccinations began, a lot of new cases were reported, as many people probably did not follow the above-mentioned prevention control measures before 14 d had passed. In an elderly facility in South Korea, more than 50 people caught the virus as the vaccinated elderlies did not wear a mask before 14 d from vaccination.⁵

Table 1. Technical summary of current COVID-19 vaccines

	Vaccine name			
	BNT162b2	mRNA-1273	AZD1222	Ad26.COV2.S
Manufacturer	Pfizer-BioNTech	Moderna	AstraZeneca	Johnson & Johnson/Janssen
Platform	mRNA	mRNA	Viral vector (recombinant adenovirus, ChAdOx1)	Viral vector (human adenovirus serotype 26, Ad26)
No. of doses (schedule) Phase 3 KDCA guidance	2-dose (21 d) 2-dose (21 d)	2-dose (28 d)	2-dose (28 d) 2-dose (8 to 12 wk)	1-dose
Route	Intramuscular	Intramuscular	Intramuscular	Intramuscular
Approved age (y)	≥16	≥18	≥18	≥18
Cost per dose US EU	\$19.50 \$14.76	\$15.00 \$18.00	\$4.00 \$2.19	\$10.00 \$8.50
Administration conditions	2 to 25°C (6 hr)	Room temperature (6 hr)	2 to 8°C (48 hr)	Refrigerated (4 to 6 hr)
Transport conditions	2 to 8°C (5 d) −25 to −15°C (2 wk)	2 to 8°C (30 d)	2 to 8°C (6 mon)	2 to 8°C (3 mon)
Storage conditions	−80 to −60°C (6 mon)	−20°C (6 mon)	2 to 8°C (6 mon)	−25 to −15°C (24 mon)
Early, limited, or emergency use (as of March 26, 2021)*	Australia, Canada, EU, Iceland, Israel, Japan, South Korea, Switzerland, United Kingdom, US FDA, WHO, etc. (≥41 countries)	Canada, EU, Iceland, Israel, Switzerland, United Kingdom, US FDA, WHO, etc. (≥12 countries)	Australia, Canada, EU, Iceland, India, South Korea, United Kingdom, WHO, etc. (≥49 countries)	Canada, EU, Iceland, Switzerland, US FDA, WHO (≥8 countries)

Abbreviations: EU, European Union; KDCA, Korea Disease Control and Prevention Agency; US FDA, United States Food and Drug Administration.

*Alphabetical order.

Table 2. COVID-19 vaccination status (00:00, July 25)

Classification	Previous day cumulative total (A)	New vaccination (B)	Total vaccination (A+B)	Vaccination rate
1 st vaccination	16,864,512	27,041	16,891,553	32.9
Vaccination complete	6,847,646	10,942	6,858,588	13.4

Note: Source: The Korea Centers for Disease Control and Prevention.

Another issue is the detection of nonresponders. This is also called “breakthrough infection,” meaning that the virus breakthroughs the antibody. A Korean in his 30s was in Russia between March and May 6. He received the Russian vaccine Sputnik V second dose on April 24. He entered Korea on May 8 and tested positive for coronavirus 14 d after the vaccination cycle completion.⁶ The U.S. Centers for Disease Control and Prevention reported domestic breakthrough infection cases of 9200, which is 0.01% of 95 million fully vaccinated people. The suggested causes of breakthrough infection are that the antibody does not react with the virus or that antibodies or cell-mediated immunity did not produce after the vaccination.⁷

To prevent COVID-19 infection and block its spread, the Korean quarantine authorities are still emphasizing social distancing, personal hygiene management such as mask use and hand washing, and observance of public precautions. Also, the Korea Centers for Disease Control and Prevention are implementing various preemptive quarantine measures.⁸ Elevated social distancing is effective in preventing the spread of the virus, but since these containment measures are associated with massive economic

losses.⁹ Therefore, to ease containment, the use of masks is recommended as the most cost-effective way to contain the virus.

Many previous studies have reported the importance of using a mask to prevent infection. A study by Dugré et al.¹⁰ found that the use of masks by health-care workers and the general public reduced the risk of respiratory viral infections. And also, according to a study by Leung et al.,¹¹ the use of masks in public places and public facilities was found to be effective in preventing COVID-19 infection.

There is no doubt we need to break free from mask mandates. But let us not decide the timing in haste. The most important thing is the circumstance when it comes to whether ease or lift mask mandates or other social distancing measures. Even if the mask mandates are eased, they should be changed depending on the number of reported cases, vaccinations, as well as prevention and control measures on how circumstances are changing under the influence of mutant coronavirus.

Data Availability Statement. The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declaration of Conflicting Interests. The author declares that they have no competing interests.

Consent for Publication. Consent for publication was included in the consent to participate form.

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