



How to deal with the Delta variant this fall

Jong-Koo Lee

Department of Family Medicine, Seoul National University College of Medicine, Seoul, Korea

The United Kingdom declared its “freedom day” on July 19, 2021, and coronavirus disease 2019 (COVID-19)-related lockdown measures were completely lifted. This controversial step was implemented even though the vaccine uptake rate has not reached the herd immunity level (primary vaccination rate, 69.48%; vaccination completion rate, 59.94%). However, a curious phenomenon that must be explained is that, in the United Kingdom, case levels have not rebounded because the herd immunity level of vaccination has not been reached, giving rise to multiple interpretations. Meanwhile, Israel was the first country to carry out wide-scale vaccinations against COVID-19, and its vaccination rate was very high (primary vaccination rate, 67.33%; vaccination completion rate, 62.46%) [1], which led to a complete lifting of social restrictions. However, the spread of COVID-19 in Israel has recently increased to the level of February 2021, so mandatory measures regarding social distancing and mask-wearing have been reintroduced, and third vaccinations for immune-suppressed patients are being promoted.

Although the United States (US) has pushed ahead with vaccination, it has not reached the level of herd immunity due to vaccine hesitancy (primary vaccination rate, 58.72%; vaccination completion rate, 49.97%) [1]. The government eased anti-COVID-19 policies before the vaccination rate was high enough to protect the community, causing confusion and leading to the spread of the Delta variant in areas with many unvaccinated people, increasing the number of confirmed patients and deaths. In response, it has been necessary to reintroduce strengthened non-pharmaceutical interventions (NPIs) [2].

In the Republic of Korea, where vaccination has not yet reached the level of herd immunity (primary vaccination rate, 41.7%; vaccination completion rate, 15.4%), the scale of the fourth wave of the epidemic has expanded to the point that around 2,000 new cases are being reported daily. The burden of COVID-19 is increasing [3].

Globally, the Delta variant is dominating, challenging the effectiveness of vaccination. It is first necessary to confirm whether the main cause of the fourth wave of the epidemic in Korea is the Delta variant. And whether the fourth wave is related to loosened measures during summer vacation and the exhaustion of health workers.

First of all, raising the vaccine uptake rate is an urgent priority above all else. Even if variants of COVID-19 with novel mutations are spreading in the community, the current vaccines can alleviate the burden on the medical system by reducing the overall hospitalization and mortality rates. Therefore, securing vaccines is very important and private medical institutions must provide immunization services to promptly raise the vaccination rate.

In a situation where outbreak clusters are continuing and many cases involve an unclear

Received: August 11, 2021
Accepted: August 17, 2021

Corresponding author:

Jong-Koo Lee
Department of Family
Medicine, Seoul National
University College of Medicine,
103 Daehak-ro, Jongno-gu,
Seoul 03080, Korea
E-mail: docmohw@snu.ac.kr

contact history, NPIs remain an effective preventive measure until the vaccination complete rate rises to 60% or more. Misguided messaging can cause confusion among the public, like in the US. The introduction of premature mitigation policies without evidence and in the absence of a high vaccine uptake rate will lead to an absolute increase in the number of patients, which will increase the number of fatalities.

Third, mutations have resulted in an increased transmission rate, meaning that the expanded reproduction ratio has changed from 2–3 to 4–6; thus, the vaccination rate required to establish herd immunity is likely to increase to 80% ($1-1/R_0$). In addition, children under 12 years of age (about 5.72 million people, as of 2015 in the Republic of Korea) cannot currently be vaccinated. Therefore, if the Delta variant becomes predominant, herd immunity will be difficult to achieve. In particular, children under the age of 12 should be protected by wearing a mask and social distancing. It is urgently necessary to take rapid steps to vaccinate family members of unvaccinated children and teachers to block the epidemic in schools, as children can transmit the infection.

Fourth, although peer review has not been conducted, initial findings suggest that the Alpha and Beta variants present higher rates of severe infection and mortality than the original strain of COVID-19, and the Delta variant is even worse in this regard [4]. A Canadian research report has suggested that an increase in mortality and a shortage of intensive care units may occur nationwide due to the prevalence of the Delta variant. Therefore, wearing masks and social distancing in unvaccinated risk groups as NPIs should be more rigorously implemented, along with preparing ICU beds.

Fifth, variants cause re-infection and breakthrough infections, which occur even after natural infection and vaccination. However, the hospitalization rate and mortality rate are reduced in patients who experience COVID-19 breakthrough infections. Since antibody titers can decrease from 6 months after vaccination, high-risk individuals who received the initial vaccination should take measures against re-infection in the fall. In other words, long-term care facilities that implemented early vaccination initiatives should consider revaccination, while simultaneously blocking the spread of the Delta variant by expanding monitoring and limiting visits.

Sixth, if vaccination uptake increases, the number of patients will naturally decrease. Nonetheless, even if the alert level is downgraded, there is a very high possibility of

cluster outbreaks at mass gatherings, such as sports games and events. However, essential businesses and those related to normal life should create a couple of alternatives of ICT centered on rapid testing, contact tracing, and isolation rather than social distancing and movement restrictions.

Finally, international cooperation for securing vaccines is important. Ultimately, vaccinations must be carried out worldwide as a joint effort to prevent the emerging variants and cross-border transmission. The contribution of Korean industry to the scaled-up capability of vaccine production is important, and vaccine aid for low- and middle-income countries with extensive travel to and from Korea is also necessary.

In response to COVID-19, individual liberty and human rights, economic losses, and the strictness of infection control must depend on vaccine uptake, the intensity of COVID-19 spread in the community, and the participation of the public. Political and policy considerations in decision-making are very difficult choices. Such decision-making is an art that requires an evidence-based scientific approach, including precise monitoring and surveillance, as well as simulations and modeling.

Notes

Ethics Approval

Not applicable.

Conflicts of Interest

The author has no conflicts of interest to declare.

Funding

None.

References

1. Our World in Data. Coronavirus (COVID-19) vaccinations [Internet]. Our World in Data; 2021 [cited 2021 Aug 11]. Available from: <https://ourworldindata.org/covid-vaccinations?country=KOR>.
2. Centers for Disease Control and Prevention (CDC). Delta variant: what we know about the science [Internet]. Atlanta: CDC; 2021 Aug 6 [cited 2021 Aug 11]. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/variants/delta-variant.html>.
3. Ministry of Health and Welfare. Coronavirus disease-19, Republic of Korea [Internet]. Sejong: Ministry of Health and Welfare; 2021 [cited 2021 Aug 11]. Available from: <http://ncov.mohw.go.kr/en/>.
4. Fisman DN, Tuite AR. Progressive increase in virulence of novel SARS-CoV-2 variants in Ontario, Canada [Preprint]. Posted 2021 Aug 4. medRxiv 2021.07.05.21260050. <https://doi.org/10.1101/2021.07.05.21260050>.