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COVID-19 Pandemic, Update # 50 *Omicron Variant and COVID-19 Vaccine Booster Update*

Key Points and Recommendations:

- NH Public Health Laboratories (PHL) has identified the first NH resident infected with the Omicron variant. This person is an adult from Cheshire County who traveled out-of-state and had a known exposure to another person with Omicron; this person was fully vaccinated but not yet boosted.
- The Omicron variant is predicted to be more infectious, resistant to certain therapeutics, and possibly evade vaccine- or infection-induced immunity. Preliminary laboratory-based studies are showing decreased vaccine- and infection-induced antibody neutralization of the Omicron variant (see Background section).
- COVID-19 vaccine booster doses are increasingly important:
 - Booster doses are effective at preventing infection, severe illness, and death when compared to people who completed a primary vaccine series but did not receive a booster dose ([Bar-On et al. NEJM](#); [Arbel et al. NEJM](#))
 - Preliminary studies are showing that a booster dose after primary series vaccination can restore a moderate-high level of antibody neutralization ([Pfizer-BioNTech media release](#)) and vaccine effectiveness ([Andrews et al. Preprint](#)) against the Omicron variant
- On December 9th, the U.S. FDA [authorized](#) use of the Pfizer-BioNTech COVID-19 vaccine as a booster dose in persons 16-17 years of age.
- The CDC subsequently updated their vaccine [booster dose recommendations](#):
 - All persons 18 years of age or older **should** receive a booster dose (heterologous dosing allowed)
 - Persons 16-17 years of age **may** receive a booster dose (Pfizer-BioNTech vaccine only)
- Given the effectiveness of booster doses at increasing protection (against infection, severe disease, and death) and emergence of the Omicron variant, NH Division of Public Health Services (DPHS) recommends:
 - Everybody who is 5 years of age or older complete a primary COVID-19 vaccination series
 - Everybody 16 years of age or older who completed a primary COVID-19 vaccination series receive a booster dose at the appropriate time interval (time interval is based on which vaccine a person received for their primary series)
 - Vaccination regardless of prior infection; people previously infected who are subsequently vaccinated have some of the highest levels of protection, including against the Omicron variant
- Find vaccination sites at www.vaccines.gov/search.

- NH Division of Public Health Services (DPHS) **Healthcare Provider and Public Health Partner** webinars continue to occur on the 1st and 3rd Thursday of each month from 12:00 – 1:00 pm (**next call will be Thursday, December 16th**):
 - Zoom link: <https://nh-dhhs.zoom.us/j/94059287404>
 - Call-in phone number: (646) 558-8656
 - Meeting ID: 940 5928 7404
 - Password: 353809

Background:

The SARS-CoV-2 Omicron variant was first identified in South Africa on 11/24/21. The U.S. identified the first case of Omicron on 12/1/21 and has since been identified in at least 30 different states, including NH. NH's first case of Omicron was identified in an adult from Cheshire County who traveled out-of-state, and developed mild COVID-19 symptoms after returning. The person was tested for SARS-CoV-2 infection, and the positive PCR result showed a pattern consistent with possible Omicron infection (i.e., PCR showed the S-gene target failure). Whole genome sequencing has confirmed infection with the Omicron variant.

Omicron has multiple mutations, including many on the spike protein, which is predicted to increase transmissibility, confer resistance to certain therapeutics (e.g., monoclonal antibodies), and potentially escape infection- or vaccine-induced immunity. The impact of this variant is still being studied, but early lab-based antibody neutralization studies are showing a significant decrease in the ability of infection- or vaccine-induced antibodies to neutralize the Omicron variant ([Pfizer-BioNTech media release](#); [Cele et al. medRxiv](#); [Wilhelm et al. medRxiv](#); [Roessler et al. medRxiv](#)). There is some preliminary evidence, however, that a booster dose after primary series vaccination may restore a moderate-high level of antibody neutralization ([Pfizer-BioNTech media release](#)) and vaccine effectiveness ([Andrews et al. Preprint](#)) against the Omicron variant. Because of the emergence of the Omicron variant and the possibility of waning immunity, booster doses are increasingly important.

The Omicron variant has two identified lineages, designated BA.1 and BA.2. The BA.1 lineage has a spike gene 69/70 deletion which results in the characteristic PCR positive test pattern showing an S-gene target failure (SGTF), which was also seen with the Alpha variant. The BA.2 lineage does not have the S-gene 69/70 deletion and therefore does not show a PCR positive SGTF pattern. Genetic sequencing is required to confirm Omicron variant infection, which is being conducted at Public Health Laboratories, academic laboratories, large commercial reference labs, and at the CDC.

- For any questions regarding this notification, please call the NH DHHS, DPHS, Bureau of Infectious Disease Control at (603) 271-4496 during business hours (8:00 a.m. – 4:30 p.m.).
- If you are calling after hours or on the weekend, please call the New Hampshire Hospital switchboard at (603) 271-5300 and request the Public Health Professional on-call.
- To change your contact information in the NH Health Alert Network, please send an email to DHHS.Health.Alert@dhhs.nh.gov.

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