OMICRON VARIANT BRIEFING

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This information is based on currently available scientific evidence, reports, and expert opinion, and is subject to change. This document is accurate as of March 2022 and will be frequently updated as new evidence and information becomes available.

All viruses change naturally. Mutations, or changes in the genetic code of the virus, result in different versions of the virus, or variants. Variants can change the characteristics of a virus, possibly making a virus more transmissible and/or deadly. Just like with other viruses, SARS CoV-2—the virus that causes COVID-19—is constantly mutating. Experts have identified a number of distinct variants since the beginning of the pandemic, and it is likely that more will emerge. Our best strategy to combat these changes and protect people from dying or suffering devastating long-term effects is to prevent infections and transmission *everywhere throughout the world*, lessening the chances that variants will continue to emerge.

As members of a global community, PIH-US and our partners advocate strongly for global vaccine equity as a moral, ethical, and epidemiological imperative. Equitable vaccine access, especially in low-resource settings, will offer better protection for everyone. Decreased transmission at the global level is necessary to prevent the emergence of new variants.

A new variant—known as the Omicron variant—was identified in November 2021. The WHO classified Omicron as a "variant of concern," a designation for potentially dangerous variants that prioritizes vigilant tracking to better study and understand the mechanics of the variant. It appears to involve a large number of mutations to the spike protein, the effects of which are being studied. The Omicron variant and its multiple lineages (BA.1.1, B.1.1.529, and BA.2) has become the predominant variant across Europe and North America. In the U.S. as of March 12, Omicron accounts for over 99% of the total number of SARS-CoV-2 infections, based on modeling estimates,[i] though this varies by region.[ii] BA.1.1 accounts for approximately 66% of infections, while BA.2 accounts for 23% and B.1.1.529 for approximately 11%. At the global level, the proportion of reported sequences designated as BA.2 has increased relative to BA.1 in recent weeks.[iii] BA.2 differs from BA.1 in its genetic sequence; therefore some properties of this lineage are different than BA.1 and are noted below where relevant. See more information on what we're watching below.

Scientists are studying several key areas to understand the effect of the Omicron variant:

- **Transmissibility** (whether it spreads more easily from person to person): **Omicron appears to be more transmissible than previous variants.**
    - Multiple studies indicate that the Omicron variant is more transmissible than previous variants of SARS-CoV-2.[iv, v] This increased transmissibility may be due to the way in which Omicron infects the human respiratory tract.[vi]
    - The BA.2 subvariant appears to be 30-40% more transmissible than BA.1 lineages.[vii,viii] This may in part explain increasing cases in many countries, including many in Europe.
- **Incubation period** (the length of time between when a person is infected and when symptoms appear): **Omicron appears to have a shorter incubation period than previous variants, potentially affecting testing strategies.**
    - Small-scale data indicate that the median Omicron incubation period may be as short as 3 days, as opposed to 4 days for the Delta variant and 5 days for earlier variants.[ix, x]
    - A shorter incubation time may imply earlier onset of infectiousness, suggesting that testing sooner after exposure may help prevent transmission. The period of infectiousness for Omicron is still under investigation.
    - Early testing is crucial to ensure those who can benefit from antiviral treatment can start the doses within 3-5 days of first symptoms.

- **Immune escape** (whether it can evade the immunity our bodies have created either with the vaccine or by previously having SARS-CoV-2 infection): **Vaccines help against severe disease, and boosters give us the absolute best protection.**
    - Data indicate that the available vaccines do provide protection against severe disease, but they may offer more limited defense against infection.[xi, xii, xiii] Early data from the U.K. show similar levels of vaccine effectiveness for the BA.2 subvariant.
    - Data indicate a substantial jump in effectiveness against symptomatic Omicron infection with a booster dose (as opposed to two doses).[xiv, xv, xvi, xvii]
    - Studies[xviii,xix, xx] have found Omicron is able to widely reinfect people with recent SARS-CoV-2 infection.
    - Preliminary data show that previous infection with BA.1 is largely (though not entirely) protective against reinfection with BA.2, especially when an individual is vaccinated.[xxi]
- **Severity of disease: Omicron appears to be less severe than previous variants.**
    - Multiple studies (from Canada[xxii], South Africa[xxiii], Scotland[xxiv], and England[xxv]) have found that the risk of hospitalization is lower for people infected with the Omicron variant, compared with the Delta variant.
    - Severity of the BA.2 subvariant appears similar to the BA.1 lineages.[xxvi]
    - It is important to remember that even if cases are more likely to be mild, if a higher proportion of the population is infected at once, there may be an overall higher number of people with severe disease, which can overwhelm health systems.

Widespread, equitable vaccination (and boosting), coupled with robust surveillance programs and commitment to proven mitigation efforts (masking, social distancing, testing, contact tracing, supportive isolation, etc.) remain the recommended courses of action. In particular, tests must be widely available and easy to access in order to limit spread and as a prerequisite to taking advantage of new treatment options.

What we recommend:

- Our best tools to ensure protection against COVID-19 remain the same: **widespread, equitable, immediate vaccination for everyone who is eligible, regardless of prior infection status; robust surveillance, testing, and reporting programs; and proven mitigation efforts (including masking, social distancing, testing, contact tracing, supportive isolation).**
- **The surge in antibodies provided by a booster shot provides good defense**. There is clear data showing that unboosted populations have much lower immunity levels against COVID-19 and particularly against Omicron than non-boosted populations.[xxvii] Any adult 18+ who received the J&J vaccine at least 2 months ago or who received the second dose of the Moderna vaccine at least 5 months ago, or anyone 12+ who received the second dose of the Pfizer vaccine at least 5 months ago, is eligible to get a booster dose now and should do so.
- **Widespread PCR testing is an effective tool to identify the Omicron variant.** While more information is needed, preliminary evidence suggests that **some rapid antigen tests also effectively detect infections** caused by the Omicron variant (with a few important caveats, noted here), and may be used for **regular testing, especially among symptomatic people.**
- Given that new variants of the SARS CoV-2 virus will likely emerge in the future, we recommend a **concerted and cooperative commitment to structured response planning** at the international, national, state, and local levels to prepare for when this inevitably happens again.

What we're watching:

- Many populations are likely to have significant baseline levels of T-cell immunity from infections and/or vaccination, which likely confers some protection against severe disease even with waning antibodies, less effective vaccines, or non-boosted regimens.
- Some of the existing monoclonal antibody treatment options appear to be ineffective against the Omicron variant.[xxviii, xxix, xxx] However, the FDA granted Emergency Use Authorization (EUA) on February 22 to Bebtelovimab[xxxi] and Sotrovimab[xxxii] on February 20 for use in patients infected with the Omicron variant (Bebtelovimab showed particular promise in effectiveness against BA.2[xxxiii]; Sotrovimab's BA.2 effectiveness is still under investigation[xxxiv]).
- The use of oral antiviral tablets will likely become more widespread, once supply and distribution are ramped up in the coming weeks and months. Notably, in the context of limited supply and distribution, jurisdictions are planning for critical implementation challenges (for testing, access to care/prescriber/PCP, and dosing adherence, for example) and many have developed prioritization criteria to ensure only those most in-need and at-risk are prioritized for initial access. Outpatient treatment options include the following:
    - The FDA granted EUA on December 22 to Nirmatrelvir/Ritonavir (Paxlovid), Pfizer's COVID-19 oral treatment pill, recommended for infected people age 12+ at high risk of developing severe COVID-19 (excluding those with severe liver or kidney issues and with special considerations for pregnant or breastfeeding women).[xxxv] This drug could provide a crucial new tool to treat COVID infections, particularly as the health care system is strained with increasing cases. It is expected to remain effective against the Omicron variant, though more information is needed. However, supply and distribution of the pill are limited in some places, with variable demand reported thus far.
    - The FDA granted EUA on December 23 to Molnupiravir, Merck's COVID-19 oral treatment pill, recommended for people age 18+ at high risk of developing severe COVID-19 (excluding pregnant women).[xxxvi] Supply and distribution of the pill are limited in many settings, with variable demand reported thus far.

We will monitor emerging knowledge and will update this document with more information when it is available.

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