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A case of severe acute respiratory coronavirus virus 2 (SARS-CoV-2) reinfection within ninety days of primary infection in a healthcare worker

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To the Editor—Case definitions and prior literature typically describe reinfections with severe acute respiratory coronavirus virus 2 (SARS-CoV-2) in situations when someone becomes infected >90 days from their prior infection.[1] Healthcare workers (HCWs) may be particularly susceptible to reinfection.[2] With the emergence of the o (omicron) variant of SARS-CoV-2, an increased risk of reinfection has been described.[3] Here, we describe a case of reinfection that occurred only 2 weeks after the primary infection.

A 38-year-old female HCW developed a primary infection with SARS-CoV-2 in November 2021. She had no comorbidities or immunocompromising conditions. She was not vaccinated for SARS-CoV-2. Symptoms at that time consisted of fever, myalgias, headache, fatigue, congestion, and cough. A polymerase chain reaction (PCR) analysis of a nasopharyngeal (NP) swab sample collected 4 days after symptom presentation resulted in cycle threshold (Ct) values of 23.2 and 23.6, respectively, for the *ORF1* and *E* genes on the Roche cobas platform (Roche Diagnostics, Basel, Switzerland). Subsequent analysis of the NP swab sample identified the δ (delta) variant (sublineage AY.3) as the causal pathogen.

The patient had complete resolution of symptoms. She received 1 dose of dexamethasone during her primary infection but otherwise received no treatment. Then, 7 weeks after her primary diagnosis, she developed fever, sore throat, fatigue, congestion, and cough. An NP swab sample was collected and tested 2 days after symptom onset, which was again positive for SARS-CoV-2. The Ct values were 20.92 and 20.95 for the *ORF1* and *E* genes, respectively, on the Roche cobas platform. The sequence analysis of this second NP swab sample revealed the presence of the o variant (omicron sublineage BA.1), confirming a new infection of SARS-CoV-2.

This is a unique case demonstrating an early reinfection with SARS-CoV-2 occurring within 90 days of prior infection. Reinfection is likely to be more frequent with the o (omicron) lineage due to the escape of this variant from prior neutralizing SARS-CoV-2 antibodies.[4,5] Importantly, symptomatic individuals should be tested and evaluated for the possibility of reinfection, even within 90 days of their last infection. Understanding the dynamics of reinfections is particularly important as we update testing protocols and infection prevention policies during this surge of the omicron variant, and as we prepare for future emerging variants. This individual did have low Ct values, which would likely represent the presence of live virus; therefore, isolation would have been important to prevent continued spread.[6,7] This finding also highlights the importance of vaccination in our healthcare workers, given we now know that individuals who have completed their vaccine series and have received a booster are less likely to become infected with the o (omicron) variant.[8] Cases like

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these also emphasize the importance of making genomic sequencing more widely available as we work to understand the virology and epidemiology of evolving variants.

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