

Summary**What is already known about this topic?**

Once SARS-CoV-2 is introduced in a long-term care skilled nursing facility (SNF), rapid transmission can occur.

What is added by this report?

Following identification of a case of coronavirus disease 2019 (COVID-19) in a health care worker, 76 of 82 residents of an SNF were tested for SARS-CoV-2; 23 (30.3%) had positive test results, approximately half of whom were asymptomatic or presymptomatic on the day of testing.

What are the implications for public health practice?

Symptom-based screening of SNF residents might fail to identify all SARS-CoV-2 infections. Asymptomatic and presymptomatic SNF residents might contribute to SARS-CoV-2 transmission. Once a facility has confirmed a COVID-19 case, all residents should be cared for using CDC-recommended personal protective equipment (PPE), with considerations for extended use or reuse of PPE as needed.

chills, increased confusion, rhinorrhea or nasal congestion, myalgia, dizziness, malaise, headache, nausea, and diarrhea. Residents were categorized as asymptomatic (no symptoms or only stable chronic symptoms) or symptomatic (at least one new or worsened typical or atypical symptom of COVID-19) on the day of testing or during the preceding 14 days. Residents with positive test results and were asymptomatic at time of testing were reevaluated 1 week later to ascertain whether any symptoms had developed in the interim. Those who developed new symptoms were recategorized as presymptomatic. Ct values were compared for the recategorized symptom groups using one-way analysis of variance (ANOVA) for all residents with positive test results for SARS-CoV-2. Analyses were conducted using SAS statistical software (version 9.4; SAS Institute).

On March 13, among the 82 residents in facility A; 76 (92.7%) underwent symptom assessment and testing; three (3.7%) refused testing, two (2.4%) who had COVID-19 symptoms were transferred to a hospital before testing, and one (1.2%) was unavailable. Among the 76 tested residents, 23 (30.3%) had positive test results.

Demographic characteristics were similar among the 53 (69.7%) residents with negative test results and the 23 (30.3%) with positive test results (Table 1). Among the 23 residents with positive test results, 10 (43.5%) were symptomatic, and 13 (56.5%) were asymptomatic. Eight symptomatic residents had typical COVID-19 symptoms, and two had only atypical symptoms; the most common atypical symptoms reported were malaise (four residents) and nausea (three). Thirteen (24.5%) residents who had negative test results also reported typical and atypical COVID-19 symptoms during the 14 days preceding testing.

One week after testing, the 13 residents who had positive test results and were asymptomatic on the date of testing were reassessed; 10 had developed symptoms and were recategorized as presymptomatic at the time of testing (Table 2). The most common signs and symptoms that developed were fever (eight residents), malaise (six), and cough (five). The mean interval from testing to symptom onset in the presymptomatic residents was 3 days. Three residents with positive test results remained asymptomatic.

Real-time RT-PCR Ct values for both genetic markers among residents with positive test results for SARS-CoV-2 ranged from 18.6 to 29.2 (symptomatic [typical symptoms]), 24.3 to 26.3 (symptomatic [atypical symptoms only]), 15.3 to 37.9 (presymptomatic), and 21.9 to 31.0 (asymptomatic) (Figure). There were no significant differences between the mean Ct values in the four symptom status groups ($p = 0.3$).

Discussion

Sixteen days after introduction of SARS-CoV-2 into facility A, facility-wide testing identified a 30.3% prevalence of infection among residents, indicating very rapid spread, despite early adoption of infection prevention and control measures. Approximately half of all residents with positive test results did not have any symptoms at the time of testing, suggesting that transmission from asymptomatic and presymptomatic residents, who were not recognized as having SARS-CoV-2 infection and therefore not isolated, might have contributed to further spread. Similarly, studies have shown that influenza in the elderly, including those living in SNFs, often manifests as few or atypical symptoms, delaying diagnosis and contributing to transmission (6–8). These findings have important implications for infection control. Current interventions for preventing SARS-CoV-2 transmission primarily rely on presence of signs and symptoms to identify and isolate residents or patients who might have COVID-19. If asymptomatic or presymptomatic residents play an important role in transmission in this population at high risk, additional prevention measures merit consideration, including using testing to guide cohorting strategies or using transmission-based precautions for all residents of a facility after introduction of SARS-CoV-2. Limitations in availability of tests might necessitate taking the latter approach at this time.

Although these findings do not quantify the relative contributions of asymptomatic or presymptomatic residents to SARS-CoV-2 transmission in facility A, they suggest that these residents have the potential for substantial viral shedding. Low Ct values, which indicate large quantities of viral RNA, were identified for most of these residents, and there was no statistically significant difference in distribution of Ct values among the symptom status groups. Similar Ct values were reported in asymptomatic adults in China who were known to