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Commentary

The challenge of asymptomatic SARS-CoV-2 transmission in care homes

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An outbreak of COVID-19 in a care home is a dramatic event that often results in high mortality among residents. Understanding how these outbreaks occur is crucial to avoid events early and limit their burden. Jeffery-Smith et al. [1] studied the presence and transmission of SARS-CoV-2 among residents and staff at five London nursing homes that had not previously experienced outbreaks or cases of COVID-19. By conducting a systematic search using nasal swab real time polymerase chain reaction (RT-PCR) tests and serum IgG antibodies, they found that silent transmission of SARS-CoV-2 was common among residents and staff, since 11 to 49% of individuals tested were seropositive and 0 to 8% tested positive by RT-PCR.

This report and other studies [2–5] had documented that asymptomatic SARS-CoV-2 infection is common among care homes residents and staff members. The point prevalence varies according to the facilities and the studies. In this study and others, correlates between residents and staff members prevalence were found, and this association suggests viral transmission between them. In one of the five nursing homes of this study, the genomic viral analysis showed that the same SARS-CoV-2 lineage affected both residents and staff members. Though the direction of viral transmission cannot be determined by these studies, it is highly plausible that the SARS-CoV-2 mainly entered in the care homes by a staff member or by a visitor and then spread to residents and other staff members.

Longitudinal observations [3,6–8] realized in care homes have shown that SARS-CoV-2 asymptomatic infections have different evolutive patterns in residents and staff members. In about half of cases, it corresponds to a presymptomatic infection and clinical signs of COVID-19 occur in the four days following the positive RT-PCR test. In the remaining cases, the infection remains asymptomatic. Studies using repeated RT-PCR testing showed different profiles, as some cases became negative and other remained positive for several weeks [8].

The literature on asymptomatic cases of COVID-19 in care homes has important implications for clinical practice and policy to limit the

spread of SARS-CoV-2 in these facilities and prevent epidemics. Serial RT-PCR testing of all staff, residents and also visitors is a logical way to detect asymptomatic cases of COVID-19 and to implement cohorting of residents as well as quarantine of staff members or visitors who are carriers of SARS-CoV-2. Systematic prevalence points could be conducted and repeated periodically, but such an approach is costly and may be poorly accepted by some residents or staff. In addition, the optimal periodicity of serial screening is not known and probably depends on the extent of viral circulation in the area of the care home. There is also a need to explore innovative ways to identify early signs of SARS-CoV-2 circulation in nursing homes, such as wastewater surveys [9] or contact tracing applications [10] that could generate useful signals to trigger a screening campaign.

An intriguing point is that some care homes have not experienced an outbreak of COVID-19 despite the circulation of SARS-CoV-2 in the facility, as evidenced by the presence of asymptomatic cases among staff or residents. For example, in the Jeffery-Smith study, a care home that did not experience a clinical outbreak had a 49.5% seropositive rate, which was higher than one of the care homes that experienced a COVID-19 outbreak. Why SARS-CoV-2 produces a high burden and mortality in some facilities and remains silent and quiet in others remains a mystery. The role of the virus and/or host factors remains to be elucidated.

Better understanding of asymptomatic cases and the silent transmission of SARS-CoV-2 in nursing homes is crucial to address the spread and consequences of this infection in these facilities. The distribution of COVID-19 vaccines to care homes residents and staff will probably reduce the circulation of the SARS-CoV-2 in care homes. However, the effects of vaccination on asymptomatic COVID-19 infection and asymptomatic transmission are still poorly known.

Declaration of Competing Interests

Prof Belmin reports participation to boards and conferences for Novartis, Pfizer and Sanofi, all outside of the submitted work. Dr Lafuente has nothing to disclose.

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