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Perspectives

# COVID-19 in long-term care facilities: An upcoming threat that cannot be ignored



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## COVID-19 epidemic

To date, a total of 693,224 patients have been infected by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) worldwide.<sup>1</sup> It only took approximately 100 days for SARS-CoV-2 to cause such extensive damage. This suggests that this infection can be rapidly transmitted by human-to-human contact and the associated reproductive number may be high.<sup>2,3</sup> According to the daily situation report from the World Health Organization (WHO), 33,106 coronavirus disease 2019 (COVID-19) infections have led to death, corresponding to a fatality rate of 4.78%.<sup>1</sup> Additional studies have demonstrated that a significant portion of COVID-19 patients had underlying conditions or diseases,<sup>4–6</sup> and old age was significantly associated with poor outcomes.<sup>7–9</sup> The fatality rates for COVID-19 patients over 80 years old are approximately 21.9% in China and 20.2% in Italy, which are much higher than those of patients without any underlying comorbidity.<sup>10</sup> Overall, this suggests that elderly patients residing in long-term care facilities (LTCFs) could be vulnerable to SARS-CoV-2 infection and at a high risk for COVID-19-associated morbidity and mortality.

## COVID-19 spread in LTCFs

In the United States (US), a recent study reported that a total of 167 confirmed COVID-19 cases affecting 101 residents, 50 health care personnel, and 16 visitors were found to be epidemiologically linked to a skilled nursing facility in King County, Washington, with a resident case fatality rate of 33.7% (34/101).<sup>11</sup> Moreover, a total of 30 King County LTCFs had reported at least one confirmed COVID-19 case as of March 18, 2020.<sup>11</sup> In Taiwan, one nurse working in a nursing home tested positive for SARS-CoV-2, and health authorities responded rapidly, employing multiple interventions to prevent the spread of the disease according to the daily report of the Expert Advisory Committee of COVID-19. As of March 28, 2020, no additional people have tested positive for SARS-CoV-2 in this investigation. Both of these studies suggest that COVID-19 occurrence and outbreaks in LTCFs are possible and can be associated with high morbidity and mortality.

## Why we should not ignore the incidence of COVID-19 in LTCFs?

In this era of aging, the rapidly growing elderly population has become a global challenge.<sup>12</sup> In the US, over 4 million people reside in nursing homes and skilled nursing facilities, and 1 to 3 million serious infections occur each year.<sup>13</sup> Infectious diseases caused by influenza, pneumonia, respiratory syncytial virus, norovirus and methicillin-resistant *Staphylococcus aureus* have become a significant burden in LTCFs.<sup>14–17</sup> The emergence of these infectious diseases could be because of the following reasons: (1) LTCF residents tend to have multiple chronic diseases and are frail, which make them more susceptible to infection; (2) the residents share the same sources of air, food, water, caregivers, and medical care, which may help introduce and facilitate the transmission of infectious agents among

vulnerable residents; and (3) visitors, practitioners, and residents can frequently come and go without limitation, introducing pathogens from around the hospital and the community. Moreover, if either a healthcare practitioner or resident from an LTCF becomes infected with SARS-CoV-2, a COVID-19 outbreak would be highly possible due to the close contact that occurs between LTCF caregivers and residents and the shortage of manpower or resources for infection control and prevention. Finally, an outbreak of COVID-19 in the LTCF could be associated with high morbidity and mortality due to resident characteristics (i.e., elderly patients with multiple comorbidities). Therefore, possible outbreaks of COVID-19 in LTCFs are of serious concern in the ongoing pandemic.

## Lessons from influenza and SARS

Historically, influenza has been the most common pathogen causing outbreaks in LTCFs,<sup>14</sup> with one review reporting that the influenza virus was associated with the largest outbreak (23%) with a median infection rate of 33% and 23% among residents and staff, respectively.<sup>18</sup> The exposure of elderly LTCF residents to influenza could increase the risk of respirator-origin hospitalization and the risk of death due to a respiratory cause.<sup>19</sup> Effective methods to prevent influenza outbreaks include written infection prevention and control (IPC) policies, vaccination strategies for residents and staff, staff education, and enhancing compliance with infection control measures.<sup>14</sup> Although no studies have reported a SARS outbreak in an LTCF, the SARS fatality rate was more than 50% in patients aged 65 years or older, and comorbidity was a significant factor leading to poor prognosis.<sup>20,21</sup> In contrast to influenza, which was well known to healthcare workers and the general population, knowledge about SARS during its outbreak was limited. A previous study investigating the knowledge surrounding SARS that consisted of interviewing 27 health care workers and 40 elderly residents in an LTCF found that most of the elderly residents were not well-informed about SARS and its prevention strategies, despite having access to the news through the media and visitors.<sup>22</sup> In addition, the fear of a SARS outbreak was high among staff.<sup>22</sup> Therefore, the authors suggested that education programs to promote awareness and prevention of SARS in a manner that is tailored to the elderly are needed. Additionally, more in-service training, support, and counseling are strongly suggested for the staff to promote disease prevention and improve the quality of care.<sup>22</sup>

## Infection prevention and control

Presently, we do not have an effective weapon against COVID-19. However, we can try to stop the rapid spread of SARS-CoV-2 to prevent the occurrence of new cases. The WHO provides an interim guidance on IPC in LTCFs, which aims to prevent SARS-CoV-2 from entering the facilities, spreading within the facilities, and spreading outside the facilities.<sup>23</sup> This IPC policy includes providing training to all staff, providing education for residents, auditing IPC practices, promoting hand hygiene and respiratory etiquette, ensuring adequate supplies are available, and promoting

physical distancing in the LTCFs.<sup>23</sup> In addition, early recognition, isolation, care of COVID-19 cases, and source control are essential to prevent the spread of SARS-CoV-2 in the LTCFs. The US CDC also suggests that each LTCF should develop a comprehensive response plan, consisting of restricting all visits, removing unnecessary healthcare personnel and canceling all group activities and communal dining.<sup>24</sup> A daily report from the Expert Advisory Committee of COVID-19, presented a suitable example of how to respond to COVID-19 in LTCFs. On March 22, 2020, one nurse at a nursing home tested positive for SARS-CoV-2 through local transmission. Subsequently, 81 doctors, nurses and residents in the LTCF were immediately tested for SARS-CoV-2, and all of them tested negative. Simultaneously, all the residents were moved to a nearby hospital and two quarantine locations to prevent further spread of COVID-19, and the LTCF was closed and disinfected. Authorities also identified an additional 14 people who had contact with the infected nurse before her diagnosis and closely monitored their clinical conditions. On Mar 29, 2020, a repeated test for SARS-CoV-2 was negative for the infected nurse and all the tests of the contacts were also negative.

## Conclusions

Although there have been limited reported outbreaks of COVID-19 in LTCFs to date, the elderly in LTCFs are vulnerable to infections and at a high risk for mortality. LTCFs should be well prepared to manage COVID-19, which exhibits high transmissibility. Appropriate IPC policies should be established in LTCFs and strictly adhered to in order to prevent this disease from entering these facilities and spreading within and outside of them.

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