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COVID-19 Editorial

Long-Term Care Facilities and the Coronavirus Epidemic: Practical Guidelines for a Population at Highest Risk

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COVID-19, the abbreviated name for the coronavirus disease 2019, has quickly drawn the attention of worldwide media, public health officials, health care providers, and a worried public. Since its identification in Wuhan, China on December 31, 2019, the virus has spread to over 100 countries, including the United States. This spread has occurred despite aggressive public health measures to contain it.[1] As of March 8, 2020, there have been over 105,000 known cases of COVID-19 infection with over 3500 deaths.[1]

For long-term care providers, the rise of COVID-19 into a global outbreak over just a few months conjures the specter of rapid escalation of care for dozens of concurrently infected frail older adults living in close proximity to one another. Congregate housing where rapid transmission of the virus is of paramount concern is a case in point. Recently, a nursing home in Washington State has reported 13 deaths from COVID-19 with at least 50 more residents under observation.[2]

This rapidly evolving situation has not only resulted in multiple recorded US deaths from the virus but also transmission of the virus to US health care workers.[3] The Washington State case study should serve as a proverbial "canary in the coal mine" and focus attention and preparedness efforts on long-term care facilities where the risk of COVID-19 transmission in the coming months may be high. Further, morbidity among vulnerable older residents appears to be many fold higher than in the general community.

Why Long-Term Care Preparedness for COVID-19 is Important

Several epidemiological variables make long-term care facilities a priority area for near term public health planning. Most significantly, long-term care residents are among those at highest risk for COVID-19 morbidity and mortality. In 2014, 42% of long-term care residents were over the age of 85 and 68% over 75.[4] Initial estimates from the Chinese Centers for Disease Control indicate an overall fatality rate from COVID-19 of 2.3%.[5] As a broader segment of the population gets tested, this overall estimated fatality rate will decrease as the number of individuals with mild or asymptomatic disease are increasingly included in the calculations. Regardless, the fatality rate is highest among older patients. For patients under the age of 50, the case fatality rate for COVID-19 has not exceeded 0.4% (5). Among susceptible older adults, however, the recorded death rate rapidly increases. Among patients aged 70 to 79, the fatality rate in China has been estimated at 8.0%; for patients over 80, the estimate increases to 14%.[5] Even as the overall case fatality rate drops, the risk of death among older adults may be 10-fold higher than for younger individuals.

Residents of long-term care facilities often have medical conditions associated with an increased risk of morbidity and mortality to COVID-19. Based on analyses of deaths related to COVID-19 through February 11, 2020, the odds of dying from the virus were greater in those with heart (OR = 12.83; CI 95% [10.27; 15.86]) or chronic respiratory disease (OR = 7.79; CI 95% [5.54; 10.43]).[6] Analysis of China's mortality data indicates that 10.5% of those who died had cardiovascular disease, 7.3% had diabetes, 6.3% had chronic respiratory disease, 6% had hypertension, and 5.6% had cancer.[7]

These conditions are commonplace in the long-term care environment, where rates of heart disease exceed 30% and chronic obstructive pulmonary disease exceeds 20%.[8,9] Further, extreme functional impairment within long-term care facilities makes close contact between health care workers and residents inevitable. Additionally, cognitive impairment among residents may make contact precautions and isolation a practical impossibility.

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Recommendations

Appropriate preparedness includes 5 key elements: 1) reduce morbidity and mortality among those infected; 2) minimize transmission; 3) ensure protection of health care workers; 4) maintain health care system functioning; and 5) maintain communication with worried residents and family members.[10] These elements offer a critical framework for the long-term care community and the public at large as it prepares for COVID-19. AMDA, The Society for Post-Acute and Long-Term Care Medicine, has recently published interim recommendations (https://paltc.org/COVID-19) for health care providers in Long-Term Care Facilities. The documents offer guidance and address frequently asked questions on how Post-Acute and Long-Term Care Facilities should prepare for and manage individuals with suspected COVID-19. Symptoms of COVID-19 include fever, cough, and shortness of breath, but initial symptoms are milder and frail older adults often present atypically. The symptoms may range from mild to severe. While studies underway to assess antiviral medications for COVID-19 have begun, supportive care is the best available therapeutic option.

Absent vaccination and antiviral prophylaxis, and stringent and proactive infection prevention and control measures remain the best way to reduce the risk of staff and residents becoming ill (Table 1). This includes steps to actively reduce both the risk of introducing COVID-19 into nursing homes and for transmission within the nursing home, particularly from asymptomatic staff members who may unwittingly shed viruses to surfaces that can infect their residents or by direct contact with them. Airborne disease protocols should be activated and put into action. Plans previously developed for pandemic influenza can be re-purposed for COVID-19, including the respiratory outbreak preparedness checklist previously developed by the CDC (https://www.cdc.gov/coronavirus/2019-ncov/php/pandemic-preparedness-resources.html).

Once COVID-19 has begun to spread within a community, additional efforts to reduce the introduction of the virus into the building can include limiting visitors to the long-term care building. Staff could be screened upon entry for fever or respiratory symptoms. These measures would be in addition to active surveillance for an elevated temperature and even mild respiratory symptoms among residents. Early suspicion and detection of a case will help identify which resources can be deployed to further prevent or reduce the spread of the disease. Hand hygiene remains among the most fundamental measures to prevent disease transmission. Staff, residents, and visitors should all receive instruction on how to properly wash their hands with soap and water. Alcohol hand sanitizer should be available outside of every resident room, as well as in workspaces, dining areas, and other common areas throughout the building. Finally, environmental services should be engaged to perform at least daily cleaning with Environmental Protection Agency (EPA) registered hospital grade disinfectants. These will be paramount to containing the disease, particularly in high traffic areas (eg, dining halls, treatment areas, living spaces, etc.) where residents congregate, and frequently touched surfaces.

Currently, the types of precautions recommended for people with suspected COVID-19 are still evolving. In addition to Standard and Contact Precautions, the CDC recommends Droplet and Airborne Precautions during the care of individuals with suspected COVID-19 while the World Health Organization recommends Droplet Precautions; presently we have a concurrent influenza epidemic, so precautions for respiratory disease need to protect against both diseases. Operationally, this means wearing gowns, gloves, facemask, and eye protection. This may be challenging in the nursing home environment, where supplies of these items may be limited and are prioritized for acute care hospitals. In long-term care settings, few of which have negative pressure (airborne isolation) rooms, simples measures like pulling room-dividing curtains and closing doors are helpful.

Table 1
Practical Considerations for Reducing the Risk of Transmission in the Workplace

1. Avoid unnecessary contact (eg No handshaking, hugging, etc.)
2. Use knuckle or pen to flip light switches or push elevator buttons; Open doors with a closed fist or hip if possible
3. If you are sick, stay home
4. Wash hands thoroughly with soap for 10 to 20 seconds and/or use a greater than 60% alcohol-based hand sanitizer after ANY activity that involves contact with others
5. Maintain a supply of sanitizer and tissues at each facility entrance and at regular intervals around the facility
6. Disinfect high use work items frequently (eg phones, computer keyboards and mouse, etc.)
7. If possible, cough or sneeze into a disposable tissue and discard; Use your elbow only if you have to
8. Launder clothing and linens regularly: Clothing and linens/towels can contain infectious virus that can be passed on
9. Consider keeping your hands in your pockets when about, to keep you from touching things that don't need to be touched

Ensuring Protection of Healthcare Workers

A key challenge to nursing home and assisted living (AL) facilities during any disaster scenario is the maintenance of adequate staffing levels. All long-term care facilities must have a policy in place that identifies workers who become sick and allows them to be absent from work. Guidance proposed by AMDA includes screening employees at entry for signs of infection. Protocols must also be developed that ensure staffing levels if an employee needs to call off or be sent home. It is noteworthy that many long-term care workers live paycheck to paycheck in an environment without reserve staffing; they therefore may be conditioned to report even when sick. Providing a work environment that allows healthcare workers to call out without repercussion will be critically important. Within the facility, protecting workers involves maintaining an adequate supply of gowns, gloves, and face masks. This involves both keeping track and awareness of inventory and negotiating with suppliers and public health officials who might seek to redirect limited resources to other healthcare environments.

Maintain Health Care Infrastructure

A key practical consideration for the long-term care environment will be to determine if or when to admit a resident who has been previously diagnosed with COVID-19. Long-term care facilities are a key component of our healthcare system, and we can anticipate significant pressure to receive discharged hospitalized patients for convalescence or to accommodate sicker patients arriving from the community. We do not yet know how long individuals shed transmissible levels of virus, whether older individuals shed virus longer, nor whether cohorting confirmed cases can reduce risk of spread within a facility or contributes to disease severity among those cohorted. Previous experience with MERS and SARS suggests that viral shedding may continue for at least 12 days following symptom onset, with the quantity of virus decreasing as symptoms improve. According to data acquired from 4 Chinese patients who contracted COVID-19 and recovered, positive reverse transcriptase–polymerase chain testing was still present at 5 to 13 days post infection and then on subsequent testing.[11] It is unclear whether this meant that they were continuously infectious or re-infected, but should give pause as to when recovering COVID-19 patients are safe to bring into a facility where rapid transmission of the virus to a susceptible population could occur. Further research into the post-infectious period will be

critical to developing further guidance. Until then, patients who are newly admitted should likely remain isolated behind a closed door for 7 to 14 days to reduce the risk of serving as the vector for an explosive outbreak among high-risk individuals.

The Assisted Living Experience

Over the past 2 decades, assisted living has rapidly emerged as a preferred housing and long-term care option for many older and disabled adults who require assistance with activities of daily living (ADLs). Each day in calendar year 2014, approximately 36,000 AL communities provided residence to over 835,000 Americans.[12] Despite caring for frail older residents, AL settings are not staffed or equipped to provide the type of care that nursing homes can provide. Further, the amenities and support are more heterogenous than the highly regulated nursing homes with marked differences in staffing levels and their training, policies and procedures, and their threshold for accepting certain types of patients (eg, cognitive impairment). As ALs are not routinely regulated by the federal government, state regulators will need to consider how to encourage ALs to have the staffing and infrastructure in place to meet the care delivery needs for this potentially vulnerable population when COVID-19 enters the community. It will also be important for state regulators to ensure that AL facilities have a plan in place to prepare for cases of COVID-19.

The Blame Game

In recent years, negative outcomes in nursing homes during disaster situations have led the media, public health officials, and politicians to find fault with nursing home providers. Most recently, 4 nursing home workers who cared for residents during Hurricane Irma were charged with criminal homicide in Florida.[13] Though the circumstances in the Florida case were different, this historical reality is chilling when viewed through the prism of what is currently transpiring in Washington state where second-guessing of care quality has already begun. Quite clearly, mortality within long-term care environments related to COVID-19 will be significantly higher than among the general population as a function of resident advanced age and comorbidity rather than substandard care. Some understanding of this fact will certainly be welcomed by the long-term care industry, who are often responsible for delivering difficult care under suboptimal circumstances.

What next?

We do not yet know how this epidemic will unfold, and how effective infection prevention and control measures will be at staving off the spread of COVID-19 into long-term care facilities. The epidemiology of other respiratory viral outbreaks may hold some clues, with influenza being the best characterized. We cannot yet predict whether the spread of COVID-19 follows the 1918 Spanish Flu pandemic with mortality rates akin to those calculated so far, or more like the 2009 A/H1N1 pandemic where the mortality rates more closely mirrored those of seasonal influenza. However, these pandemics did follow a pattern with a milder sentinel wave in the Spring months like we have now, followed by ongoing lower level of activity before resurging with a significant impact during the subsequent fall and winter seasons. As accurate testing becomes more readily available, we will likely discover the mortality rates are much lower than the estimates from China, and hopefully, as low as more severe seasonal influenza, that is, well below 1%. Case fatality rate estimates are likely to fall in older adults as well but, as for influenza, will almost certainly remain highest among the frailest individuals, like the residents of long-term care facilities. Until then, training staff and visitors on how to minimize their risk for picking up virus in the community and the facility and transmitting it to others will remain our most important tools. This begins with frequent hand washing, not touching our face with unwashed hands, and keeping surfaces touched by others clean. Executing a communication strategy that keeps residents, family members, and the public informed will also be critical during this rapidly evolving crisis.

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References

1. World Health Organization. Coronavirus disease 2019 (COVID-19) Situation Report – 48. Geneva, Switzerland: World Health Organization. Available at: https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200308-sitrep-48-covid-19.pdf?sfvrsn=16f7ccef_4. Accessed March 12, 2020.
2. Golden H. Washington nursing home at center of US coronavirus outbreak reports 13 deaths. The Guardian. March 7, 2020. Available at: https://www.theguardian.com/world/2020/mar/07/coronavirus-washington-kirkland-life-care-center-deaths. Accessed March 12, 2020.
3. Centers for Disease Control. CDC, Washington State Report First COVID-19 Death. 2020. Available at: https://www.cdc.gov/media/releases/2020/s0229-COVID-19-first-death.html. Accessed March 12, 2020.
4. The Kaiser Family Foundation State Health Care Facts. Centers for Medicare and Medicaid Services (CMS) Nursing Home Data Compendium, 2015. Available at: https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/CertificationandCompliance/Downloads/nursinghomedatacompendium_508-2015.pdf. Accessed March 12, 2020.
5. Xing ZL, Xue B, Zhi A. The Epidemiological Characteristics of an Outbreak of 2019 Novel Coronavirus Diseases (COVID-19) in China. China CDC Weekly 2020;41:145–151. Available at: http://www.ne.jp/asahi/kishimoto/clinic/cash/COVID-19.pdf. Accessed March 12, 2020.
6. Caramelo F, Ferreira N, Oliveiros B. Estimation of risk factors for COVID-19 mortality - preliminary results. medRxiv. Available at: https://doi.org/10.1101/2020.02.24.20027268. Accessed March 12, 2020.
7. Wu Z, McGoogan JM. Characteristics of and important lessons from the coronavirus disease 2019 (COVID-19) outbreak in China: Summary of a report of 72,314 cases from the Chinese center for disease control and prevention. JAMA; 2020 Feb 24 [Epub ahead of print].
8. Daamen MA, Hamers JP, Gorgels AP, et al. Heart failure in nursing home residents; a cross-sectional study to determine the prevalence and clinical characteristics. BMC Geriatr 2015;15:167.
9. Zarowitz BJ, O'Shea T. Chronic obstructive pulmonary disease: Prevalence, characteristics, and pharmacologic treatment in nursing home residents with cognitive impairment. J Manag Care Pharm 2012;18:598–606.
10. Centers for Disease Control. Interim guidance for healthcare facilities: Preparing for community transmission of COVID-19 in the United States. 2020. Available at: https://www.cdc.gov/coronavirus/2019-ncov/community/guidance-business-response.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fspecific-groups%2Fguidance-business-response.html. Accessed March 12, 2020.
11. Lan L, Xu D, Ye G, et al. Positive RT-PCR test results in patients recovered from COVID-19. JAMA; 2020 Feb 27 [Epub ahead of print].
12. Harris-Kojetin L, Sengupta M, Park-Lee E, et al. Long-term care providers and services users in the United States: Data from the National Study of long-term care providers, 2013-2014. Vital Health Stat 3; 2016. 1–105; x-xii.
13. Bacon J. Four face charges in deaths of 12 Florida nursing home patients following Hurricane Irma. USA Today. 2019 August 26, 2019. Available at: https://www.usatoday.com/story/news/2019/08/26/florida-nursing-home-deaths-hollywood-hills-arrests-expected/2118769001/. Accessed March 12, 2020.