SPECIAL ARTICLE

Coronavirus Disease 2019 in Geriatrics and Long-Term Care: The ABCDs of COVID-19

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See related editorial by Joseph Ouslander.

The pandemic of coronavirus disease of 2019 (COVID-19) is having a global impact unseen since the 1918 worldwide influenza epidemic. All aspects of life have changed dramatically for now. The group most susceptible to COVID-19 are older adults and those with chronic underlying medical disorders. The population residing in long-term care facilities generally are those who are both old and have multiple comorbidities. In this article we provide information, insights, and recommended approaches to COVID-19 in the long-term facility setting. Because the situation is fluid and changing rapidly, readers are encouraged to access frequently the resources cited in this article. **J Am Geriatr Soc 00:1-6, 2020.**

Keywords: coronavirus; COVID-19; pandemic; long-term care

BACKGROUND

Since the first cases of coronavirus disease appeared in 2019 (COVID-19) in Wuhan, the capital city of Hubei Province, China, hundreds of thousands of confirmed cases globally in 190 countries, areas, or territories according to the World Health Organization were associated with 14,652 deaths; 31,573 of these cases and 402 of the deaths were in the United States (as of March 24, 2020).[1] The numbers worldwide continue to grow, and infections in the United States are expected to increase rapidly as testing becomes more available.

The psychological and socioeconomic impacts of this illness are unprecedented in our lifetimes, with social distancing and resultant travel restrictions, closures of schools and many businesses, cancellation of recreational activities, and fear of shortages of basic living needs such as food, medications, and cleaning and hygiene supplies. There is also the potential to overwhelm medical and nursing services in emergency departments, clinics, hospitals, and other healthcare facilities due to a lack of access to testing, protective equipment, respirators, and medical and nursing direct care providers (who are at especially high risk for becoming infected and will be unable to work as a result).

One of the defining features of COVID-19 is the predilection for infection of older adults and individuals with chronic underlying health conditions, resulting in higher attack rates and mortality.[2] Given that older adults experience a greater number and severity of chronic diseases and disabilities, as well as immune dysfunction,[3] it is intuitive that COVID-19 will disproportionately affect this population. Thus it is not surprising that older adults residing in long-term care facilities (LTCFs) have the greatest susceptibility to COVID-19, as well as the poorest outcomes from this infection. LTCFs is a broad term that includes a wide range of facility types; this article focuses on the skilled nursing facility or nursing home setting, although much of the information may be relevant to other types of LTCFs. We refer to "patients/residents" to encompass the heterogeneity of the typical LTCF population (ie, short-stay "patients" and long-stay "residents").

An outbreak of COVID-19 in an LTCF in the Seattle, Washington, area was associated with several deaths, and more recent reports highlight infection in many other LTCFs,[4] underscoring the enormous risk of COVID-19 in the older LTCF population. Although COVID-19 is a novel disease, other types of coronaviruses (types 229E and OC43) were previously described as causing respiratory disease in older adults. In one study, coronavirus infections in community-dwelling older adults accounted for 9.5% of respiratory illnesses.[5]

In this article, we focus on critical aspects of this pandemic for health professionals who work in geriatrics and long-term care. The situation is very fluid, and it changes hour to hour and day to day. No one knows how long this pandemic will last and what its ultimate toll on the health of the world's population and economy will be. In the

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United States, numerous agencies and organizations have issued guidance related to COVID-19 that are relevant to geriatrics and long-term care. These include federal agencies such as the Centers for Disease Control and Prevention (CDC), the Centers for Medicare & Medicaid Services (CMS), the Veterans Health Administration, as well as state and county governments. Federal agencies are making changes daily that will affect LTCFs, such as waiving the 3-day requirement for Medicare coverage of a skilled stay, providing reimbursement for telehealth visits on a broader scale, and approving a rapid test for the virus that could save tens of thousands of transfers to the hospital for testing.

Many health professional organizations, including the American Geriatrics Society (AGS) and the Society for Post-Acute and Long-Term Care (AMDA), have posted information, educational resources, and links on their websites. As would be expected at this early stage in the pandemic, not all of the information, even from these reliable sources, is consistent. We have tried to summarize the current information to be as consistent with evidence and federal guidance as possible. The most detailed federal guidance can be found on the CMS[6] and CDC websites.[7,8] Several other resources and links to the CMS and CDC websites as well as other resources can be found on the websites of the AGS[9] and the AMDA.[10] The California Department of Health issued an executive order on March 20, 2020, that strongly recommends that LTCFs prepare to care for patients with COVID-19. This document contains a succinct but comprehensive list of recommendations that should be useful to all LTCFs.[11]

With this background information, it is imperative that geriatrics healthcare providers understand the ABCDs of this pandemic: the *awareness* of potential key clinical differences of COVID-19 in this population; how to initiate appropriate *behaviors* quickly to manage the infection clinically in LTCFs; and concurrently, to begin *containment* of COVID-19 to disrupt further spread of the virus, as well as preventive interventions in the LTCF setting. In addition, healthcare leaders, policymakers, and government agencies must make *decisions* that address more rapid access and results of testing and treatment for COVID-19, as well as the costs and societal impacts of COVID-19.

AWARENESS

Clinicians who care for older adults are generally aware of the atypical presentations of common clinical diseases and disorders in this population. Infectious diseases are certainly no different.[12] The typical findings in patients with COVID-19 are fever, cough, and dyspnea. In an initial report of 138 patients in Wuhan, China, with a mean age of 56 years (range = 22-92 years), most without multiple comorbidities, fever was present in 99%, fatigue in 70%, cough in 59%, anorexia in 40%, myalgia in 35%, and dyspnea in 31%.[13] However, older adults, especially frail older adults with multiple chronic conditions, may be afebrile and may not have a cough, chest discomfort, or sputum production. Tachypnea, altered mental status or delirium, and unexplained tachycardia or a decrease in blood pressure may be the presenting clinical manifestations. Informal reports from US physicians who have cared for older patients with COVID-19 indicate that the most common presentation of infection began with malaise, muscle pains, low-grade fever, and cough that progressed to respiratory difficulty in the second week of illness; fever was not prominent in several cases.[14]

Many LTCF residents have dementia, history of strokes, or other health issues that may mask manifestations of COVID-19 infection. Thus any significant change in clinical status from baseline in older adults that has no immediate explanation may be caused by infection or sepsis, and it must be evaluated for COVID-19 infection during the current epidemic.[15] Some reports from China indicate that coinfection with another respiratory virus such as influenza is uncommon (<.5%), suggesting that if a patient tests positive for influenza, it is unlikely that they are harboring COVID-19. Whether this finding also occurs in countries outside of China remains to be confirmed.

BEHAVIOR

Our behavior as individuals and as health professionals must change to mitigate the rapid spread of this virus. Many people in general, and staff who work in LTCFs in particular, may be infected with the virus and be contagious, but they have no or mild symptoms. Thus we all must behave as if we can contract the virus without contact with a symptomatic person and as if we can transmit the virus ourselves. Based on CMS guidance, LTCFs must not allow any visitors except for very narrowly defined circumstances,[6] and they have therefore instituted screening procedures for all staff, contractors, and visitors. In addition, CMS recommends not using a common dining room and canceling all group activities.

Traditional infrequent monitoring of vital signs and clinical status must be enhanced during this period of COVID-19, especially for LTCF residents. All residents should be evaluated for a change of condition at least three times per 24-hour period and have daily temperature measurements. Rapid temperature-measuring devices should be used to expedite identification of fever. However, the absence of fever does not necessarily exclude an infection in older LTCF patients/residents, and thus assessment of clinical status for any change from baseline (eg, new onset of cough, dyspnea, altered mental status, and changes in vital signs other than temperature) is essential.

LTCF clinicians and staff must be prepared to act quickly when a patient/resident is identified as high risk for COVID-19 and/or has clinical findings consistent with the virus. Figure 1 illustrates examples of criteria for testing for COVID-19. Figure 2 illustrates different approaches to management based on whether the facility is prepared to test and manage patients/residents in the facility vs transferring them to an acute care facility. This decision will vary depending on how local circumstance evolve and may change rapidly over time. For example, rapid testing that gives results in hours rather than days will be available in the near future; many emergency departments and hospitals are becoming overwhelmed by symptomatic patients and may not allow transfer of patients with mild symptoms that can be managed at a lower level of care; and alternative isolation and quarantine centers may be developed that would provide relief for both LTCFs and acute hospitals. A helpful review of the key points on COVID-19 for emergency

Screening to test for COVID-19 in the LTCF

CDC Recommendations on Who to Test for COVID-19

1. Hospitalized patients who have signs and symptoms compatible with COVID-19 in order to inform decisions related to infection control.
2. Other symptomatic individuals such as, older adults and individuals with chronic medical conditions and/or an immunocompromised state that may put them at higher risk for poor outcomes (e.g., diabetes, heart disease, receiving immunosuppressive medications, chronic lung disease, chronic kidney disease).
3. Any persons including healthcare personnel, who within 14 days of symptom onset had close contact with a suspect or laboratory-confirmed[4] COVID-19 patient, or who have a history of travel from restricted areas within 14 days of their symptom onset.

For details, see https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-criteria.html

Los Angeles Department of Public Health Testing Criteria

LAC DPH Public Health Lab (PHL) COVID-19 Testing Criteria		
Clinical Features	**and**	**Epidemiologic Risk**
Fever **or** signs/symptoms of lower respiratory illness (eg, cough, shortness of breath)	AND	Any healthcare worker (defined as a person providing direct clinical care to patients) who worked while symptomatic in an acute or long-term care facility[1] **-or-** A resident of a long-term care facility **-or-** Paramedic personnel and Emergency Medicine Technicians (EMTs)
Part of a cluster of 2 or more cases of a presumed infectious acute respiratory illness within a 72-hour period	AND	Any congregate living setting (eg, assisted living facility for older adults, homeless shelters

For details, see http://publichealth.lacounty.gov/acd/ncorona2019/checklist.htm

Figure 1. Screening to test for COVID-19 in the long-term care facility (LTCF). Until COVID-19 testing is more widely available in the LTCF setting, it may be useful to perform viral testing that is available to most LTCFs for influenza and other respiratory viruses because positive tests for these viruses may explain the symptoms rather than COVID-19. [Color figure can be viewed at wileyonlinelibrary.com]

department providers was just published and includes information about older patients and interactions with LTCFs.[16]

Any LTCF patient/resident who meets the criteria in Figure 1 and/or develops symptoms consistent with COVID-19 should immediately be isolated in a separate room or a quarantine area in situations when multiple patients/residents meet the criteria, and strict infection prevention and control practices are implemented. The screening criteria in Figure 1 are those outlined by the CDC and the Los Angeles County Department of Public Health[17] for testing for COVID-19. This individual is now classified as a person under investigation, and a decision must be made about management in the LTCF vs transfer to an acute care facility for evaluation and management (Figure 2). Until COVID-19 testing is more widely available in the LTCF setting, it may be useful to perform viral testing that is available to most LTCFs for influenza and other respiratory viruses because positive tests for these viruses may explain the symptoms rather than COVID-19.

All staff who will have immediate contact with a patient/resident suspected or confirmed to have the virus must use airborne precautions and wear personal protective equipment (PPE) that includes an N-95 mask, goggles, gown, and gloves. In these times of shortages of PPE, the CDC recommends alternatives to N-95 including other filtering facepiece respirators, elastomeric half-mask and full facepiece air-purifying respirators, and powered air-purifying respirators where feasible. Staff and other LTCF residents who have had contact with an infected patient/resident should also be tested and placed in quarantine for at least 14 days if they test positive.

CONTAINMENT

Preparation

To implement measures effectively to not only identify new infections but also prevent further spread of COVID-19, LTCFs

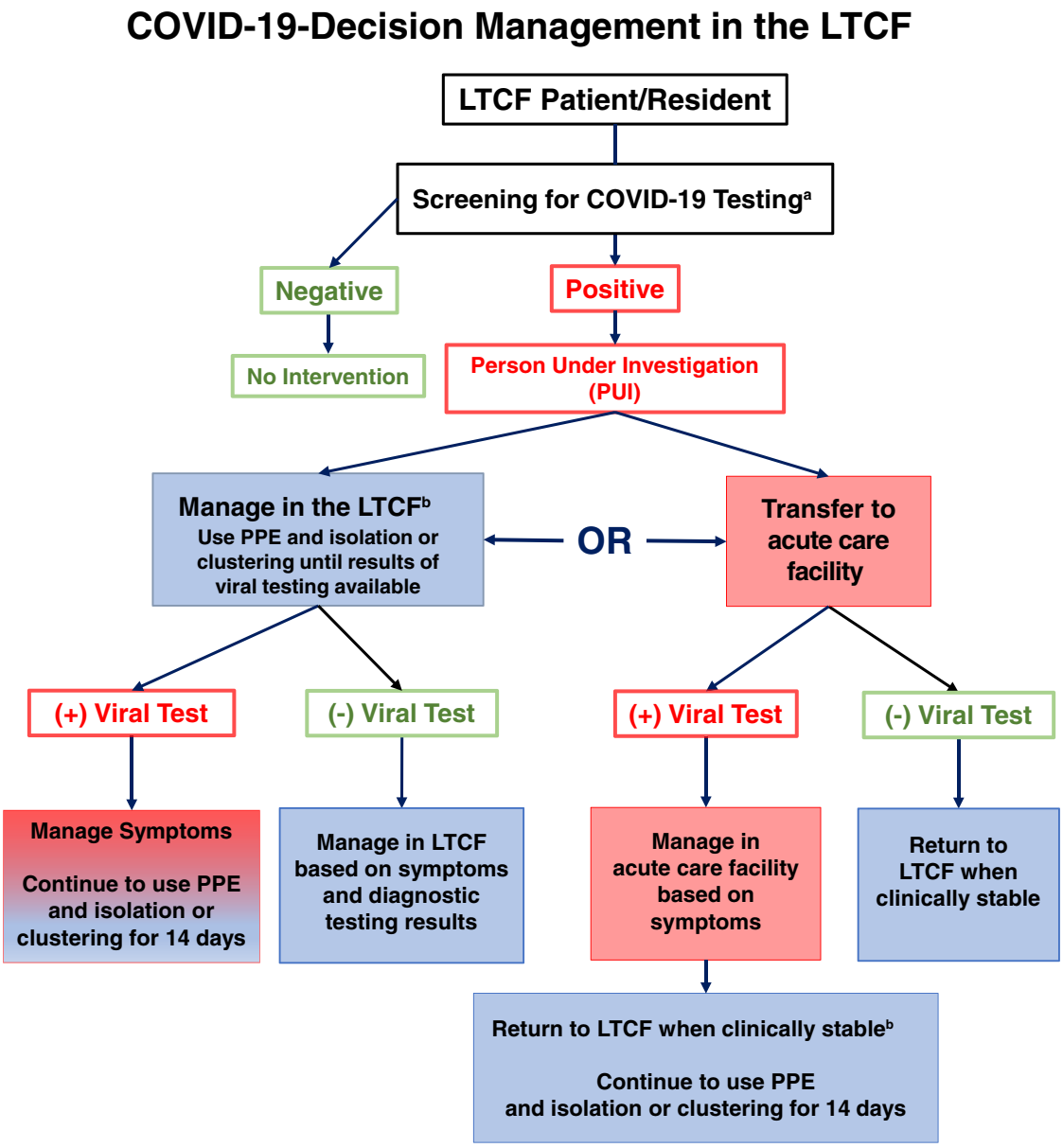

Figure 2. COVID-19: Decision management in the long-term care facility (LTCF). Viral testing in this figure refers to testing for COVID-19. Until COVID-19 testing is more widely available in the LTCF setting, it may be useful to perform viral testing available to most LTCFs for influenza and other respiratory viruses because positive tests for these viruses may explain the symptoms rather than COVID-19. PPE, personal protective equipment. [a]Figure 1 shows examples of screening criteria for testing. [b]Centers for Medicare & Medicaid requires the LTCF to have the ability to follow Centers for Disease Control and Prevention COVID-19 Infection Control and Prevention Practices.[7,8,11] [Color figure can be viewed at wileyonlinelibrary.com]

should have clear knowledge of stakeholders and their roles in this situation. Table 1 provides examples of key stakeholders who will be essential in managing a COVID-19 outbreak in the LTCF and their roles. Updated contact information is vital for communication with all key stakeholders, so policies and guidelines released by national, regional, and local health organizations, which may change quickly depending on the status of the COVID-19, can be efficiently disseminated to all stakeholders. Communication modalities may include signage, conference calling and webinars, hotlines, recorded messages, and, if available, telehealth.

Adequate supplies for temporary management of sick COVID-19 patients, as well as for preventive interventions, are critical. To the extent possible, given national shortages, there should be assurance of adequate standard care supplies as well as face masks including N-95 respiratory masks, gowns, gloves, hand soaps, and alcohol sanitizing solutions.

Preventive Interventions

The coronavirus mechanism of spread appears to be similar to that of influenza (ie, droplet transmission). Coughing or sneezing from an infected patient can have droplet nuclei (containing virus) that travel airborne at least 3 feet. Similar to influenza virus, it is believed that this coronavirus can remain viable on skin surfaces and inanimate objects for several hours and on some surfaces for several days. The primary portal of entry for the virus is through the upper

Table 1. LTCF Stakeholders and Functions during the COVID-19 Outbreak

Key stakeholders	Functions during COVID-19 outbreak
Corporate leadership	Provide consistent messaging, education, and updating on the most current regulations and relevant policies and procedures
Administrator	Coordinate the facility team; ensure adherence to all federal, state, and county recommendations, regulations, and policies Ensure the facility has adequate supplies and equipment Coordinate quality improvement activities
Director of nursing	Ensure adequate and appropriate nurse staff; implement and ensure that policies and procedures are adhered to; ensure education of nursing staff; oversee infection control practitioner Assist administrator in coordination of quality improvement activities
Medical director	Educate clinicians and ensure adherence to all facility, federal, and state policies and procedures including identification of those needing COVID-19 testing and transfer to acute care Ensure adequate medical coverage both onsite and via telemedicine, and encourage primary care clinicians to update as appropriate the patient/resident condition and document advance directives Participate in infection control and other quality improvement activities
Infection control practitioner	Assure implementation of infection control measures; identify possible infected staff and residents; assist with COVID-19 policies and procedures
Social worker	Assist primary care clinicians in updating as appropriate the patient/resident condition and document advance directives; ensure appropriate discharge to a safe setting of care
Pharmacy	Assist with antimicrobial stewardship related to the outbreak; ensure adequate supply of medications and supplies to manage symptoms of the illness
Maintenance	Cleanse and disinfect all areas of facility frequently (equipment, dining tables, etc)
Facilities management	Ensure adequate supplies including equipment (protective equipment as available) and transportation

respiratory tract, and then it settles in the lower respiratory tract.[18] Thus personal protection and prevention includes a variety of strategies.

The CDC offers comprehensive guidance on these strategies.[7] Regular careful washing of hands for 20 seconds with soap and/or cleansing hands with alcohol-based antiseptic after contact with any resident/patient or surface that potentially could harbor the virus (eg, doorknobs, stairway handrails, restaurant menus, elevator buttons, common-use computers, etc) is essential. Avoiding touching one's face area including mouth, nose, and eyes is critical because of the portal of entry. A fecal-oral route of transmission may be possible because viral RNA has been isolated in stool samples from infected patients, but this remains to be proven. Frequent cleansing and disinfecting of bathrooms, showers, bedrails, hallway handrails, doorknobs, elevators, stairwell handrails, and all equipment that would be used by patients/residents and/or staff should be implemented.

To limit any potential spread of the infections between individuals, social distancing is highly recommended, as it is outside the LTCF. Individuals should maintain a distance of 3 to 6 feet from another person. In-person meetings or conferences should be reduced in number to only very essential information exchanges, and they should be limited to as small a number of people as necessary. For LTCFs involved with teaching institutions and their trainees or students, these activities should be postponed until further guidance is provided by the school, college, or university.

Staff, residents, and visitors of LTCFs should be educated and informed of the clinical manifestations of COVID-19 infection and screened daily before entering the facility. Any positive response should prompt staff to contact their healthcare provider for further evaluation. Reminders of the clinical manifestations of COVID-19 and the preventive interventions should include signs and posters placed throughout the entire facility, especially in the resident rooms, employee restroom and break room, as well as at the entrance of the building.

New admissions to the LTCF should only be allowed if the potential resident has been screened negative for COVID-19. If screening has not been performed, admission should be avoided or delayed until screening has been completed. This situation may change because LTCFs may be called on to care for patients who test positive for COVID-19.[11]

DECISIONS

At a time of unprecedented crisis, local, county, state, and federal leadership must make difficult decisions. They must communicate regularly in a clear and honest way, balancing the seriousness of the situation with a sense of community purpose and cooperation to resolve the crisis as soon as possible.

At a local level, LTCF administration and medical leadership should remain informed by regularly checking the resources cited in this article as well as others, and communicating updated key information to staff, patients/residents, and families. Administrators should also be prepared to address employee absenteeism and strongly recommend that employees remain at home if they have symptoms compatible with COVID-19, and create backup plans to cover potential staff shortages to the extent possible. Medical directors should collaborate with nursing and social work staff to help ensure that advance care planning and advance directives are updated as appropriate to the patient/resident condition and documented. This is especially important in areas where the number of intensive care unit beds and respirators may be limited and potentially unavailable to those at the end of life. A wide variety of tools to assist with advance care planning are available with links to other resources on the Interventions to Reduce Acute Care Transfers (INTERACT) website.[19] Because the situation is changing so rapidly, the formation of local groups of key health professionals to communicate what they are encountering and brainstorm on local solutions in real time should be encouraged.

County and state health departments are stepping up as illustrated by the leadership of the California Department

of Public Health as just one of many examples.[11,17] Many state governors are implementing a wide variety of public health measures, taking dramatic steps to meet the needs of hospitals, LTCFs, and healthcare providers, and to protect their population, giving daily briefings to communicate these decisions.

Numerous federal agencies are playing a leadership role under the auspices of the White House Coronavirus Task Force in dealing with both the health and economic consequences of this pandemic. The leaders of these agencies are communicating their decisions and activities on televised briefings daily. Examples of decision making at the federal level that affect LTCFs include all of the information and recommendations posted on the cited websites, waiving the 3-day hospitalization rule for Medicare coverage of a skilled LTCF stay, relaxing restrictions on reimbursement for telehealth, delaying implementation of the updated Minimum Data Set, and the approval of a rapid diagnostic test for COVID-19 that may be available soon. All of these measures are intended to better prepare LTCF leadership, staff, and medical providers to play a critical role in mitigating the potential devastating health and economic consequences of this pandemic.

In conclusion, this article is intended to help geriatrics healthcare providers understand the ABCDs of the COVID-19 pandemic. We recognize that the situation is fluid as new information and recommendations are released almost hourly. We have done the best we can to provide a succinct guide to the most current information and will continue to monitor the situation and update as quickly as we can.

This is an opportunity for the field of geriatrics to shine and play a critical role in the vast team of people and organizations involved in managing this crisis. *Awareness* of potential key clinical differences of COVID-19 in this population; quickly initiating appropriate *behaviors* to manage the infection clinically in LTCFs; implementing *containment* strategies to disrupt further spread of the virus, as well as preventive interventions in an LTCF; and being knowledgeable about the *decisions* being made at the local, state, and federal level will help achieve this goal.

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REFERENCES

1. World Health Organization. https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports/. Accessed March 19, 2020.
2. Belluz J. China's cases of Covid-19 are finally declining. A WHO expert explains why. https://www.vox.com/2020/3/2/21161067/coronavirus-covid19-china. Accessed March 3, 2020.
3. Bandaranayake T, Shaw AC. Host resistance and immune aging. Clin Geriatr Med. 2016;32:415-432.
4. Kamp J, Mathews AW. Coronavirus outbreaks spreading in nursing homes. Wall Street Journal. https://www.wsj.com/articles/coronavirus-outbreaks-spreading-in-nursing-homes-11584628291. Accessed March 19, 2020.
5. Falsey AR, McCann PM, Hall WJ, et al. The common cold in frail older persons: impact of rhinovirus and coronavirus in a senior daycare center. J Am Geriatr Soc. 1997;45:706-711.
6. Centers for Medicare and Medicaid Services. https://www.cms.gov/files/document/3-13-2020-nursing-home-guidance-covid-19.pdf. Accessed March 19, 2020.
7. Centers for Disease Control and Prevention. Preparing for COVID-19: Long-term care facilities, nursing homes. https://www.cdc.gov/coronavirus/2019-ncov/healthcare-facilities/prevent-spread-in-long-term-care-facilities.html. Accessed March 19, 2020.
8. Centers for Disease Control and Prevention. Interim infection prevention and control recommendations for patients with suspected or confirmed coronavirus disease 2019 (COVID-19) in healthcare settings. https://www.cdc.gov/coronavirus/2019-ncov/infection-control/control-recommendations.html. Accessed March 19, 2020.
9. American Geriatrics Society. About the coronavirus disease 2019 (COVID-19). https://www.americangeriatrics.org/covid19. Accessed March 19, 2020.
10. Society for Post-Acute and Long-Term Care Medicine. AMDA update on COVID-19. https://paltc.org/COVID-19. Accessed March 19, 2020.
11. California Department of Health. Preparing for coronavirus disease 2019 (COVID-19) in California skilled nursing facilities. https://www.cdph.ca.gov/Programs/CHCQ/LCP/Pages/AFL-20-25-1.aspx. Accessed March 23, 2020.
12. Norman DC. Clinical features of infection in older adults. Clin Geriatr Med. 2016;32:433-441.
13. Wang D, Hu B, Hu C, et al. Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus–infected pneumonia in Wuhan, China. JAMA. 2020; https://doi.org/10.1001/jama.2020.1585
14. AGS Member Forum. https://myagsonline.americangeriatrics.org/community-home/digestviewer. Accessed November 3, 2020.
15. Yoshikawa TT, Reyes BJ, Ouslander JG. Sepsis in older adults in long-term care facilities: challenges in diagnosis and management. J Am Geriatr Soc. 2019;67:2234-2239.
16. Malone ML, Hogan TM, Perry A, et al. COVID-19 in older adults: key points for emergency department providers. The Geriatric Emergency Department Collaborative. 2020;1(4). https://gedcollaborative.com/article/covid-19-in-older-adults-key-points-for-emergency-department-providers/. Accessed March 23, 2020.
17. Los Angeles County Department of Public Health. Coronavirus disease 2019 (COVID-19) clinician checklist: evaluating patients who may have COVID-19. http://publichealth.lacounty.gov/acd/ncorona2019/checklist.htm. Accessed March 21, 2020.
18. Xu Z, Shi L, Wang Y, et al. Pathological findings of COVID-19 associated with acute respiratory distress syndrome. Lancet Respir Med. 2020;8:420-422.
19. Interventions to Reduce Acute Care Transfers (INTERACT). http://www.pathway-interact.com. Accessed March 23, 2020.