



JAMDA

journal homepage: www.jamda.com

Controversies in Care

Proceedings from an International Virtual Townhall: Reflecting on the COVID-19 Pandemic: Themes from Long-Term Care



George A. Heckman MD, MSc^{a,b,*}, Kelly Kay MA^c, Adam Morrison MSc^c, David C. Grabowski PhD^d, John P. Hirdes PhD^a, Vince Mor PhD^e, Greg Shaw BSc^f, Sophiya Benjamin MBBS^{c,g}, Veronique M. Boscart RN, PhD^{a,h}, Andrew P. Costa PhD^{a,i}, Anja Declercq PhD^j, Leon Geffen MBChB^{k,l}, Terry Yat Sang Lum PhD^m, Andrea Moser MD, MScⁿ, Graziano Onder MD, PhD^o, Hein van Hout PhD^p

^a UW-Schlegel Research Institute for Aging, Waterloo, Ontario, Canada

^b School of Public Health and Health Systems, University of Waterloo, Waterloo, Canada

^c Provincial Geriatrics Leadership Ontario, Ontario, Canada

^d Department of Health Care Policy, Harvard Medical School, Boston, MA, USA

^e School of Public Health, Center for Gerontology and Healthcare Research, Brown University, Providence, RI, USA

^f International and Corporate Relations, International Federation on Ageing, Ontario, Canada

^g Department of Psychiatry and Behavioural Neurosciences, McMaster University, Hamilton, Canada

^h School of Health & Life Sciences, Conestoga College Institute of Technology and Advanced Learning, Kitchener, Ontario, Canada

ⁱ Department of Clinical Epidemiology and Biostatistics, McMaster University, Hamilton, Canada

^j LUCAS, Centre for Care Research and Consultancy & CESO, Center for Sociological Research, KU Leuven University, Leuven, Belgium

^k Samson Institute For Ageing Research, Cape Town, South Africa

^l Institute of Ageing in Africa, Faculty of Health Sciences, University of Cape Town, Cape Town, South Africa

^m Department of Social Work and Social Administration, The University of Hong Kong, Hong Kong, SAR China

ⁿ Department of Family and Community Medicine, University of Toronto, Ontario, Canada

^o Department of Cardiovascular, Endocrine-metabolic Diseases and Aging, Istituto Superiore di Sanità, Rome, Italy

^p University Medical Center, Amsterdam, the Netherlands

A B S T R A C T

Keywords:

Long-term care homes
nursing homes
COVID-19
quality assurance

Residents of long-term care (LTC) homes have suffered disproportionately during the COVID-19 pandemic, from the virus itself and often from the imposition of lockdown measures. Provincial Geriatrics Leadership Ontario, in collaboration with interRAI and the International Federation on Aging, hosted a virtual Town Hall on September 25, 2020. The purpose of this event was to bring together international perspectives from researchers, clinicians, and policy experts to address important themes potentially amenable to timely policy interventions. This article summarizes these themes and the ensuing discussions among 130 attendees from 5 continents. The disproportionate impact of the COVID-19 pandemic on frail residents of LTC homes reflects a systematic lack of equitable prioritization by health system decision makers around the world. The primary risk factors for an outbreak in an LTC home were outbreaks in the surrounding community, high staff and visitor traffic in large facilities, and crowding of residents in ageing buildings. Infection control measures must be prioritized in LTC homes, though care must be taken to protect frail and vulnerable residents from their overly blunt application that deprives residents from appropriate physical and psychosocial support. Staffing, in terms of overall numbers, training, and leadership skills, was inadequate. The built environment of LTC homes can be configured for both optimal resident well-being and infection control. Infection control and resident wellness need not be mutually exclusive. Improving outcomes for LTC residents requires more staffing with proper training and interprofessional leadership. All these initiatives must be underpinned by an effective quality assurance system based on standardized, comprehensive, accessible, and clinically

G.A.H. is supported by Schlegel Research Chairs in Geriatrics. V.M.B. is supported by the CIHR/Schlegel Industrial Chair for Colleges in Seniors Care. A.P.C. is supported by the Schlegel Research Chair in Clinical Epidemiology & Aging. V.M. is the Florence Pirce Grant Professor of Health Services, Policy & Practice at Brown University, Providence, RI, USA. A.Mos. is Chief Medical Officer for CMO with Sienna Senior Living in Canada. K.K. and A.Mor. are staff of Provincial Geriatrics Leadership Ontario. None of the other authors have any conflicts of interest to disclose.

* Address correspondence to George A. Heckman MD, MSc, School of Public Health and Health Systems, Faculty of Applied Health Sciences, University of Waterloo, TJB 2264, 200 University Avenue West, Waterloo, Ontario, N2L 3G1, Canada.

E-mail address: ggheckma@uwaterloo.ca (G.A. Heckman).

<https://doi.org/10.1016/j.jamda.2021.03.029>

1525-8610/© 2021 The Authors. Published by Elsevier Inc. on behalf of AMDA – The Society for Post-Acute and Long-Term Care Medicine. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

relevant data, and which can support broad communities of practice capable of effecting real and meaningful change for frail older persons, wherever they chose to reside.

© 2021 The Authors. Published by Elsevier Inc. on behalf of AMDA – The Society for Post-Acute and Long-Term Care Medicine. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Since first identified as the cause of a novel form of atypical pneumonia in late 2019, the Severe Acute Respiratory Syndrome-related Coronavirus 2 (COVID-19) pandemic has infected more than 150 million persons and claimed over 3 million lives.¹ Older persons have been the most likely to develop severe COVID-19 illness and have sustained the highest mortality rates. The greatest impact in many countries, regardless of how their health care system is configured, has been among residents of long-term care (LTC) homes.^{1–3} During the first pandemic wave, deaths of LTC residents accounted for almost half of all COVID-19 related deaths in OECD countries.⁴

The disproportionate impact of the pandemic on LTC residents lays bare not only their intrinsic frailty but illustrates how the predominant focus of health care policy and planning on acute care left LTC homes with inadequate resources for infection prevention and control, and a legacy infrastructure conducive to viral spread.² This has led to international calls for greater funding for LTC, during and in between pandemics, to better meet the complex needs of residents, improve care quality through intersectoral collaboration and quality assurance, upgrade infrastructure, and improve staff working conditions.³ However, where do we begin?

Provincial Geriatrics Leadership Ontario (PGLO) is mandated to advance seniors' health policy and build health system capacity to improve care for older adults in Ontario, Canada.⁵ Throughout the pandemic, PGLO provided coordination, policy support, and education to Ontario health system stakeholders. PGLO, in cooperation with interRAI and the International Federation on Aging, convened "Reflecting on the COVID-19 Pandemic: Themes from Long Term Care—An International Virtual Town Hall" on September 25, 2020. The planning committee selected 3 themes based on their prominence in scientific, lay press, and clinical discussions. These themes are potentially amenable to early intervention, including (1) updating the built environment of LTC; (2) public health vs individual health; and (3) staffing. Each theme was discussed by 3 scientific or clinical experts and moderated by a fourth. See [Supplementary Materials 1 and 2](#) for the planning committee, speaker list, and agenda. One hundred thirty participants from 5 continents attended the event, a recording of which can be found at https://rgps.on.ca/resources/international-virtual-town-hall_on_ltc/. This article summarizes the presentations, online discussions during the Town Hall, and written feedback submitted by 2 participants.

Theme 1: Physical Infrastructure—Rebuild Big or Downsize?

In this session, panelists highlighted emerging data about the impact of physical infrastructure on COVID-19-related outcomes among LTC residents.

The epidemiology of outbreaks in LTC homes in Ontario, Canada, during the first wave of the pandemic was reviewed.^{6,7} More than 30% (190/623) of LTC homes reported at least 1 COVID-19 infection, 6.6% (5218/78,607) of residents were infected, and the overall case fatality was 27.8%. Outbreaks were not uniformly distributed, with 86% of infections occurring in 10% of homes. The primary determinant of whether an outbreak occurred in a home was the extent of viral circulation in the surrounding community.⁶ Larger and urban homes were more likely to experience outbreaks.⁶ The extent of outbreaks was related to older building standards, crowding, shared rooms and washrooms, and chain operation of LTC homes.^{6,7} Simulations found that 31% of infections and 31% of deaths could have been prevented if

all Ontario LTC residents had single rooms, though 30,000 additional private rooms would have been required to achieve this.⁷

Data from the United States confirm that the primary determinant of LTC home outbreaks is community viral circulation.^{8–11} Additional data, derived through geospatial analysis and cell phone tracking, show that outbreaks were more likely when LTC staff commuted from neighborhoods with high viral circulation, and in large homes with more staff traffic. High occupancy rooms were associated with larger outbreaks.^{8,10,12,13} Additional factors shown to increase the risk of viral transmission include grouping residents onto single units without timely COVID-19 testing, the coming and going of residents requiring hemodialysis in hospital, and special dementia units where residents often stroll maskless.^{10,12,14}

In contrast, less crowded homes had fewer and smaller outbreaks.¹⁵ For example, the Green House model is more resident-centered, with greater staff consistency, and houses 8 to 12 residents per lodging, each with their own bedroom and bathroom.¹⁶ Data suggest that the Green House model leads to better resident outcomes and lower hospitalization costs, which may partially offset increased costs associated with the homes themselves.^{17,18} The fact that smaller homes not only support better resident outcomes but are more resilient against infectious outbreaks should prompt policy makers to reimagine LTC infrastructure in a postpandemic world.

Theme 2: Infection Control and Frail LTC Residents

In this session, panelists reflected on the challenges of balancing public health priorities to reduce viral circulation in LTC homes, and the health impacts on residents of lockdowns and visitor restrictions.

Hong Kong's high population density and importance as an international hub confer a very high baseline risk of viral outbreaks.^{19,20} There are 760 LTC homes in Hong Kong, housing 76,673 residents. By September 2020, Hong Kong had undergone 3 pandemic waves. The first 2, from January to April 2020, were small, related to travel from China and internationally, and were contained with no LTC outbreaks.²⁰ The third wave in June 2020 was triggered by community spread, with outbreaks in 16 LTC homes infecting 105 residents, 30 of whom died. Although case fatality rates among infected Hong Kong residents were similar to North American rates, the absolute number of LTC deaths was markedly lower.

This success stems from lessons learned from the 2003 Severe Acute Respiratory Syndrome (SARS) outbreak, during which 72 LTC residents were infected and 57 died.¹⁹ The risk of contracting SARS was 5 times greater among LTC residents than the general population, with 81% of cases acquired through hospital visits. Subsequently, Hong Kong developed guidelines for the prevention of communicable diseases in LTC homes, and which have been regularly updated since.¹⁹ These guidelines require that all LTC homes have an infection control officer, conduct annual outbreak drills, have a permanent 1- to 3-month stockpile of personal protective equipment (PPE), establish visitation rules that address hygiene and PPE use, and procure technology to facilitate communication with families in case of an outbreak. Furthermore, provisions were made to externally quarantine infected residents and staff. During the COVID-19 pandemic, these guidelines were complemented by strict community lockdowns, including travel bans, school closures, flexible working arrangements, and limited public gatherings.²⁰

The impact of COVID-19 outbreaks in Italian LTC homes were reviewed considering resident, facility, health system factors. Residents of LTC homes were intrinsically more vulnerable to the effects of COVID-19, the main drivers of poor outcomes being multimorbidity and frailty.^{21,22} The high prevalence of multimorbidity in patients with COVID-19 triggered a debate in Italy regarding the primary cause of death in patients with COVID-19. A review of more than 5000 Italian death certificates confirmed that the large majority of deaths (88%) were correctly attributed to COVID-19, arguing against the often-heard remarks by skeptics that “they would have died anyway.”²³

In-depth interviews with 1356 LTC home directors in Italy about the first pandemic wave confirmed challenges similar to those faced around the world, including lack of information about the virus, lack of testing, and limited PPE.^{24,25} Older building designs interfered with the effective isolation of infected residents, which was compounded further by restricted access to acute care. Larger homes saw greater usage of antipsychotic medications and physical restraints. Conversely, some very small LTC homes were affected by severe staff shortages from COVID-19 infections. Unfortunately, because of the absence of standardized data, the full picture of the COVID-19 pandemic on Italian LTC homes may never be known, and opportunities for further learning diminished.

Clearly, frail LTC residents are highly susceptible to adverse outcomes from COVID-19 infection, and although infection control measures were effective at reducing outbreaks, they were also associated with harm to residents.

Theme 3: Staffing—Does More Imply Better?

In this session, panelists discussed LTC staffing and how quality assurance frameworks could better inform optimal staffing models, training, and care.

Recommendations from the Royal Society of Canada Task Force on working conditions in LTC homes were discussed.²⁶ In addition to endorsing robust infection control and communication technologies similar to those deployed in Hong Kong, the Task Force advocated for full-time positions, equitable benefits including paid sick leave, and mental health and well-being supports for all staff. The current work environment in Canada encourages high staff turnover and leads many to work in multiple homes to earn a living wage: high staff mobility promotes the spread of infectious diseases. More staffing overall is required, as implementing 1–job site policies in Canada led to a 30% drop in staffing in some homes.²⁶

Determining an ideal staffing model is challenging because of a lack of contemporary empirical data reflecting the complexity of LTC residents.²⁶ Systemwide comprehensive and standardized information is necessary to characterize this complexity, and this information needs to be readily available and up-to-date to guide staffing decisions. Workforce planning must also ensure adequate training in geriatrics and multimorbidity, tailored to both registered staff and unregulated care providers.

The evidence regarding the physician role in LTC homes was reviewed.²⁷ Training and certification of physicians in the care of LTC residents leads to better outcomes. Although judicious application of virtual care technology clearly has a role during epidemics, in-person visits using proper infection control measures remain important to best support frail LTC residents. Greater on-site physician presence has been associated with fewer hospitalizations, lower care costs, and better care quality; more robust evidence on optimal roster size and visit frequency is needed.²⁸ Physician leadership, in collaboration with administrators, directors of nursing, other physicians, acute care, and other services, can further improve care quality.^{29,30} In Ontario, the LTC medical director role is prescribed by legislation but its implementation is highly variable. There are no requirements for LTC physicians to be trained in the care of older persons, nor are there

requirements to demonstrate competency in medical staff management, administration, interprofessional skills, and quality improvement.³¹ There is minimal support from specialists in geriatric medicine.³²

The session concluded with a discussion of the role of quality assurance in understanding how best to staff LTC homes and improve care.³¹ Internationally, although it is acknowledged that LTC staffing is insufficient to meet resident needs, increasing staffing alone without explicit attention to quality does not guarantee better resident outcomes. Australia, for example, has distinct but complementary accreditation and compliance processes, supported by federal legislation that provides a national quality assurance framework for LTC.³³ Accreditation is an ongoing process of evaluating LTC home performance against national standards and is credited with improving resident care. Compliance with national standards is overseen by an agency that can audit, issue orders, appoint administrators, or revoke operating licenses.³³ This quality assurance framework, backed by national standards and federal legislation and enforcement, has created a foundation for innovation and flexibility that is improving care quality across the entire spectrum of LTC, regardless of location or facility ownership.

Thus, implementing a quality framework for LTC, using clinical information that reflects contemporary resident complexity, may greatly facilitate improvements in care and inform how best to deploy, train, and certify clinical staff.

Discussion

The impact of the COVID-19 pandemic on LTC residents demonstrates how current health system designs, and arguably society at large, fostered conditions that allowed our frailest citizens and those who care for them to be harmed. The major determinant of viral outbreaks in LTC homes is a community outbreak: thus, the best way to protect LTC residents is to control community outbreaks. The major determinants of poor resident outcomes are frailty and multimorbidity. Frailty renders affected individuals vulnerable to adverse outcomes when exposed to stressors, and COVID-19 infection is a particularly virulent stressor. Health systems unprepared for a pandemic, that cannot effectively impose infection control measures with an expectation of widespread compliance, or that cannot mitigate the impact of lockdowns on residents, are themselves stressors that lead to harm. That the impact of the pandemic has been felt most keenly by older persons, who have either experienced increased morbidity or mortality or suboptimal care, including increased usage of chemical and physical restraints in many LTC homes, raises uncomfortable questions about structural ageism in health system design.^{24,34,35}

The LTC built environment was a major determinant of outbreak occurrence and severity. Design features that promote greater multiplicity and comingling of viral vectors—staff or residents—are strong determinants of the risk and extent of outbreaks. Investing in smaller, more home-like LTC units not only supports better outcomes for residents, but may also reduce the risk of infectious disease outbreaks by minimizing potential viral vectors. However, excessive down-sizing may leave residents vulnerable to situations similar to those reported by small Italian LTC homes and in the United States, where outbreaks led to critical staff shortages.^{24,25,36} The solution may lie in architectural approaches that distinguish small-scale living from small-scale housing, using uncrowded and homelike residential spaces. Such infrastructure must be supported by dedicated staff embedded in a responsive organizational structure sufficiently large enough to ensure adequate staff coverage and to share operation resources. Any new large-scale developments based on clearly unhealthy institutional architectural designs should be strongly discouraged.

Dedicated infection control officers should be required in all LTC homes. In Hong Kong, strict infection control measures for LTC homes received equal priority to those in acute care, limiting the extent of the outbreaks that did occur. The importance of infection control is underlined in an independent report on the impact of the pandemic by one Canadian LTC operator, and which revealed that 97% of deaths in the first wave of the pandemic could be traced to outbreaks occurring before the delivery of PPE to LTC homes.³⁷ Infection control can no longer be compromised. However, mitigating the impact of lockdown measures on resident health is essential.^{24,34,35,38}

Hong Kong took measures to equip LTC homes with technology to facilitate communication between residents and their families. Though data on the effect of these measures in Hong Kong are not available, evidence from New Brunswick, Canada, sheds light on how these strategies can mitigate the impact of a lockdown on resident mental health.³⁹ From March to June 2020, New Brunswick implemented strict provincewide lockdown measures during which no LTC COVID-19 outbreaks occurred. The New Brunswick government equipped these homes with technology for virtual communication between residents and families, and, as technology alone is insufficient, volunteers were deployed to support these and other recreational initiatives, including outdoor family visits in the spring of 2020. The systemwide availability of the standardized interRAI LTCF assessment instrument within a community of practice for Francophone facilities showed that, despite fewer face-to-face family visits, there was no increase among residents of depressive symptoms, delirium, or aggressive expressions compared with pre-lockdown levels. Moreover, residents with severe dementia were less likely to develop delirium than those with milder dementia. Although additional work is needed to better understand the mechanisms underlying these observations, these data suggest that infection control and resident health and well-being need not be mutually exclusive.

A stable, well-supported full-time workforce is not only required to better meet the chronic needs of LTC residents, it is also required for the timely mobilization of effective infection control measures during outbreaks. Enhanced role-appropriate training for all staff—including unregulated care providers and essential caregivers—in geriatrics, multimorbidity, and infection control is essential, and certification of LTC physicians should be required. The concept of nursing, physician, and administrative leadership generated much discussion among Town Hall attendees. Several desirable leadership qualities were identified, including presence on LTC home “neighborhoods,” empathy, an interprofessional and collaborative approach, inspiring in others the desire to learn, and a commitment to continuous on-the-job learning and quality assurance. Strong leaders were seen as prime movers behind robust responses to outbreaks, providing tangible support not only to residents but to overextended staff. In contrast, a small number of homes saw a marked reduction in physician access^{24,25,36}; emerging data from Canada suggest that infrequent medical director visits were associated with the risk of outbreaks.⁴⁰ Finally, lack of geriatrician involvement in LTC is not unique to Canada despite evidence of benefit, and thus reconsidering where geriatricians are deployed should be as much a priority as addressing geriatrician shortages.^{41–45}

A robust standardized quality assurance framework should be a fully funded and integral component of all LTC systems, in order to ensure that all homes meet care benchmarks and standards. The framework should include indicators that reflect the complexity of residents of LTC homes and that are clinically meaningful. Such a system provides a mechanism to support care planning, derive quality indicators, evaluate novel approaches to staffing and care, and has been shown to serve as a nidus for LTC home communities of practice for quality improvement.^{39,46,47}

Implications for Practice, Policy, and/or Research

The disproportionate impact of the COVID-19 pandemic on residents of LTC homes reflects a long-standing and systematic lack of equitable prioritization by health system decision makers around the world. Although there may be growing consensus among those working and living in LTC about what needs to change, this consensus has yet to result in meaningful policy change. Residents of LTC homes, as well as frail older persons living with frailty and wishing to remain in their own homes in the community, must no longer be dismissed. From the discussions in this International Town Hall, several conclusions can be drawn.

1. The living environment of LTC homes can and should be scaled to promote optimal resident well-being and infection control.
2. LTC residents are frail and vulnerable to both the virus and to the overly blunt application of infection control measures that fail to provide them with physical and psychosocial support. Infection control and resident wellness are not mutually exclusive and both always essential.
3. Improving outcomes for LTC residents requires more, stable, and well-supported staffing with proper training in geriatrics, multimorbidity, infection control, and interprofessional leadership.
4. The LTC sector must be supported by an effective quality assurance system based on standardized, comprehensive, accessible, and clinically relevant data, and which can support broad communities of practice capable of effecting real and meaningful change for frail older persons, wherever they chose to reside.

As succinctly stated by another Town Hall attendee, “As a family member who was restricted from seeing my father for many months during COVID-19, I feel strongly that continuing with the status quo is not an option.”

Acknowledgments

The authors wish to acknowledge the contributions of Patricia Bilski, MN, RN, GNC(C), and Ms Lisa Poole (caregiver), who attended the Town Hall and submitted written feedback, some of which is quoted in the article.

Supplementary Data

Supplementary data related to this article can be found online at <https://doi.org/10.1016/j.jamda.2021.03.029>.

References

1. Johns Hopkins University of Medicine. Coronavirus Resource Center 2021. Available at: <https://coronavirus.jhu.edu/map.html>. Accessed March 28, 2021.
2. Declercq A, de Stampa M, Geffen L, et al. Why, in almost all countries, was residential care for older people so badly affected by COVID-19? OSE Working Paper Series. Available at: http://www.ose.be/files/publication/OSEPaperSeries/Declercq_Et_Al_2020_OpinionPaper23.pdf. Published 2020. Accessed March 28, 2021.
3. Hirdes JP, Declercq A, Finne-Soveri H, et al. The long-term care pandemic: International perspectives on COVID-19 and the future of nursing homes. *Balsillie Papers*. Available at: <https://www.balsillieschool.ca/the-long-term-care-pandemic-international-perspectives-on-covid-19-and-the-future-of-nursing-homes/>. Published 2020. Accessed March 28, 2021.
4. Sepulveda ER, Stall NM, Sinha SK. A comparison of COVID-19 mortality rates among long-term care residents in 12 OECD countries. *J Am Med Dir Assoc* 2020;21:1572–1574.e3.
5. Provincial Geriatrics Leadership Office 2021. Available at: <https://rgps.on.ca/initiatives/provincial-geriatrics-leadership-office/>. Accessed March 28, 2021.
6. Stall NM, Jones A, Brown KA, et al. For-profit long-term care homes and the risk of COVID-19 outbreaks and resident deaths. *CMAJ* 2020;192:E946–E955.

7. Brown KA, Jones A, Daneman N, et al. Association between nursing home crowding and COVID-19 infection and mortality in Ontario, Canada. *JAMA Intern Med* 2021;181:229–236.
8. White EM, Santostefano CM, Feifer RA, et al. Asymptomatic and presymptomatic severe acute respiratory syndrome coronavirus 2 infection rates in a multistate sample of skilled nursing facilities. *JAMA Intern Med* 2020;180:1709–1711.
9. White EM, Kosar CM, Feifer RA, et al. Variation in SARS-CoV-2 prevalence in U.S. skilled nursing facilities. *J Am Geriatr Soc* 2020;68:2167–2173.
10. Blackman CFS, Feifer RA, Mor V, White EM. An illustration of SARS-CoV-2 dissemination within a skilled nursing facility using heat maps. *J Am Geriatr Soc* 2020;68:2174–2178.
11. Abrams HR, Loomer L, Gandhi A, Grabowski DC. Characteristics of U.S. nursing homes with COVID-19 cases. *J Am Geriatr Soc* 2020;68:1653–1656.
12. Shi SM, Bakaev I, Chen H, et al. Risk factors, presentation, and course of coronavirus disease 2019 in a large, academic long-term care facility. *J Am Med Dir Assoc* 2020;21:1378–1383.e1.
13. Gorges RJ, Konetzka RT. Staffing levels and COVID-19 cases and outbreaks in U.S. nursing homes. *J Am Geriatr Soc* 2020;68:2462–2466.
14. McConeghy KW, White E, Panagiotou OA, et al. Temperature screening for SARS-CoV-2 in nursing homes: Evidence from two national cohorts. *J Am Geriatr Soc* 2020;68:2716–2720.
15. Zimmerman S, Dumond-Stryker C, Tandan M, et al. Nontraditional small house nursing homes have fewer COVID-19 cases and deaths. *J Am Med Dir Assoc* 2021;22:489–493.
16. Cohen LW, Zimmerman S, Reed D, et al. THRIVE Research Collaborative. The Green House model of nursing home care in design and implementation. *Health Serv Res* 2016;51:352–377.
17. Grabowski DC, Afendulis CC, Caudry DJ, et al. THRIVE Research Collaborative. The impact of Green House adoption on Medicare spending and utilization. *Health Serv Res* 2016;51:433–453.
18. Afendulis CC, Caudry DJ, O'Malley AJ, et al. THRIVE Research Collaborative. Green House adoption and nursing home quality. *Health Serv Res* 2016;51:454–474.
19. Lum T, Shi C, Wong G, Wong K. COVID-19 and long-term care policy for older people in Hong Kong. *J Aging Soc Policy* 2020;32:373–379.
20. Cowling BJ, Ali ST, Ng TWY, et al. Impact assessment of non-pharmaceutical interventions against coronavirus disease 2019 and influenza in Hong Kong: An observational study. *Lancet Public Health* 2020;5:e279–e288.
21. Palmieri L, Vanacore N, Donfrancesco C, et al. Clinical characteristics of hospitalized individuals dying with COVID-19 by age group in Italy. *J Gerontol A Biol Sci Med Sci* 2020;75:1796–1800.
22. Onder G, Rezza G, Brusaferro S. Case-fatality rate and characteristics of patients dying in relation to COVID-19 in Italy. *JAMA* 2020;323:1775–1776.
23. Grippo F, Navarra S, Orsi C, et al. The role of COVID-19 in the death of SARS-CoV-2-positive patients: A study based on death certificates. *J Clin Med* 2020;9:3459.
24. Lombardo FL, Salvi E, Lacorte E, et al. Adverse events in Italian nursing homes during the COVID-19 epidemic: A national survey. *Front Psychiatry* 2020;11:578465.
25. Ancidoni A, Bacigalupo I, Bellomo G, et al. Survey nazionale sul contagio COVID-19 nelle strutture residenziali e socio-sanitarie. Report Finale. 2020 05 maggio 2020 [in Italian]. Available at: <https://www.epicentro.iss.it/coronavirus/pdf/sars-cov-2-survey-rsa-rapporto-finale.pdf>. Accessed March 28, 2021.
26. Armstrong P, Boscart V, Donner G, et al. Restoring trust: COVID-19 and the future of long-term care. Royal Society of Canada; 2020. Available at: <https://rsc-src.ca/en/research-and-reports/covid-19-policy-briefing/long-term-care/restoring-trust-covid-19-and-future>. Accessed March 28, 2021.
27. Collins R, Charles J, Moser A, et al. Improving medical services in Canadian long term care homes. *Canadian Family Physician*. Available at: <https://www.cfp.ca/news/2020/10/07/10-07>. Published 2020. Accessed March 28, 2021.
28. Kuo YF, Raji MA, Goodwin JS. Association between proportion of provider clinical effort in nursing homes and potentially avoidable hospitalizations and medical costs of nursing home residents. *J Am Geriatr Soc* 2013;61:1750–1757.
29. Lima JC, Intrator O, Karuza J, et al. Nursing home medical staff organization and 30-day rehospitalizations. *J Am Med Dir Assoc* 2012;13:552–557.
30. Katz PR, Karuza J, Lima J, Intrator O. Nursing home medical staff organization: Correlates with quality indicators. *J Am Med Dir Assoc* 2011;12:655–659.
31. Long-Term Care Staffing Study Advisory Group. Long-term care staffing study. Toronto. Available at: <https://www.ontario.ca/page/long-term-care-staffing-study>. Published 2020. Accessed March 28, 2021.
32. The College of Family Physicians of Canada. The Canadian Medical Association, The Royal College of Physicians and Surgeons of Canada. 2014 National Physician Survey. Available at: <http://nationalphysiciansurvey.ca/wp-content/uploads/2014/11/2014-National-EN.pdf>. Accessed March 28, 2021.
33. Gray LC, Cullen DJ, Lomas HB. Regulating long-term care quality in Australia. In: Mor V, Leone T, Mareson A, editors. *Regulating Long-Term Care Quality: An International Comparison*. Health Economics, Policy and Management. Cambridge: Cambridge University Press; 2014. p. 149–179.
34. Howard R, Burns A, Schneider L. Antipsychotic prescribing to people with dementia during COVID-19. *Lancet Neurol* 2020;19:892.
35. Stall NM, Zipursky JS, Rangrej J, et al. Assessment of psychotropic drug prescribing among nursing home residents in Ontario, Canada, during the COVID-19 pandemic. *JAMA Intern Med*; 2021:e210224.
36. McGarry BE, Grabowski DC, Barnett ML. Severe staffing and personal protective equipment shortages faced by nursing homes during the COVID-19 pandemic. *Health Aff (Millwood)* 2020;39:1812–1821.
37. Rivera Expert Advisory Panel. A perfect storm: The COVID-19 experience for Revera and the long term care sector. Available at: <https://cdn.reveraliving.com/-/media/files/pandemic-response/expert-advisory-report.pdf>. Published 2020. Accessed March 28, 2021.
38. Canadian Academic of Geriatric Psychiatry and Canadian Coalition for Seniors' Mental Health. Position paper: Mental health care in long-term care during Covid-19. Available at: <https://ccsmh.ca/wp-content/uploads/2021/01/COVID-19-Mental-Health-in-LTC-Web.pdf>. Published 2021. Accessed March 28, 2021.
39. McArthur C, Saari M, Heckman GA, et al. Evaluating the effect of COVID-19 pandemic lockdown on long-term care residents' mental health: A data-driven approach in New Brunswick. *J Am Med Dir Assoc* 2021;22:187–192.
40. Long-Term Care COVID-19 Commission Meeting Canadian Institute for Health Information on Wednesday, March 3, 2021. Hearing before the Long-Term Care COVID-19 Commission (2021), Toronto, Ontario, Canada.
41. Steves CJ, Schiff R, Martin FC. Geriatricians and care homes: perspectives from geriatric medicine departments and primary care trusts. *Clin Med (Lond)* 2009;9:528–533.
42. Lee WC, Sumaya CV. Geriatric workforce capacity: A pending crisis for nursing home residents. *Front Public Health* 2013;1:24.
43. Lee WC, Dooley KE, Ory MG, Sumaya CV. Meeting the geriatric workforce shortage for long-term care: opinions from the field. *Gerontol Geriatr Educ* 2013;34:354–371.
44. Boorsma M, Frijters DH, Knol DL, et al. Effects of multidisciplinary integrated care on quality of care in residential care facilities for elderly people: A cluster randomized trial. *CMAJ* 2011;183:E724–E732.
45. D'Arcy LP, Stearns SC, Domino ME, et al. Is geriatric care associated with less emergency department use? *J Am Geriatr Soc* 2013;61:4–11.
46. Hirdes JP, Retalic T, Muskat C, et al. The Seniors Quality Leap Initiative (SQLI): An international collaborative to improve quality in long-term care. *J Am Med Dir Assoc* 2020;21:1931–1936.
47. Hirdes JP, Major J, Didic S, et al. A Canadian Cohort Study to evaluate the outcomes associated with a multicenter initiative to reduce antipsychotic use in long-term care homes. *J Am Med Dir Assoc* 2020;21:817–822.