Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
COVID-19 Collaborative Model for an Academic Hospital and Long-Term Care Facilities

Laurie R. Archbald-Pannone MD, MPH\textsuperscript{a,b,*}, Drew A. Harris MD\textsuperscript{c}, Kimberly Albero DNP\textsuperscript{d}, Rebecca L. Steele MSN, RN\textsuperscript{d,e}, Aaron F. Pannone PhD\textsuperscript{f}, Justin B. Mutter MD, MS\textsuperscript{a}

\textsuperscript{a}Department of Medicine, Division of General, Geriatric, Hospital & Palliative Medicine, University of Virginia, Charlottesville, VA, USA
\textsuperscript{b}Department of Medicine, Division of Infectious Diseases and International Health, University of Virginia, Charlottesville, VA, USA
\textsuperscript{c}Department of Medicine, Division of Pulmonary and Critical Care Medicine, University of Virginia, Charlottesville, VA, USA
\textsuperscript{d}Project ECHO, Department of Psychiatry and Neurobehavioral Sciences, University of Virginia, Charlottesville, VA, USA
\textsuperscript{e}Karen S. Rheuban Center for Telehealth at the University of Virginia, University of Virginia, Charlottesville, VA, USA
\textsuperscript{f}Department of Public Health Sciences, University of Virginia, Charlottesville, VA, USA

A B S T R A C T

The COVID-19 pandemic is devastating post-acute and long-term care (PA/LTC). As geriatricians practicing in PA/LTC and a regional academic medical center, we created this program for collaboration between academic medical centers and regional PA/LTC facilities. The mission of the Geriatric Engagement and Resource Integration in Post-Acute and Long-Term Care Facilities (GERI-PaL) program is to support optimal care of residents in PA/LTC facilities during the COVID-19 pandemic. There are 5 main components of our program: (1) Project ECHO; (2) nursing liaisons; (3) infection advisory consultation; (4) telemedicine consultation; and (5) resident social contact remote connections. Implementation of this program has had positive response from our local PA/LTC facilities. A key component of our program is our interprofessional team, which includes physicians and nursing, emergency response, and public health experts. With diverse professional backgrounds, our team members have created a new model for academic medical centers to collaborate with local PA/LTC facilities.

© 2020 AMDA — The Society for Post-Acute and Long-Term Care Medicine.

Keywords: COVID-19, interprofessional, infection control, Project ECHO, nurse educator, telemedicine, subspecialty consultation
guidance on infection control policies, as recommended by AMDA, CDC, and CMS.\textsuperscript{10–12} The GERI-Pal team listened to facility-specific infection control concerns, staffing concerns, cohorting concerns, and challenges with ordering PPE from their standard suppliers. The attendees included a facility administrator, a facility director of nursing, an infection control practitioner, a medical director, and an all-facility licensed independent practitioner (LIP), whereas other meetings were attended by only a facility medical director or LIP.

Table 1

| GERI-Pal Prevention                          | Facilities Contacted | Facilities Participating | Rationale                                                                 | Implementation                                                                 |
|----------------------------------------------|----------------------|-------------------------|---------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Project ECHO COVID-19 in Nursing Homes        | 77                   | 35                      | • Facilitated time for interaction increases staff collaboration          | • Start by listening to facility needs and provide education based on needs assessment |
|                                              |                      |                         | • Multiple sources of continuous updates and recommendations to review    | • Synthesize information from various authoritative bodies to increase staff participation |
|                                              |                      |                         | • After initial broad regional outreach, transition to local initiative based on local agencies and resources | • Facilities need help testing residents and getting PPE. Connect with local testing laboratories and local emergency management for allocation of PPE |
|                                              |                      |                         | • Facility administrators and Directors of Nursing participate in facility-specific “office hours” and didactic learning | • Based on needs assessment and facility feedback, transition to weekly 1-h education sessions and “office hours” 4 d/wk |
|                                              |                      |                         | • Single point of contact for direct communication builds relationship with facility and integrates resources | • Nurse liaison provides facility with one person who can coordinate with multiple local agencies and organizations for resource allocation |
|                                              |                      |                         | • Streamlined source of information for technical assistance and guide for incorporating telehealth changes into clinical workflow | • Nursing liaison provides education to facility staff and training on telehealth |
| Nursing liaison                              | 35                   | 13                      | • Facilities may be hesitant to openly discuss challenges with other facilities | • Discuss specific facilities’ challenges with each facility individually |
|                                              |                      |                         | • Ideally done with facility walk-through; may be limited because of the pandemic | • Floor plans from emergency management can facilitate discussion if walkthrough not feasible |
|                                              |                      |                         | • Each facility has unique challenges, often based on built environment; knowing facility is important to making recommendations | • Listen to and engage in facility-specific suggestions to accommodate best practices for infection control |
| Infection advisory consultation              | 10                   | 8                       | • Facilities may be hesitant to openly discuss challenges with other facilities | • Contract negotiations have less urgency if no active cases or outbreak |
|                                              |                      |                         | • Ideally done with facility walk-through; may be limited because of the pandemic | • Must engage an active and knowledgeable legal team to assist with contract negotiations |
|                                              |                      |                         | • Each facility has unique challenges, often based on built environment; knowing facility is important to making recommendations | • Legal negotiations likely beyond expertise of clinical team to facilitate |
| Telemedicine consultation                     | 12                   | 5                       | • Multiple levels of negotiations are needed                              | • Assign medical student leaders to recruit other students |
|                                              |                      |                         | • Medical students actively volunteer                                   | • Requires staff time and dedication to recruit |
| Resident social contact remote connections    | 10                   | 2                       | • Facility staff can recruit interested residents                          | • Not all residents interested or able to participate |
|                                              |                      |                         | • Facility residents with varied levels of engagement                    |                                                                               |
Parallel to these meetings, on March 16, 2020, a “telementoring” series was rapidly instituted using the Project ECHO model that leverages learning, training, and practice support to build a collaboration for health professionals. The Project ECHO team included a nurse practitioner, geriatrician, pulmonologist, clinical nurse leader, and nurse educator. The goal of the virtual meetings was to connect long-term care facility administrators and directors of nursing to assess facility needs for COVID-19 preparedness. In the response arm, we provided updated COVID-19 information, testing and treatment guidelines, and best practices in infection control. Participants in Project ECHO sessions shared their experiences and sought input from a network of peers and insight from experts on managing COVID-19—positive patients in the PA/LTC setting. Other frequent community participants include local county fire and rescue representation and regional long-term care ombudsman. These sessions were daily focused discussions and needs assessments regarding clinical information, PPE preparedness, and infection control, as well as education-based discussions. Four days a week this program was driven by facility needs (in a question and answer format similar to academic office hours). One session each week the program was a more formal didactic session given by an academic content expert on a topic of interest determined by the group.

From the relationships established via Project ECHO, academic nursing educators actively cultivated relationships with local PA/LTC nursing leaders to determine facility needs for assistance with PPE, improve care coordination between inpatient medical teams and facilities, and provide support to optimize telemedicine consultation processes.

In addition, a facility telemedicine consult service was established to provide academic pulmonary and critical care clinical support and recommendations for testing, monitoring, and treatment-in-place, and to facilitate hospital transfer to and return from the hospital as need arises. The telemedicine consultant communicates with a hospital medical communications center to directly admit acute patients, as well as to ensure key aspects of care coordination, such as transfer of accurate medication lists, code status documentation, and demographic information faxed to a centralized number for ease of facility-based staff. An allied geriatric consultation service, including Geriatric and Palliative care specialists, provides a parallel telemedicine consult service that supports complex medical conditions, goals of care discussions, and assistance with comfort care treatment when needed.

Through this program, our academic medical center is providing support for local facilities and staff and increasing collaboration and communication with local health departments and other agencies. We
also paired local medical student volunteers with facility residents for phone calls to connect socially and help combat social isolation.

Evaluation

For our Project ECHO daily discussions, our nurse liaison invited all 28 of our local facilities, as well as an additional 49 regional facilities. We connected with up to 25 facilities each week for needs assessment and education. Table 1 provides outcomes information and lessons learned for each of the prevention components as related to feasibility and adoption. Because of our collaboration with local emergency management and health department, we focused these discussion based on these localities instead of the large catchment area of our hospital. Of the local facilities with initial COVID-19 infection, 2 of the 3 facilities had participated in our prevention program and none of these facilities had sustained transmission or outbreak. The response outcomes and feasibility are listed in Table 2 based on our response to the 2 local facilities with outbreaks in which we have implemented our program. The mortality rate of each of these outbreaks was 12% and 19%, lower than the published mortality rate of 28%.

Comment

We implemented our GERI-PaL program to support a collaborative care community between an academic medical center and local PA/LTC facilities. We present this as a practical approach intended to improve outcomes of COVID-19 in PA/LTC facilities. Components were well received among the participating facilities. The telemedicine consultation service was an integral component of our response arm and increased direct subspecialty care. In addition, our response daily huddle with all stakeholders in outbreak facilities streamlined communication for clinical and facility-based needs to activate response. A key innovation of the GERI-PaL model is our interprofessional team—including physicians, nurses, emergency response, and public health. The combined multidisciplinary expertise of this team has allowed us to more fully assess and adapt the program to meet real-time facility needs. Early intervention for facility outbreak is vital, especially to ensure appropriate planning and support before a facility point prevalence survey. Therefore, for other centers who may implement this program, we would recommend broad and ongoing outreach to facilities to expand impact and sustain facility involvement.

Acknowledgments

The authors would like to acknowledge Titus Castens, Tamar Goodale, and Beth Quatrara, and the UVA Telehealth team for their assistance with implementation of the GERI-PaL program. The authors would also like to acknowledge Jessica Little, Lydia Prokosch, Jacqueline Carson, Colleen Kiernan, and Dr Rachel Kon for their coordination of the medical students with facility residents.

References

1. CDC COVID-19 Response Team. Severe outcomes among patients with coronavirus disease 2019 (COVID-19)—United States, February 12–March 16, 2020. MMWR Morb Mortal Wkly Rep 2020;69:343–346.
2. McMichael TM, Clark S, Pogosjans S, et al. COVID-19 in a long-term care facility—King County, Washington, February 27–March 9, 2020. MMWR Morb Mortal Wkly Rep 2020;69:339–342.
3. Kimball A, Hatfield KM, Arons M, et al. Asymptomatic and presymptomatic SARS-CoV-2 infections in residents of a long-term care skilled nursing facility—King County, Washington, March 2020. MMWR Morb Mortal Wkly Rep 2020;69:377–381.
4. Stockman P, Ivory D, Smith M. “They’re death pits”: Virus claims at least 7,000 lives in U.S. nursing homes. The New York Times. 2020. Available at: https://www.nytimes.com/2020/04/17/us/coronavirus-nursing-homes.html. Accessed April 28, 2020.
5. McMichael TM, Currie DW, Clark S, et al. Public Health—Seattle and King County, EvergreenHealth, and CDC COVID-19 Investigation Team. Epidemiology of COVID-19 in a long-term care facility in King County, Washington. N Engl J Med 2020;382:2005–2011.
6. Dosa D, Jump RLP, LaPlante K, Gravenstein S. Long-term care facilities and the coronavirus epidemic: Practical guidelines for a population at highest risk. J Am Med Dir Assoc 2020;21:569–571.
7. Chidambaram P. State reporting of cases and deaths due to COVID-19 in long-term care facilities. Kaiser Family Foundation. 2020. Available at: https://www.kff.org/medicare/issue-brief/state-reporting-of-cases-and-deaths-dueto-covid-19-in-long-term-care-facilities/. Accessed April 28, 2020.
8. Centers for Disease Control and Prevention. Interim additional guidance for infection prevention and control for patients with suspected or confirmed COVID-19 in nursing homes. Available at: https://www.cdc.gov/coronavirus/2019-ncov/hcp/long-term-care.html#interim-guidance. Accessed April 28, 2020.
9. Siette J, Wuthrich V, Low L. Social preparedness in response to spatial distancing measures for aged care during COVID-19. J Am Med Dir Assoc 2020;21:985–986.
10. Dumyati G, Gaur S, Jump R, Nace D. AMDA update on COVID-19. AMDA COVID-19 Expert Team and Board of Directors. Available at: https://paltc.org/COVID-19. Accessed April 30, 2020.
11. National Center for Immunization and Respiratory Diseases (NCIRD), Division of Viral Diseases. Preparing for COVID-19: Long-term care facilities, nursing homes. CDC NCIRD. 2020. Available at: https://www.cdc.gov/coronavirus/2019-ncov/hcp/long-term-care.html. Accessed April 30, 2020.
12. Center for Clinical Standards and Quality/Quality, Safety and Oversight Group. Guidance for infection control and prevention of coronavirus disease 2019. Centers for Medicare & Medicaid Services. 2020. Available at: https://www.cms.gov/medicareprovider-enrollment-and-certificationsurveycertificationgeninfo/policy-and/qso-20-14-nh.pdf#page=1. Accessed April 30, 2020.
13. Arora S, Geppert C, Kalishman S, et al. Academic health center management of chronic diseases through knowledge networks: Project ECHO. Acad Med 2007;82:154–160.
14. Dowling M, Payne C, Larkin P, Ryan D. Does an interactive, teleconference-delivered, palliative care lecture series improve nursing home staff confidence? J Palliat Med 2020;23:179–183.