

A Clinical Response Team Providing Support to Long-Term Care Homes with COVID-19 Outbreaks in Eastern Ontario—a Cohort Study



James Downar, MDCM, MHSc^{1,2}, Kaitlyn Boese, MD, CCFP(PC)^{1,2}, Genevieve Lalumiere, RN, BScN, MN², Ghislain Bercier, ACP^{3,4}, Shannon Leduc, ACP, MSc(Epi)^{3,7}, Jill Rice, MD, MHSc, CCFP(PC)^{1,2}, Amit Arya, MD, CCFP(PC), FCFP⁵, Valerie Charbonneau, MD, MSc, FRCPC⁶

¹Division of Palliative Care, Department of Medicine, University of Ottawa, Ottawa, ON; ²Department of Palliative Care, Bruyere Continuing Care, Ottawa, ON; ³Ottawa Paramedic Services, Ottawa, ON; ⁴Regional Paramedic Program for Eastern Ontario, Ottawa, ON; ⁵Division of Palliative Care, McMaster University, Hamilton, ON; ⁶Department of Emergency Medicine, University of Ottawa, Ottawa, ON, Canada; ⁷Clinical Epidemiology Program, Ottawa Hospital Research Institute, Ottawa, ON
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ABSTRACT

Background

The greatest impact of the COVID-19 pandemic in Canada has been on long-term care facilities which have accounted for a large majority of the mortality seen in this country. We developed a clinical response team to perform mass assessment and provide support to long-term care facilities in Eastern Ontario with large outbreaks in the hope of reducing the impact of the outbreaks.

Methods

This is a retrospective cohort study of all residents of LTC facilities supported by our multidisciplinary clinical response team. We collected data about the timing of the outbreak and our deployment, as well as the total number of COVID-19 cases and deaths, and measured the correlation between the timing of our deployment and the observed mortality rate.

Results

Our clinical team was deployed to 14 long-term care facilities, representing 719 cases and 243 deaths (mean \pm standard error of mortality 34% \pm 4%). Our team was deployed a mean \pm standard error of 16 \pm 2 days after the declaration of an outbreak. There was a significant correlation between an earlier deployment of our clinical team and a lower mortality rate for that outbreak (Pearson's $r = 0.70$, $p < .01$).

Interpretation

This retrospective, uncontrolled study of a non-standardized intervention has many potential limitations. However, the data

suggest that timely deployment of our clinical response team may improve outcomes in the event of a large outbreak. This clinical team may be useful in future pandemics.

Key words: COVID-19, nursing homes, clinical deterioration, interdisciplinary health team, palliative care, emergency medical technicians, observational study

INTRODUCTION

In Canada, 69% of COVID-19 deaths in the first year of the pandemic were linked to long-term care (LTC) facilities.⁽¹⁾ The strain of the pandemic has overwhelmed our LTC sector, which was already struggling to manage an increasingly elderly and comorbid population before the first COVID-19 outbreaks occurred.⁽²⁾ In response, the Canadian Armed Forces were deployed to support some facilities,⁽³⁾ while others have had to close entirely, transferring every resident to acute care.⁽⁴⁾ To address the LTC crisis, the Champlain region of Eastern Ontario (population 1.4 million) developed a model for providing acute clinical support to LTC facilities that experienced COVID-19 outbreaks. In the present report, we describe the structure of this team, and report the mortality rates of outbreaks in which the team provided support.

METHODS

Design

This is a retrospective cohort study.

Setting

Fourteen LTC facilities in the Champlain Region of Eastern Ontario supported by our multidisciplinary clinical response team.

Participants

All residents of LTC facilities in which there was a COVID-19 outbreak with 10 or more residents infected. Our clinical team was deployed between April 2020 and February 2021.

Intervention

A description of team workflow has been published previously⁽⁵⁾ but is provided here. A multidisciplinary team consisted of three to six clinicians with acute care and community experience, as well as training in palliative and end-of-life care (e.g., physicians, nurses, and community paramedics) was deployed to LTC facilities when requested by the facility after a COVID-19 outbreak was declared. Given the scale of the outbreaks in some facilities, our team adopted a “mass casualty” approach—triaging a large number of individuals to identify those who required further assessment and treatment. All team members autonomously conducted a focused assessment of each COVID-19-positive (COVID-19+ve) resident and other residents on a ward with many COVID-19+ve residents. We took a focused history (respiratory, gastrointestinal, or constitutional symptoms), assessed for signs of respiratory distress, lethargy or mental status different than baseline, and measured transcutaneous oxygen saturation. Anyone with dyspnea, respiratory distress, lethargy or low oxygen saturation was “flagged” for follow-up. To minimize PPE use and maximize efficiency, one team member documented while the others assessed residents individually. We used different team members for COVID-19+ve and COVID-19-ve residents to reduce the risk of transmission. Gloves were changed and saturation probes cleaned with anti-infective wipes between each assessment, and gowns were changed after encounters with COVID-19+ve residents, if close care was provided in non-cohorted wards.

Each “flagged” patient was reviewed with the facility staff to know their baseline and the time course of any symptom. We also obtained a focused medical history to determine whether symptoms/signs could be related to a cause other than COVID-19. Finally, we assessed the facility’s ability to deliver the care required (e.g., supportive, palliative), and discussed goals of care with each “flagged” person (or their substitute decision-maker) to determine whether the person could be safely treated on site, or if they required a transfer to acute care. We also provided for, or arranged for, frequent follow-up for residents at risk of deterioration in the following days or weeks, before handing care back entirely to the medical team normally responsible for patient care at the facility.

Variables

We collected the date that each outbreak was declared, the total number of resident cases, and total number of deaths

for each facility from publicly available databases published by the public health units of Ottawa and Eastern Ontario.⁽⁶⁾

Statistical Methods

The decision to deploy our team was not random; we were generally asked to respond to larger outbreaks and/or outbreaks in facilities that were struggling with staffing. Thus, it would not be appropriate to assess the effectiveness of our team by comparing outcomes in facilities where we were deployed to those where we were not deployed. Instead, we used Pearson’s *r* test to compare the mortality rate of outbreaks at each facility based on the delay between the declaration of the outbreak and the deployment of the clinical team. Statistical comparisons were performed using StatPlus:mac v7.3.32 (AnalystSoft, Walnut, CA).

RESULTS

Between March 2020 and February 2021, 18 LTC and 12 assisted living facilities (ALF) in the Champlain region experienced outbreaks of COVID-19, with 10 or more residents infected (30 facilities, 1173 cases, 325 deaths (overall 28% mortality)).⁽⁶⁾ Our clinical teams were deployed to 14 of these facilities (11 LTC, 3 ALF), representing 719 cases and 243 deaths (mean \pm standard error of mortality $34\% \pm 4\%$). Our team was not deployed to 16 facilities (7 LTC and 9 ALF), accounting for 454 cases and 82 deaths (overall 18% mortality). The mean \pm standard error of the time from declaration of the outbreak (when two or more COVID-19 infections were identified in the same facility within 14 days and were presumed to be acquired in the facility) to deployment of the clinical team was $16 \pm$ days. There was a significant correlation between an earlier deployment of our clinical team and a lower mortality rate for that outbreak (Figure 1; Pearson’s $r = 0.70, p < .01$).

Most COVID-19+ve residents did not have worrisome symptoms or clinical signs on initial assessment, but the most common COVID-19 clinical problems we encountered were hypoxemia, dyspnoea, fatigue, anorexia, and dehydration. We did not collect specific data about each intervention provided, but roughly one-third to one-half of patients assessed would ultimately require an intervention during our follow-up period, which often lasted one to two weeks. The most common interventions were the addition of corticosteroids, antibiotics, oxygen therapy, and/or comfort medications, which occurred in approximately one-third of patients assessed. Less frequent interventions included subcutaneous hydration or transfer to acute care, which occurred in fewer than 5% of people we assessed.

DISCUSSION

In this retrospective cohort study of a clinical response team providing support to LTC facilities experiencing large COVID-19 outbreaks, we found that there was a significant correlation between an earlier deployment of our clinical team

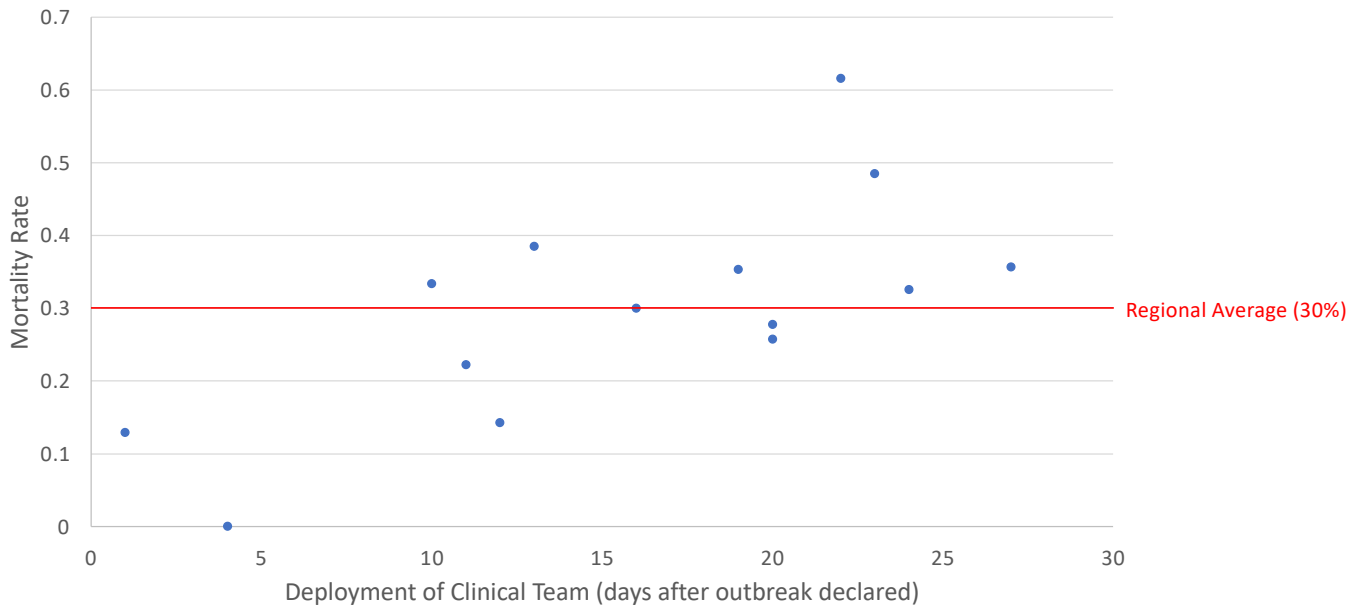


FIGURE 1. Mortality and response team deployment

and a lower mortality rate for that outbreak, suggesting there may have been a benefit to the intervention.

Because of the high mortality rate seen in many outbreaks and the common preference for comfort-focused care among LTC residents, our team had a strong palliative care component. However, the focus of the team was on immediate medical and symptom management needs, rather than traditional, holistic palliative care that addresses physical, psychological, social, and spiritual needs, which would be included in a comprehensive palliative care consultation. In outbreaks that can feature >100 COVID-19+ve residents and as many as a dozen acutely deteriorating residents at one time, comprehensive palliative care consultations are not feasible. The inclusion of community paramedics expanded our clinical capacity without taxing other health-care professionals from local facilities. Finally, although our team did address acute non-COVID-related medical needs, we didn't manage chronic, non-urgent medical issues. The LTC home's medical record and LTC home staff's knowledge of residents provided information regarding a resident's baseline function and comorbidities, which allowed for a more nuanced assessment of a change in condition.

Limitations

Our study has several limitations. Due to the dynamic evolution of the COVID-19 crisis, our intervention was not standardized across sites and over time, and so we cannot repeat this study or conclude that our team was responsible for any specific effect. Furthermore, this was an uncontrolled, retrospective study, and the decision to deploy the team and the timing of the deployment were not random. Deployment time was influenced by communication between health professionals, the regional public health authorities, and the regional incident command structure. Thus our finding that

earlier deployment was associated with lower mortality could have been confounded by other unmeasured variables, such as COVID-19 variants or staffing levels in the facility. However, this type of analysis has been used in previous observational studies in situations where a randomized trial was impossible to infer that both the intervention itself, and the timing of the intervention, may have a beneficial effect on outcomes.^(7,8) We also did not directly measure symptom scores or distress levels, but we received numerous expressions of gratitude from residents, family members, and staff for supporting them through the crisis.

CONCLUSION

While our intervention was designed specifically for the LTC setting, elements of this approach could be applied to other congregate care settings. As we have gained a better awareness of the challenges facing the LTC sector both in pandemic and "normal" times,⁽⁹⁾ we are better able to understand why clinical response teams like ours were needed in the first place. We hope that public health measures, LTC reforms, and advances in research will mean that our team will rarely be needed in the future, if at all.

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CONFLICT OF INTEREST DISCLOSURES

The authors declare that no conflicts of interest exist.

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Correspondence to: James Downar, MDCM, MHSc, Élisabeth Bruyère Hospital, Department of Palliative Care, Bruyere Continuing Care, 43 Rue Bruyere, Ste 268J, Ottawa, ON K1N 5C8

E-mail: jdownar@toh.ca