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## Lived experiences of frontline workers and leaders during COVID-19 outbreaks in long-term care: A qualitative study

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### Key Words:

COVID-19  
Outbreak management  
Long-term care  
Qualitative evaluation

### A B S T R A C T

**Background:** Long-term care facilities across Canada have been disproportionately affected by the COVID-19 pandemic. This study aims to describe the experiences of frontline workers and leaders involved in COVID-19 outbreak management in these facilities, identify best practices, and provide recommendations for improvement.

**Methods:** This is a qualitative study using key informant, semi-structured interviews. Key informants were defined as individuals with direct experience managing COVID-19 outbreaks in long-term care. Thematic content analysis of interview transcripts identified key themes important for outbreak management.

**Results:** Twenty-three interviews were conducted with key informants from the following categories: public health, health authority leadership for long-term care, infection prevention and control, long-term care operators, and frontline staff. Eight themes were identified as critical factors for outbreak management on thematic analysis, which included: (1) early identification of cases, (2) the suite of public health interventions implemented, (3) external support and assistance, (4) staff training and education, (5) personal protective equipment use and supply, (6) workplace culture, organizational leadership and management, (7) coordination and communication, and (8) staffing.

**Conclusions:** Best practices and areas for improvement in outbreak response identified in this study can help to inform policy and practice to reduce the impact of COVID-19 in these settings.

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## INTRODUCTION

Outbreaks of COVID-19 in long-term care (LTC) facilities have resulted in a significant number of infections and deaths in British Columbia.<sup>1</sup> Across Canada, during the first 6 months of the pandemic, more than 80% of all COVID-19 deaths have occurred among

residents of LTC facilities.<sup>2,3</sup> Residents in LTC are particularly vulnerable to both SARS-CoV-2 infection and severe consequences due to their congregate living settings and their multiple co-morbidities, respectively.<sup>4,5</sup> In response to outbreaks within these facilities and the unique vulnerabilities of this population, a regional health authority in British Columbia, Canada, implemented a range of outbreak control measures, such as restricting LTC staff to a single work site and visitor restrictions. These measures were intended to reduce the risk of introducing SARS-CoV-2 into these facilities and to reduce transmission within these facilities.<sup>6</sup>

The experiences of frontline workers and healthcare leaders involved in COVID-19 outbreaks in LTC facilities represent a valuable perspective that can be best captured using qualitative research methods. Qualitative approaches are well suited to provide a narrative description of the direct and lived experiences of research participants with firsthand knowledge of a phenomenon under study.<sup>7</sup>

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Much of the existing literature on the lived experiences of frontline workers managing COVID-19 patients and outbreaks have examined the psychological impact on these frontline workers or their unique vulnerabilities.<sup>8–11</sup> By exploring the experiences of frontline workers, one can capture their critical perspectives. These insights can help to inform policy and practice for healthcare system improvement, such as improving the management of outbreaks in LTC settings.

The central aim of this study is to inform and improve the management of COVID-19 outbreaks in LTC facilities as part of an ongoing quality improvement project. The primary objectives of the analysis include the following:

- 1) Describe the lived experiences of key informants involved in COVID-19 outbreaks in LTC facilities
- 2) Identify best practices and areas of improvement in the approach to COVID-19 outbreak management in LTC facilities
- 3) Provide recommendations to improve the management of these outbreaks

## METHODS

### Study design

This qualitative study utilized an inductive approach informed by grounded theory. Semi-structured, key informant interviews were used for data collection. Semi-structured interviews were chosen to ensure a minimum set of topics were covered and to allow flexibility to include topics outside the scope of the interview guide.

### Sampling

The sampling strategy consisted primarily of a purposive sampling framework, supplemented by snowball sampling, with the goal of obtaining data saturation among key informants involved in outbreak management. Sampling was conducted to ensure the inclusion of key informants within several role-based categories, as described in Table 1. Recruitment was conducted via email and recruitment for further interviews was stopped after data saturation was reached. Data saturation was defined as the point where further interviews with key informants did not generate significantly new findings.<sup>12</sup> Key informants were defined as individuals with direct experience in COVID-19 outbreaks in LTC facilities within the health authority.

**Table 1**  
Summary of key informant categories

Key informant Category	Key informant job classifications	Outbreak management roles	Number interviewed
Public Health	Public Health Nurses Environmental Health Officers Medical Health Officers	COVID-19 case and contact management Coordinate outbreak control measures Lead outbreak management team	2
Health Authority Senior leadership in LTC	Directors for LTC	Logistical support to LTC Facilitate operational compliance and preparedness	2
Infection Prevention and Control (IPAC) Professionals	IPAC Physicians, Nurses, other practitioners	On-site IPAC assessments IPAC training and education	4
LTC Operators	LTC Executive directors LTC Directors of Care LTC senior administrators	Implement outbreak control measures Manage day-to-day operations	8
Frontline staff	Residential Care Aides Registered Nurses	Provide direct care to LTC residents Operationalize outbreak control measures	7
Total			23

### Data collection

A semi-structured interview guide was developed to provide a general structure to the interviews (Appendix 1). The guide included aspects of outbreak management thought to be critical to communicable disease control such as: public health interventions, infection prevention and control (IPAC) measures, the use and availability of personal protective equipment, workplace culture and staffing issues, among others. The interview process involved the participant and 2 interviewers (BY, RV). One interviewer conducted the interview via telephone and one took notes. The participants were made aware of the interviewer's roles in public health and the general goals of the research study. Each interview lasted approximately 1 hour.

### Data analysis

An inductive approach was used to identify key themes in the interview notes during thematic content analysis. Thematic analysis was conducted by a primary reviewer (BY) throughout the data collection period to conform with best practices in qualitative research methods and to further refine the interview guide.<sup>12</sup> Thematic content analysis involved the development and application of a coding framework and manual review of interview transcripts. General themes emerging from each interview were manually highlighted and analyzed. To ensure coding validity, a second reviewer (RV) manually coded several interviews independently. Any discordance between the 2 reviewers were compared, discussed among the team, and a uniform approach was agreed upon.

### Ethics approval

Research ethics board review was not required, as this study informed quality improvement and program evaluation activities as part of routine public health operations. Key informants provided verbal consent to be interviewed and included in the study. Confidentiality was ensured by avoiding the use of facility names in the final report and avoiding the collection of informant identifiers, other than their role in outbreak management.

## RESULTS

A total of 23 semi-structured interviews were conducted between June and July 2020. Key informants interviewed in each category are summarized in Table 1. Eight main themes or key factors for outbreak response were identified and are summarized in Table 2, although these themes were not entirely mutually exclusive. Within each

**Table 2**  
Key factors in COVID-19 outbreak response for LTC facilities identified on thematic analysis

Early identification and action on new COVID-19 cases The suite of public health interventions	Early identification of COVID-19 cases and the rapid implementation of public health and IPAC measures The suite of public health interventions included the single site restriction for LTC staff, visitor restrictions, active symptom monitoring for staff and residents, staff and resident cohorting, mass testing, among others
Additional supports and external assistance	External assistance during outbreaks may have included IPAC supports and training, relief staffing, and public health and logistical support
Staff training and education	Staff training on IPAC principles and education on COVID-19
PPE use and supply	Access to PPE and its appropriate use
Workplace culture, organizational leadership and management	The relationship between frontline staff and managers/senior administrators, the management styles of LTC operators, and overall workplace culture and staff morale
Communication and coordination	Communication between teams involved in outbreak response and the level of coordination and consistency in the approach to outbreak management
Staffing levels	Frontline staffing levels of residential care aides and nursing staff

main theme, key informants described both best practices and areas for improvement related to that theme.

### **THEME 1: EARLY IDENTIFICATION AND ACTION ON NEW COVID-19 CASES**

#### *Best practice*

Facilities with greater success in preventing the introduction and transmission of SARS-CoV-2 had a high index of suspicion for COVID-19 among residents and staff, along with a low threshold for testing. A high index of suspicion meant that residents or staff who exhibited mild or even nonrespiratory symptoms were considered suspect COVID-19 cases and tested appropriately. As one LTC operator stated, “a protective factor [for our facility] was that staff were fairly alert early on to COVID-19.” In addition to a high index of suspicion/low threshold for testing, facilities that rapidly notified public health authorities about potential exposures and the rapid implementation of control measures before case counts within facilities increased significantly were considered effective approaches. Several LTC operators specifically identified the early adoption of certain IPAC measures, such as universal mask use for all staff, as best practices.

#### *Areas for improvement*

Alternatively, delays in identifying a case of COVID-19 and implementing control measures were characterized as early and critical failures. In some cases, delayed action was the result of overconfidence in the level of preparedness, leading to poor infection control practices. One residential care aide commented:

“I think [the outbreak] could have been prevented if we listened and paid attention to the lessons coming out of [earlier outbreaks], my manager did not seem very interested in changing things to prepare us for a possible outbreak of COVID-19.”

An important factor in the delayed identification of the first case of COVID-19 in a facility was a failure operationalizing the “high index of suspicion/low threshold for testing” principle. Specifically, monitoring for a limited set of symptoms and a more restrictive testing strategy delayed effective control. One residential care aide, reflecting on their facility outbreak, stated how “early on, [there was a] cluster of residents with diarrhea but [we] never recognized [this] as a possible COVID-19 outbreak, because no one suspected this symptom could be COVID-related.” Further transmissions of COVID-19, as well as the subsequent scale of the outbreaks, were considered a direct result of delayed identification and action. One LTC operator commented:

“I was alerted to a resident with [symptoms]. I instructed that this resident should be isolated, but there was a failure to post signs

for PPE and to isolate. Had we better isolated that resident and had they been swabbed early, that would have changed the course of the outbreak.”

### **THEME 2: SUITE OF PUBLIC HEALTH INTERVENTIONS**

#### *Best practice*

There was broad support for the range of public health interventions implemented and an understanding of the rationale behind these measures. Frontline staff and LTC operators generally supported visitor restrictions and understood the importance of active symptom assessment and attempts to cohort staff members. For some, mass testing was considered a critical turning point. This involved testing asymptomatic individuals residing or working in the facility and often identified early or unrecognized cases of COVID-19, which was considered an important factor in preventing further transmission. Environmental testing was another important intervention in outbreak management. Testing environmental surfaces for the presence of SARS-CoV-2 virus identified surfaces and medical equipment that may have been contaminated or poorly sanitized, leading to immediate changes in local IPAC practice.<sup>13</sup>

#### *Areas for improvement*

Support for some of the public health interventions was tempered with a recognition of their unintended consequences. The restriction of staff to a single LTC site created local staffing challenges and reduced the causal employee pool. This measure exacerbated what was described as a persistent, pre-existing, and sector-wide staffing shortage at baseline. One LTC operator stated, “[The single site restriction] left us with 3 causals. It is really hard for employers to make up for that lost staffing and for the staff that rely on that additional income.” There were also concerns about the visitor restriction policy. This policy restricted visitors to LTC facilities, with LTC residents having a difficult time coping with this change. Several informants advocated for a less restrictive policy to address the harms associated with social isolation of LTC residents.

### **THEME 3: ADDITIONAL SUPPORTS AND EXTERNAL ASSISTANCE**

#### *Best practice*

Infection prevention and control (IPAC) support was noted to be a critical resource in outbreak management. This team conducted rapid, on-site assessments and provided IPAC training and COVID-19 education to frontline staff and management. By improving local protocols and addressing entrenched, problematic practices, the IPAC support team effectively reduced the risk of transmission. As one

registered nurse stated, “the [IPAC support] team was critical – if they had not come in, there would have been way more deaths. . . this outside assistance was essential.”

Features of the IPAC support team which was important to their success included rapid deployment and an independent, nonpunitive approach. One IPAC support team member stated how “we were able to create strong relationships with staff and provide feedback in a non-punitive way – we worked to decrease staff anxiety and increase morale.” The external nature of the team was important, as one LTC operator noted, “the [IPAC support] team was providing training and advice from outside the management structure, [so] the staff were more receptive to listening to them and following their directives.” IPAC support team members also directly addressed staff concerns and provided considerable moral support to frontline staff.

Involvement of the public health team and Operations Directors for LTC was identified as another important external resource in outbreak management. These teams helped clarify recommendations and assist with compliance. Important features of these teams included their ongoing and regular communication and supportive approach. One LTC operator reflected, “[we] felt that [the public health team] was able to provide timely information, we felt that they were in our corner.”

#### Areas for improvement

One challenge with the assistance provided by the IPAC support team was the level of coordination and consistency between the teams. Some sites received multiple visits from the IPAC support team and the team’s composition would often change, occasionally resulting in inconsistent advice and conflicting guidance. Another significant challenge regarding IPAC support was the lack of training outside of regular working hours. Many informants expressed concerns that nighttime staff were not provided the same support and training as daytime staff. One residential care aide stated,

“When. . . [the IPAC support team] . . . came in to do training, there was never training for the night [staff]. Night staff were flying by the seat of our pants. There was no organizing for other shifts or for the night staff to be cross trained.”

### THEME 4: STAFF TRAINING AND EDUCATION

#### Best practice

Additional staff training was required for almost every facility outbreak. In-house training was supplemented with external training provided by the IPAC support team, which improved cleaning standards and IPAC protocols. One residential care aide stated how “after [they] came in, they showed us how to properly put on PPE, many staff really needed this. [They] showed the housekeepers how to properly clean and disinfect touchpoint areas.” Several key informants described how some facilities were more prepared as a result of a recent experience in outbreak management. Among facilities that recently managed other viral respiratory and gastrointestinal outbreaks, such as influenza or Norovirus, IPAC protocols and plans were recently reviewed, resulting in better adherence to IPAC best practices.

Providing education to staff on COVID-19 was another important factor for outbreak management. Many IPAC support team members and LTC operators commented how this education was critical to reassure staff and increase morale. IPAC support team members mentioned how receptive staff were to the education and training being

provided, reflecting a strong desire to both protect residents and to mitigate the risk of SARS-CoV-2 transmission.

#### Areas for improvement

Reported gaps in knowledge of IPAC principles highlights the need to improve the current approach to staff training and education. Many frontline staff, LTC operators, and IPAC support team members commented that a more frequent and robust approach to staff training is required. Several staff commented that their most recent IPAC training was at the time of being hired. The frequency of staff training varied widely between facilities. One LTC operator stated that, “there is absolutely no doubt about needing more regular IPAC training.”

### THEME 5: PPE USE AND SUPPLY

#### Best practice

During the early stages of the pandemic, there were concerns about the supply of PPE for LTC facilities. A best practice in PPE supply management was centralization of access to the supply and distribution of PPE for the LTC sector through the health authority, ensuring a stable supply for each facility. As one LTC operator commented, “we would not have survived without the centralized supply. We were simply being told [by our suppliers] that we are not getting masks.”

#### Areas for improvement

Many frontline staff described challenges with access to PPE, particularly during the early stages of the pandemic. There were also conflicts with local leadership around the type of PPE available, including specific requests for N95 respirators in circumstances where they were not required based on local IPAC guidelines, such as when providing routine patient care or for cleaning staff not involved in direct patient care. Many of these conflicts were the result of staff fear, changing guidelines, and gaps in direct communication to staff. There were instances of frontline staff taking what were perceived as enhanced protective measures, which included practices that would be classified as an inappropriate use of PPE, such as double-masking or double-gloving.

### THEME 6: WORKPLACE CULTURE, ORGANIZATIONAL LEADERSHIP AND MANAGEMENT

#### Best practice

Despite the significant culture of fear that resulted from the declaration of an outbreak, many staff continued to demonstrate a strong commitment to providing care to residents. One residential care aide said, “My experience was very stressful. But at the same time, I kept on thinking that if I don’t come in to work, no one else would.” It was critical to address and manage staff fear through education and training, as one IPAC support team member reflected, “staff at some facilities had a lot of anxieties and worries about new patients. I think it came down to a lack of education about COVID-19.”

Although there were few frontline staff who described the staff-management relationship as perfect, there was a recognition of the efforts of management to address the outbreak. An example of a best practice for LTC operators was for them to act as role models, particularly in following protocols they were attempting to enforce and to work alongside frontline staff. For instance, one LTC operator mentioned how management would:

“...walk on the floor and [go] to the COVID-positive residents. [Having] the administrators on the floor and helping to take care

of the COVID patients really helped to set an example. The team got closer as a result of this.”

#### Areas for improvement

Frontline staff expressed frustration with top-down, punitive management styles. This contributed to staff burnout, low morale, mistrust of management, and poor adherence to protocols and instructions from managers. For instance, one residential care aide found that “*care aides are afraid to speak [out]. If you want to improve something, you cannot suggest [it]. I do not feel like I am able to speak [openly] to my manger about [any] issues.*” Additionally, frontline staff mentioned several examples where local leaders failed to role model best practices, which resulted in a further deterioration in respect and trust in management.

### THEME 7: COMMUNICATION AND COORDINATION

#### Best practice

An explicit communications strategy between the various teams involved in outbreak management helped to facilitate effective control. Consistent and reliable lines of communication was required for success. For example, the availability of the public health team and their daily meetings with facility operators helped to ensure a consistent approach. In addition, open communication was deemed essential in building trust among frontline staff and family members. As one LTC operator noted,

“Part of what contributed to a boost in morale was the constant and daily communication to staff. The staff expected these communications and had the opportunity to express concerns to management through a virtual comment box.”

One facility implemented daily safety huddles as a strategy to ensure a common understanding among all staff. This daily huddle was an opportunity to ensure a consistent approach to outbreak management, to clarify questions, and to explain the rationale behind certain measures.

#### Areas for improvement

Challenges with communication was explicitly identified as a factor that impeded outbreak response for some sites. Communication breakdowns often involved frontline staff, resulting in a lack of clarity around appropriate protocols. There were some concerns that updates were not being communicated to all staff, for instance one residential care aide stated:

“Communication breakdowns are still happening, there will be a rollout of something and a small number of people would be trained, but it doesn’t reach all staff. We may get some directive from management, but there will be a general lack of clarity.”

One factor that created challenges for effective communication and coordination was the rapidly evolving knowledge about the virus and, consequently, the changing public health recommendations. This resulted in confusion about which guidelines to follow.

Finally, another area of improvement was the lack of an explicit and coordinated approach between the public health team and the IPAC support team. While both teams would often be asked to provide guidance on similar topics, a lack of formal coordination between these two teams resulted in conflicting advice being provided. An IPAC support team member stated that they “*wished there*

*were more collaboration with the [public health] team. The different advice created confusion for staff on what advice to follow.*”

### THEME 8: STAFFING LEVELS

#### Best practice

Some facilities worked aggressively to maintain staffing levels, with varying levels of success. Certain sites anticipated staffing challenges and made early efforts to maintain or increase baseline staffing. A limited number of sites with acute staffing challenges required external health authority assistance, which represented an effective, short-term solution.

#### Areas for improvement

For facilities that struggled to maintain baseline staffing, frontline staff, operators, and residents were significantly impacted. Many informants described staffing challenges and increased workloads precipitated by staff illness, the single site restriction for staff, sick residents, and strict adherence to IPAC protocols. Many described significant amounts of overtime hours required to ensure adequate staffing. Additionally, several key informants contextualized these acute staffing challenges within the broader, long-standing, sector-wide staffing shortages at baseline.

Another long-standing issue specifically described by a variety of key informants was the level of overnight staffing within these facilities. These facilities operate on reduced staffing overnight, leading to challenges in providing patient care during these hours. One care aide commented how:

“During the outbreak, there were no increases in overnight staffing, despite the increased workload. The time it takes to appropriately don and doff PPE, to attend to people who are sick, to take temperatures, give extra medications, et cetera.”

Another issue with limited staffing overnight was the potential for staff to cross between wards or neighborhoods within the facility, increasing the transmission risk between areas with active cases of COVID-19 and those without.

### DISCUSSION

COVID-19 represents a novel threat to LTC facilities and there is emerging research that will inform the approach to outbreak management for this particular patient population and setting.<sup>5,14,15</sup> Existing research has identified long-term care residents as particularly vulnerable to COVID-19, highlighting the disproportionate burden of COVID-19-related morbidity and mortality among this population.<sup>16–18</sup> This qualitative evaluation provides complimentary data derived from the experiences of key informants, which identified eight key themes important in outbreak management. These themes represent actionable areas of improvement in outbreak management which could potentially reduce the impact of future COVID-19 outbreaks on a particularly vulnerable population. Existing research corroborates many of these best practices in COVID-19 outbreak management in LTC, such as strong leadership, rapid response to COVID-19 cases, and regular communication with stakeholders.<sup>19,20</sup>

Among several important findings applicable to practice improvements, key informants specifically identified early identification and rapid action as a critical factor in outbreak response. The range of public health measures implemented at the local level, in particular the testing indications for COVID-19 among residents and staff, were



considered essential factors in detecting cases of COVID-19 and subsequently initiating enhanced control measures. These measures were considered critical to both limit the introduction of the virus into these facilities and reduce transmission within them. External assistance was almost universally required during outbreaks and these external teams provided invaluable training, education, coordination, and support throughout the outbreaks. Access to a secure supply of PPE within LTC facilities was ensured through centralization by the health authority and the appropriate use of PPE was reinforced through internal and external training for frontline staff and LTC operators. The secure supply of PPE also helped to address staffing challenges that resulted from concerns about safe working conditions. The organizational culture within these facilities also played a role in outbreak response: respectful work environments that focused on team-based approaches worked best to address staff concerns and staffing shortages. Closely related to organizational culture, communication and a coordinated response characterized more effective leadership styles and effective outbreak response. Finally, appropriate staffing levels were essential to ensure safe patient care and adherence to best practices in IPAC protocols.

This study represents a timely and important evaluation of the factors important for effective outbreak management and identified best practices and areas of improvement across the sector. The diversity of key informants interviewed was a strength of this study, as data saturation was reached across the 23 interviews. However, a limitation of this study was the absence of residents or family members as key informants. Although LTC residents and their family members are not directly involved in managing outbreaks, they represent a critical stakeholder that is not included within this analysis. Future investigations of COVID-19 outbreaks in LTC should explore the experience of residents and their families. An additional limitation of this study was the small numbers of informants interviewed in some key informant roles. This was the result of a small number of individuals within certain roles, which could have led to underrepresentation of some key informant categories. There is also a potential for selection bias, as individuals were to some extent self-selected by agreeing to participate in the study.

## CONCLUSION AND IMPLICATIONS

Table 3 outlines specific recommendations for action that emerged from thematic analysis. The first action is for LTC facilities to maintain a high level of vigilance for SARS-CoV-2 transmission, as the early stages of outbreaks were identified as a critical window for effective control. Public health can continue to reinforce the principles of the high index of suspicion and low threshold for testing approach to COVID-19 within these facilities. The second action is to provide regular, ongoing, and comprehensive IPAC training and education at the local level. The gaps identified in frontline staff training and education represents an opportunity to strengthen local operational readiness through a more proactive, comprehensive, inclusive and a more frequent training approach. The last action item is to develop a more formal mechanism for communication and coordination amongst the outbreak management team. Gaps in communication and coordination created confusion and frustration. Finally, local

LTC operators can be encouraged to develop an explicit communications strategy in the event of an outbreak in order to provide regular updates to staff, residents, and their families. These action items do not address all of the issues identified from the thematic analysis. Many of the challenges to effective outbreak management represent legitimate, structural issues that appear to be long-standing and sector-wide, which require investigation and interventions beyond the scope of this study.

Key informants with direct experience managing outbreaks of COVID-19 in LTC facilities described a range of factors important for outbreak control, including best practices and gaps in the current public health approach. The LTC resident population are highly vulnerable to COVID-19 and LTC outbreaks have already resulted in considerable mortality.<sup>16</sup> By building on the experience of individuals directly involved in outbreak management, we can improve the public health approach to outbreak response within LTC facilities, prevent further infections, and save lives.

## BRIEF SUMMARY

Key informant interviews of individuals managing COVID-19 outbreaks in long-term care were analyzed. Eight factors were identified as critical to outbreak management, informing the approach to outbreak management.

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## SUPPLEMENTARY MATERIALS

Supplementary material associated with this article can be found in the online version at <https://doi.org/10.1016/j.ajic.2021.03.006>.

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- Nelson A, Kassimatis J, Estoque J, et al. Environmental Detection of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) from medical equipment in

**Table 3**

Key public health recommendations

Key Public health actions

- Maintain a high level of vigilance for COVID-19 at LTC facilities
- Provide regular, ongoing, and comprehensive IPAC training and education at LTC facilities
- Develop formal mechanisms for communication and coordination

- long-term care facilities undergoing COVID-19 outbreaks. *Am J Infect Control*. 2020; S0196-6553.
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