

## Rapid Review Report

<b>Review Title:</b>	How can LTC facilities prepare for a pandemic?
<b>Keyword Title:</b>	LTC Preparedness Checklist
<b>Review ID:</b>	LTC042201 RR
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### Key Findings

- Overall, there is a lack of high quality evidence to support recommended pandemic preparedness strategies (checklist items) to prevent or mitigate respiratory infection outbreaks in LTC.
- In the absence of high-quality or mixed evidence to support strategies for pandemic preparedness, it is advisable to follow clinical practice guideline recommendations that have been based on expert opinion (key sources are identified in red). This is particularly the case for infection control interventions that are likely to have no negative impacts on LTC residents (e.g. hand hygiene, cough etiquette). Strategies that have a potential negative impact on LTC

residents (e.g. visitor restrictions) must be handled with more flexibility and individual assessment to determine how infection control can be preserved while minimizing negative consequences for residents and families.

- Internationally recognized pandemic/outbreak preparedness checklists for LTC (e.g. CDC 2020, Buynder et al. 2017) share many similarities to the current SHA Annex R checklists.
- Consideration should be given to converting the checklist into a planner with accountabilities to demonstrate how each item is being addressed (similar to CDC 2020). Links can be embedded in the planner/checklist to more detailed information, such as the PPE burn calculator (CDC 2020), education/training materials (WHO 2020), and communication materials for families (CDC 2020, WHO 2020, Buynder et al. 2017).
- Consider the addition of specific detail to the SHA pandemic preparedness checklists on the date of the next pandemic plan/checklist review, contact names for local resource acquisition or assistance with staffing, tracking forms for dates of education/training with staff and residents, tracking of audits/observation of infection control practices, surge capacity planning items, and expanded items for communication (see attached recommendations from family caregivers of the Saskatchewan LTC Network).
- Discrepancies exist between reported (77-100%) and observed (25-63%) adherence to infection control practices, indicating a need for independent audits. Adherence rates improve with direct observation, frequent education reminders and prompts.
- Even when there is not an outbreak in a home, the pandemic response results in increased workload demands on staff due to infection control practices (e.g. PPE and hand hygiene), loss of family caregiver assistance with resident care, enhanced care needs of residents due to anxiety, increased communication with family caregivers and other members of the care team, monitoring and restricting resident movement in the home, enhanced cleaning, staff absenteeism, and education/training. Consideration is needed for a provincial process for evaluation of needs within individual homes, and allocation of additional human resources, disposable supplies, equipment, or funding to ensure that both infection control and usual care needs of residents are consistently met.
- Maintaining public confidence through communication is a defined infection control strategy. Communication strategies include individual communication between family members and staff, public communication strategies by individual facilities and provincially through dedicated pandemic information pertaining to LTC (e.g. dedicated LTC section on provincial websites).

## Limitations

- Not all evidence was specific to COVID-19.
- Articles were screened and data extracted by a team of reviewers without attempts to test the degree of agreement between reviewers.
- Some relevant publications may have been missed due to the urgency of the request. An exhaustive search of grey literature (e.g. provincial Ministry of Health websites) was not possible due to the rapid response time.
- Media reports were not screened due to the low probability that evidence

would be found that was not in the published or grey literature.

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**GRADE of Evidence: C - Low**

A grade of "C" is assigned when further research is very likely to have an important impact on confidence in the estimate of effect and is likely to change the estimate. The review may consist of one or more studies with severe limitations.

*For more information about how this rating was determined, visit [https://www.essentialevidenceplus.com/product/ebm\\_loe.cfm?show=grade](https://www.essentialevidenceplus.com/product/ebm_loe.cfm?show=grade)*

## Background/Context

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The Saskatchewan Health Authority (SHA) Annex R document includes pandemic planning checklists for long-term care homes (LTC) and personal care homes (PCHs). Dr. Brittany Ellis requested additional information on evidence supporting pandemic planning checklists with a particular focus on human resources, environmental factors (e.g. built environment and environment management), and maintaining routine care in the context of an outbreak.

### **Purpose**

The provincial Seniors' Task Force with the SHA is reviewing the pandemic planning checklists and examining evidence supporting checklist items for LTC/PCHs to assess preparedness for preventing, mitigating, or managing a COVID-19 outbreak.

### **Review Question(s)**

- Four component questions contributed to this report:
  - Search identifier LTC042201-01 ESR: What human resources are required in long term care facilities to prevent or manage influenza like illness (ILI) outbreaks?
  - Search identifier LTC042201-02 ESR: What environmental management and built environment factors influence a home's ability to prevent or manage an ILI outbreak?
  - Search identifier LTC042201-03 ESR: What characteristics of residents in LTC homes affect the ability to provide routine care during a COVID-19 or ILI outbreak?
  - Search identifier LTC042201-04 ESR: What is the evidence for infection control practices (checklist items) for preventing or managing an ILI outbreak?

## Method

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The question was received on April 22<sup>nd</sup>. A refinement meeting was held on April 23<sup>rd</sup> with Dr. Brittany Ellis, Dr. Susan Tupper, Dr. Heather Ward, and librarians Courtney Ellsworth, Michelle Dalidowicz, and Catherine Boden. Librarians conducted evidence searches of traditional publication databases and grey literature excluding media reports up to April 28<sup>th</sup>, 2020. References were screened and data extracted from relevant sources using a data extraction template by Tupper, Ward, Dr. Allison Cammer, Nina Gao, and Dr. Jason Vanstone. Tupper reviewed extracted data and wrote the report. Ward reviewed and finalized the report. Further detail from relevant sources is provided in the Summary of Relevant Sources table. Further detail on the specific search strategy and sources, abstracts and links to the full list of sources can be found in the evidence summary attachments. Family caregivers of the Saskatchewan LTC Network provided recommendations on checklist items specific to communication strategies. The report was completed on April 29<sup>th</sup>, 2020.

Total librarian search time = 25 hours

Total working group report preparation time = 58 hours

Total report time = 83 hours

## Summary of Evidence

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There is little high quality evidence to support recommended infection control strategies to prevent or mitigate respiratory infection outbreaks in LTC (i.e. pandemic preparedness checklist items). There is high quality evidence to support use of anti-viral medications, vaccinations plus PPE use to prevent influenza infections in LTC homes. Other infection control practices have either no evidence of effectiveness (e.g. social isolation) or mixed evidence of effectiveness (e.g. hand hygiene alone, personal protective equipment alone). In the absence of high-quality or mixed evidence to support strategies for

infection control, it is advisable to follow clinical practice guideline recommendations that are based on expert opinion.

The SHA pandemic plan checklists are largely identical to other internationally recognized checklists with minor variations in level of detail. The SHA checklists may be enhanced with the addition of accountabilities for checklist items and embedded links to resources, such as the Center for Disease Control (CDC) PPE Burn Calculator, education and communication materials. Checklists alone are unlikely to have significant impact on infection rates or quality of care. Research from other jurisdictions identifies high degrees of discrepancy between reported adherence to infection control guidelines and observed adherence rates. Homes typically report higher adherence rates ranging from 77% to 100% compared to observed staff adherence which ranges from 25% to 63%. Randomized controlled trials report significant improvements in adherence rates when training is reinforced with observation of performance and frequent audits with feedback for staff on infection control practices (e.g. personal protective equipment [PPE], hand hygiene, cough etiquette, cleaning). Infection control audit teams that are external to the LTC home can be utilized to ensure infection control competency, the ability of the home to provide routine care to residents, and support homes by assessing needs and allocating resources.

Pandemic responses, even in the absence of an outbreak in a home, result in additional workload requirements and psychosocial stress on clinical and non-clinical staff. This arises due to staff absenteeism (e.g. symptomatic staff staying home), visitor restrictions including family caregivers and volunteers who typically provide social engagement activities, increased communication needs with family caregivers and residents, increased anxiety and need for reassurance in residents, education and training, and infection control activities (e.g. increased cleaning, traffic control of residents, PPE, hand hygiene). Based on experiences of homes in Ontario and Quebec where resident deaths were reported due to dehydration and lack of assistance with care, it is critical that attention to routine care be included in pandemic checklists. LTC homes and PCHs may require additional support including infection control training materials, province-wide communications on behalf of LTC and PCHs for family caregivers, equipment, infection control audits, and human resource allocation. Some of the burden of communication by homes can be provided at a provincial level with a dedicated LTC section for the provincial SHA or Ministry of Health COVID-19 information webpage. Information could include specific information about COVID-19 on LTC residents and family caregivers, the pandemic response in LTC (e.g. staffing changes, enhanced cleaning, and attention to routine care), and technology assisted communication strategies for residents with a range of communication abilities.

## Conclusions

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Despite the lack of high quality evidence supporting the majority of pandemic planning checklist items, clinical practice guidelines provide consensus on best practices. Although the current SHA pandemic preparedness checklists are comprehensive in capturing the majority of these recommendations, further accountability and links to resources could be embedded in the checklists. Accountability could be further enhanced with external audits of adherence to infection control practices and routine care in homes.

## Glossary

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- ILI – influenza like illness
- LTC – long-term care (includes long-term care homes [LTCH] and long-term care facilities [LTCF – American terminology])

- PCH – personal care home
- PPE – personal protective equipment
- SARS – Severe acute respiratory Syndrome
- WHO – World Health Organization

**Table 1: Summary of Literature**

Source	Extracted Data	Quality
<p>WHO Interim guidance on IPC for LTC during COVID March21, 2020  <a href="https://extranet.who.int/iris/restricted/bitstream/handle/10665/331508/WHO-2019-nCoV-IPC_long_term_care-2020.1-eng.pdf?sequence=1&amp;isAllowed=y">https://extranet.who.int/iris/restricted/bitstream/handle/10665/331508/WHO-2019-nCoV-IPC_long_term_care-2020.1-eng.pdf?sequence=1&amp;isAllowed=y</a></p> <p><b>Key source</b></p>	<p>Expert consensus on HR requirements</p> <ul style="list-style-type: none"> <li>- Activate the local health and social care network to facilitate continuous care (clinic, acute-care hospital, day-care center, volunteer group, etc.).</li> <li>- Facilitate additional support (resources, health care providers) if any older person in LTCFs is confirmed with COVID19</li> <li>- LTCFs should ensure that there is an IPC focal point at the facility to lead and coordinate IPC activities, ideally supported by an IPC team with delegated responsibilities and advised by a multidisciplinary committee. (pg 1) <ul style="list-style-type: none"> <li>o Provide COVID IPC training to all employees including an overview of COVID 19. WHO has developed online training courses (<a href="https://openwho.org/channels/covid-19">https://openwho.org/channels/covid-19</a>)</li> <li>o hand hygiene and respiratory etiquette</li> <li>o standard precautions</li> <li>o COVID-19 transmission-based precautions</li> </ul> </li> <li>- Provide information sessions for residents on COVID-19 to inform them about the virus, the disease it causes and how to protect themselves from infection</li> <li>- Regularly audit IPC practices (hand hygiene compliance) and provide feedback to employees.</li> <li>- Increase emphasis on hand hygiene and respiratory etiquette – detailed instructions provided</li> <li>- Ensure adequate supplies of tissues and appropriate waste disposal (in a bin with a lid)</li> <li>- Guidance on water, sanitation, laundry and waste management is provided (<a href="https://www.who.int/publications-detail/water-sanitation-hygiene-and-waste-management-for-covid-19">https://www.who.int/publications-detail/water-sanitation-hygiene-and-waste-management-for-covid-19</a>)</li> <li>- Prospective surveillance for COVID-19 among residents and staff should be established</li> <li>- Twice daily cleaning of all commonly touched surfaces. If commercially prepared hospital-grade disinfectants are not available, the LTCFs may use a diluted concentration of bleach to disinfect the environment. The minimum concentration of chlorine should be 5000 ppm or 0.5% (equivalent to a 1:9 dilution of 5% concentrated liquid bleach)</li> </ul>	D
<p>WHO Interim guidance on IPC for LTC during COVID March21, 2020  <a href="https://extranet.who.int/iris/restricted/bitstream/handle/10665/331508/WHO-2019-nCoV-IPC_long_term_care-2020.1-eng.pdf?sequence=1&amp;isAllowed=y">https://extranet.who.int/iris/restricted/bitstream/handle/10665/331508/WHO-2019-nCoV-IPC_long_term_care-2020.1-eng.pdf?sequence=1&amp;isAllowed=y</a></p>	<p>Expert Consensus on equipment requirements during COVID (same report as previous row)</p> <ul style="list-style-type: none"> <li>- Dedicate specific medical equipment (e.g. thermometers, blood pressure cuff, pulse oximeter, etc.) for the use of medical professionals for resident(s) with suspected or confirmed COVID-19.</li> <li>- Restrict sharing of personal devices (mobility devices, books, electronic gadgets) with other residents.</li> <li>- Contact and droplet precautions include the following PPE:</li> </ul>	D

<p><a href="#">-2019-nCoV-IPC long term care-2020.1-eng.pdf?sequence=1&amp;isAllowed=y</a></p> <p><b>Key source</b></p>	<ul style="list-style-type: none"> <li>○ medical mask, gloves, gown, and eye protection (goggles or face shield).</li> <li>○ Employees should take off PPE just before leaving a resident’s room.</li> <li>○ Discard PPE in medical waste bin and preform hand hygiene.</li> <li>○ Cleaners and those handling soiled bedding, laundry, etc., should wear PPE, including mask, gloves, long sleeve gowns, goggles or face shield, and boots or closed toe shoes. They should perform hand hygiene before putting on and after removing PPE.</li> <li>○ Hospital-grade cleaning and disinfecting agents are recommended for all horizontal and frequently touched surfaces (e.g., light switches, door handles, bed rails, bed tables, phones) and bathrooms being cleaned at least twice daily and when soiled.</li> </ul>	
<p>CDC 2020 IPC for Nursing homes  <a href="https://www.cdc.gov/coronavirus/2019-ncov/healthcare-facilities/prevent-spread-in-long-term-care-facilities.html">https://www.cdc.gov/coronavirus/2019-ncov/healthcare-facilities/prevent-spread-in-long-term-care-facilities.html</a></p> <p><b>Key source</b></p> <p>CDC checklist for preparedness here:  <a href="https://www.cdc.gov/coronavirus/2019-ncov/downloads/novel-coronavirus-2019-Nursing-Homes-Preparedness-Checklist_3_13.pdf">https://www.cdc.gov/coronavirus/2019-ncov/downloads/novel-coronavirus-2019-Nursing-Homes-Preparedness-Checklist_3_13.pdf</a></p>	<p>Expert consensus with advice for commonly reported infection control practices (no links to evidence to support these measures).</p> <ul style="list-style-type: none"> <li>- Educate residents, HCW, and visitors about COVID-19, precautions being taken in the home and actions they can take to protect themselves (<a href="https://www.cdc.gov/coronavirus/2019-ncov/index.html">https://www.cdc.gov/coronavirus/2019-ncov/index.html</a>)</li> <li>- HCP education <ul style="list-style-type: none"> <li>○ Do not report to work when ill – reinforce sick leave policies</li> <li>○ Now policies for source control</li> <li>○ Hand hygiene, PPE – have HCW demonstrate competency and observe during resident care activities</li> </ul> </li> <li>- Educate families and residents -letter for families of LTC residents <ul style="list-style-type: none"> <li>○ <a href="https://www.cdc.gov/coronavirus/2019-ncov/downloads/healthcare-facilities/Long-Term-Care-letter.pdf">https://www.cdc.gov/coronavirus/2019-ncov/downloads/healthcare-facilities/Long-Term-Care-letter.pdf</a></li> <li>○ Social distancing, hand hygiene, cough etiquette, face coverings</li> <li>○ Support alternative methods for visitation</li> <li>○ Case by case approach for decisions about compassionate care</li> <li>○ monitor temperature and symptoms at least daily</li> <li>○ report if symptoms develop within 2 weeks of visiting LTC home</li> <li>○ encourage residents to remain in their rooms</li> </ul> </li> <li>- Evaluate and manage HCW with symptoms <ul style="list-style-type: none"> <li>○ Non punitive and flexible sick leave policies</li> <li>○ Inventory of volunteers and HCW who provide care to determine non-essential services</li> <li>○ Monitor daily for symptoms – temperature, cough, sore throat, muscle aches</li> </ul> </li> <li>- Provide supplies <ul style="list-style-type: none"> <li>○ Hand hygiene, tissues and trash cans, PPE (monitor supplies and burn rate daily</li> </ul> </li> </ul>	D

	<p style="text-align: center;"><a href="https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/burn-calculator.html">https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/burn-calculator.html</a>)</p> <ul style="list-style-type: none"> <li>- Environmental cleaning</li> <li>- Cohorting infected residents with dedicated HCW and equipment</li> </ul>	
<p>CDC 2020 Preparing for COVID – 19  <a href="https://www.cdc.gov/coronavirus/2019-ncov/hcp/long-term-care.html">https://www.cdc.gov/coronavirus/2019-ncov/hcp/long-term-care.html</a></p> <p><b>Key source</b></p>	<p>Expert consensus that includes a link to a PPE Burn Rate Calculator on Excel: a spreadsheet-based model to help healthcare facilities plan and optimize the use of PPE for response to COVID-19).  <a href="https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/burn-calculator.html">https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/burn-calculator.html</a></p> <ul style="list-style-type: none"> <li>- daily screening of all residents</li> <li>- 3xdaily monitoring of symptomatic residents</li> <li>- All residents and visitors wear cloth face covering when they leave their room</li> <li>- All HCPs wear a facemask while in the facility</li> <li>- Actively screen everyone entering the building for fever, symptoms</li> </ul>	D
<p>CDC 2020  <a href="https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-recommendations.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Finfection-control%2Fcontrol-recommendations.html#monitor_manage">https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-recommendations.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Finfection-control%2Fcontrol-recommendations.html#monitor_manage</a></p> <p><b>Key source</b></p>	<p>Expert opinion on engineering controls for infection control (not specific to LTC)</p> <ul style="list-style-type: none"> <li>- Design and install engineering controls to reduce or eliminate exposures by shielding HCP and other patients from infected individuals. Examples of engineering controls include: <ul style="list-style-type: none"> <li>o physical barriers or partitions to guide patients through triage areas</li> <li>o curtains between patients in shared areas</li> <li>o air-handling systems (with appropriate directionality, filtration, exchange rate, etc.) that are properly installed and maintained</li> </ul> </li> </ul> <p>Implement Environmental Infection Control (Item 10 <a href="https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-recommendations.html">https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-recommendations.html</a>) April 13</p> <ul style="list-style-type: none"> <li>- Dedicated medical equipment should be used when caring for patients with known or suspected COVID-19.</li> <li>- All non-dedicated, non-disposable medical equipment used for patient care should be cleaned and disinfected according to manufacturer’s instructions and facility policies.</li> <li>- Ensure that environmental cleaning and disinfection procedures are followed consistently and correctly.</li> <li>- Routine cleaning and disinfection procedures (e.g., using cleaners and water to pre-clean surfaces prior to applying an EPA-registered, hospital-grade disinfectant to frequently touched surfaces or objects for appropriate contact times as indicated on the product’s label) are appropriate for SARS-CoV-2 in healthcare settings, including those patient-care areas in which aerosol generating procedures are performed.</li> <li>- Refer to List Nexternal icon on the EPA website for EPA-registered disinfectants that have qualified under EPA’s emerging viral pathogens program for use against SARS-CoV-2.</li> </ul>	D

	<ul style="list-style-type: none"> <li>- Management of laundry, food service utensils, and medical waste should also be performed in accordance with routine procedures.</li> <li>- Additional information about recommended practices for terminal cleaning of rooms and PPE to be worn by environmental services personnel is available in the Healthcare Infection Prevention and Control FAQs for COVID-19</li> </ul>	
<p>Buynder 2017  <a href="https://www1.health.gov.au/internet/main/publishing.nsf/Content/27BE697A7FBF5AB5CA257BF001D3AC8/\$File/RCF_Guidelines.pdf">https://www1.health.gov.au/internet/main/publishing.nsf/Content/27BE697A7FBF5AB5CA257BF001D3AC8/\$File/RCF_Guidelines.pdf</a></p> <p><b>Key source</b></p>	<p>Expert consensus with links to Australian guideline on Infection prevention and Control 2019 publication Pg 252 minimum cleaning frequencies  <a href="https://www.nhmrc.gov.au/about-us/publications/australian-guidelines-prevention-and-control-infection-healthcare-2019#block-views-block-file-attachments-content-block-1">https://www.nhmrc.gov.au/about-us/publications/australian-guidelines-prevention-and-control-infection-healthcare-2019#block-views-block-file-attachments-content-block-1</a></p> <p>Checklists of IPAC planning before and during an outbreak – appendix 9 and 10  Generic information for general infectious ILI outbreaks pgs 52-61</p>	D
<p>Cochrane report Physical Interventions March 3, 2020  <a href="https://www.cochranelibrary.com/cca/doi/10.1002/cca.2965/full">https://www.cochranelibrary.com/cca/doi/10.1002/cca.2965/full</a></p> <p><b>Key source</b></p>	<p>Systematic Review</p> <ul style="list-style-type: none"> <li>- Findings suggest that handwashing; wearing of masks, gowns, and/or gloves; and use of eye protection may reduce the spread of respiratory viruses.</li> <li>- However, results were not consistent across studies and reviewers classified the evidence as very low certainty.</li> <li>- Only four interventions were evaluated in RCTs; moderate-certainty evidence shows that use of handwashing plus masks probably reduces the spread of respiratory viruses, but results for handwashing or masks alone, gargling of povidone-iodine solution, and use of virucidal handkerchief wipes were inconclusive, and reviewers rated the evidence as very low certainty.</li> </ul>	A
<p>Lynch &amp; Goring 2020  <a href="https://doi.org/10.1016/j.jamda.2020.04.001">https://doi.org/10.1016/j.jamda.2020.04.001</a></p>	<p>Expert opinion that outlines 5 step process for converting isolations rooms in LTC to improve airflow.</p> <ul style="list-style-type: none"> <li>- COVID may become airborne within closed rooms with coughing/sneezing placing HCW and residents at greater risk even with rigorous cleaning and PPE.</li> <li>- Estimate total room volume, ventilation and differential pressure</li> <li>- Install supplemental exhaust ventilation through dedicated exhaust portals</li> <li>- Increase efficiency of filtration</li> <li>- Keep doors to hallways closed (and open between ventilation and resident room)</li> <li>- Follow IPAC guidelines for HCW – hand hygiene, PPE, cough etiquette, patient placement, cleaning of equipment, cleaning environment</li> </ul>	D

<p>Lynch &amp; Goring 2020  <a href="https://doi.org/10.1016/j.jamda.2020.04.001">https://doi.org/10.1016/j.jamda.2020.04.001</a></p>	<p>Expert opinion on LTCH human resource requirements</p> <ul style="list-style-type: none"> <li>- “Contact an Industrial Hygienist and HVAC 71 contractor to discuss options for supplemental exhaust ventilation through these portals.”</li> </ul>	<p>D</p>
<p>Yen et al. 2020  <a href="https://www.ncbi.nlm.nih.gov/pubmed/32303480">https://www.ncbi.nlm.nih.gov/pubmed/32303480</a></p>	<p>Expert consensus on HR requirements during COVID</p> <ul style="list-style-type: none"> <li>- Designate a chief officer (staff member) responsible for epidemic preparedness and response. The designated person should be trained in the basics of infection control, including surveillance and reporting such as web-reporting through the syndromic surveillance system; hand hygiene, cleaning and environmental disinfection, and maintaining essential stockpiles.</li> <li>- Additional HR for surveillance of HCW and residents – routine chest x-rays, vaccinations against influenza and pneumonia, regular health log for staff and residents</li> <li>- Education and training – hand hygiene, PPE, fomite control</li> <li>- Cleaning - In all locations, disinfection requires a two-step process including preliminary cleaning with a regular detergent followed by disinfection with hospital-grade disinfectant or a diluted concentration of bleach</li> </ul> <p>Built Environment/Equipment</p> <ul style="list-style-type: none"> <li>- Adequate PPE including masks, gloves, alcohol based disinfectants – sufficient to change PPE with every patient encounter</li> <li>- Enhanced traffic control bundling (eTCB) includes triage prior to entering the facility, separate zones of risk within the facility and checkpoint hand hygiene throughout.</li> <li>- Minimize movement between zones/compartments. Ideally dedicate staff to only one compartment. Movement between zones requires hand hygiene between compartments.</li> <li>- Checkpoint at entrance to the facility – needs to be staffed.</li> <li>- Transition (contains residents who have transitioned from a medical facility to the LTCF) and clean zones designated within the facility.</li> <li>- Hand hygiene stations positioned between compartments in the LTCF</li> </ul> <p>[NOTE: if the LTC home has insufficient staff to assign this role, consider assignment of a staff member who is unable to perform usual duties (e.g. recreation therapist, PT), an RN/CCA on alternate duties due to an injury, graduated RNs who are currently unable to work due to COVID hiring restrictions, or senior RN students requiring clinical placements. ]</p>	<p>D</p>
<p>Kluger 2020 DOI:  <a href="https://www.medrxiv.org/content/10.1101/2020.04.15.20061168v1.full.pdf">https://www.medrxiv.org/content/10.1101/2020.04.15.20061168v1.full.pdf</a></p>	<p>Modeling of staff scheduling on infection rates – not specific to LTC.</p> <ul style="list-style-type: none"> <li>- Shorter physician and nurse rotation lengths (1-3 days) led to higher team failure rates</li> <li>- Nursing shifts of 12 versus 8 hours and avoiding staggering of physician rotations decreased the chance of team failure</li> </ul>	<p>B</p>

	<ul style="list-style-type: none"> <li>- Conclusions: Simple changes in staff scheduling, such as longer nursing shifts, co-rotation of physicians and groups of nurses no more frequently than every 3 days results in improved workforce preservation</li> </ul> <p>Primary outcome - probability of team failure, defined as the likelihood that at some point there are insufficient attendings, house-staff or nurses to staff a fully functioning floor</p>	
<p>Rios 2020 CPGs  <a href="https://www.medrxiv.org/content/10.1101/2020.03.19.20039180v2.full.pdf">https://www.medrxiv.org/content/10.1101/2020.03.19.20039180v2.full.pdf</a></p>	<p>Systematic review of 17 clinical practice guidelines for infection prevention and control in LTC (270 pg document prepared for WHO)</p> <ul style="list-style-type: none"> <li>- The most commonly recommended prevention strategies across the clinical practice guidelines were hand hygiene, wearing personal protective equipment, social distancing/isolation, disinfecting surfaces, droplet precautions, surveillance and evaluation, conducting diagnostic testing to confirm suspected respiratory illness, policies and procedures for visitors, policies and procedures for staff, and respiratory hygiene/cough etiquette. For managing respiratory illness in long-term care facilities, the majority of the clinical practice guidelines recommended antivirals for prophylaxis of staff and/or residents. However, most of the clinical practice guidelines failed to address multiple AGREE-II items, suggesting that they are most likely based on expert opinion.</li> <li>- AMA 2008 gives specific guidelines on management of ill residents</li> <li>- Buynder 2017 provides specific instructions on hand hygiene, cough etiquette, PPE</li> <li>- ECRI 2020 – includes triggers for levels of concern</li> </ul> <p>Human resource recommendations:</p> <ul style="list-style-type: none"> <li>- One person (ICP – infection control lead) should be assigned responsibility for directing infection control activities in each LTCF. Needs to be someone familiar with resident care problems. Responsible for implementing monitoring and evaluating infection control program (pg 228).</li> <li>- Also need sufficient staff for replacing missing staff due to illness/symptoms, training on IPC, communication with families, and increased cleaning including surfaces in resident rooms - bedrails, bedside tables, commodes, doorknobs, sinks, surfaces and equipment close to the resident. Minimum cleaning frequency - appendix 2. Staff cohorting to not move between sections. Infection control staff monitors personnel compliance with infection control policies.</li> </ul> <p>Environmental management recommendations</p> <ul style="list-style-type: none"> <li>- Sufficient PPE and alcohol based hand cleaners (ABHC) or wash stations to change their PPE and perform hand hygiene after every contact with an ill resident, when moving from one room to another, or from one resident care area to another.</li> <li>- Disposal bins for tissues, used PPE, gowns.</li> <li>- Single rooms for infected residents or shared rooms if all residents are infected – cohort those with productive cough – draw curtains between beds. .</li> </ul>	<p>D – based on expert opinion from 17 CPGs</p>

	<p>Built environment (facility) recommendations: pg 230</p> <ul style="list-style-type: none"> <li>- Hand hygiene facilities and supplies should be available and conveniently located for residents and staff (Category IA).</li> <li>- Clean and soiled utility areas should be functionally separate and clearly designated (Category IC).</li> <li>- Appropriate ventilation and air filtration should be addressed by the LTCF (Category IC).</li> <li>- (All) requirement should be met. If these requirements cannot be met, a system for transfer of cases to an appropriate institution that provides All should be part of the overall infection control plan.</li> <li>- Housekeeping in the facility should be performed on a routine and consistent basis to provide for a safe and sanitary environment (Category IC). <ul style="list-style-type: none"> <li>o Comment: Cleaning schedules should be kept for all areas in the LTCF. Cleaning products should be approved and labeled appropriately; manufacturers' (or other authoritative) recommendations for use and dilution should be followed.</li> </ul> </li> <li>- Measures should be instituted to correct unsafe and unsanitary practices (Category II). Comment: Environmental cleanliness may be monitored by walking rounds with a checklist for each area of the LTCF. Nursing interventions may be monitored by direct observation during such rounds.</li> <li>- Areas in the LTCF with unique infection control concerns (eg, laundry, kitchen, rehabilitation) should have the appropriate policies and procedures developed (Category II).</li> <li>- Policies and procedures for disposal of infectious medical waste (including waste categorization, packaging, storage, collection, transport, and disposal) should be developed in accordance with federal, state, and local regulations (Category IC). Comment: Examples of specific issues include types of waste disposal bags, cleaning of waste transportation carts, and types of waste storage containers. Policies for sharps disposal should be developed.</li> </ul>	
<p>Rios 2020  <a href="http://medrxiv.org/content/early/2020/03/27/2020.03.19.20039081.abstract">http://medrxiv.org/content/early/2020/03/27/2020.03.19.20039081.abstract</a></p>	<p>Systematic review of 6 systematic reviews on preventing respiratory illness in LTC for WHO.</p> <ul style="list-style-type: none"> <li>- One high quality SR found mixed results for the effectiveness of hand hygiene to prevent infection (2 studies statistically significant positive results, 1 study non-statistically significant results)</li> <li>- One moderate quality SR with meta-analysis found a moderate non-statistically significant effect for personal protective equipment (PPE) in preventing infection and found no statistically significant results for the effectiveness of social isolation.</li> <li>- One moderate quality SR reported statically significant evidence for the effectiveness of amantadine and amantadine + PPE to prevent infection with lab confirmed influenza in LTCF</li> </ul>	<p>C (high quality study with limited evidence)</p>

<p>Armijo-Olivo 2020 DOI: 10.1093/geront/gnz053</p>	<p>Systematic Review</p> <ul style="list-style-type: none"> <li>- Results are mixed regarding the relationship between nursing staff time and quality of care.</li> <li>- The reviews did not control for family caregiving or resident care needs.</li> <li>- Most studies had a high risk of bias.</li> <li>- Meta-analysis was not possible due to different outcome definitions and measures, adjustments for confounding, and analytic methods.</li> </ul>	<p>C</p>
<p>Kariya 2018 DOI:10.1016/j.jiac.2017.12.004</p>	<p>Observational survey (17% response rate)</p> <ul style="list-style-type: none"> <li>- survey completed by IC managers – overall compliance with recommendations 79.2%.</li> <li>- Manual reviewed annually 40.3 to 42.5%</li> <li>- Installation of PPE low at 25.8 – 62.5% suggesting it was rarely used</li> </ul>	<p>C</p>
<p>Lansbury 2017 DOI: 10.1111/irv.12464</p>	<p>Expert opinion</p> <ul style="list-style-type: none"> <li>- Employment of LTC staff is precarious, and taking unpaid sick leave may have adverse economic consequence</li> <li>- During SARS compliance with IPC practices was dependent on the institutional climate. Increased uptake if staff felt valued, continuous access to training, clear IPC policies and supplies.</li> </ul>	<p>D</p>
<p>Lee 2017 DOI: 10.2147/CIA.S142522</p>	<p>Observation: survey of Infection Control Officers (ICO) and HCW</p> <ul style="list-style-type: none"> <li>- Organizations: 100% had policies stating IPC training provided at employment initiation</li> <li>- HCW state:25% received no training and 35% received in the past year</li> <li>- Training effectiveness was evaluated verbally in 67% and by written exam in 7.6%</li> <li>- Barriers to training: manpower (32%), knowledge (28%), and resources (26%)</li> <li>- Organizational barriers to managing outbreaks: inadequate manpower 43.7%</li> <li>- HCW perceived preparation as inadequate or very much inadequate, preparation re availability of supplies (22.5%) and isolation area (16.1%)</li> </ul>	<p>C</p>
<p>Lee 2017 DOI: 10.1016/j.ajic.2016.07.022</p>	<p>Observation: survey of ICO and visitors</p> <ul style="list-style-type: none"> <li>- ICOs cite uncooperative visitors (72.4%) and inadequate resources (23%) as main barriers for homes to implement outbreak protocols</li> <li>- Among surveyed family members, 77-88% indicated compliance with outbreak protocols (handwashing and masking). 69% would not visit if symptomatic and 63% would not visit during an outbreak. Uptake of annual influenza vaccine in visitors was 64%.</li> </ul>	<p>C</p>
<p>Najafi 2017 DOI: 10.1177/0272989X17708564 <a href="https://www.ncbi.nlm.nih.gov/pubmed/28538110">https://www.ncbi.nlm.nih.gov/pubmed/28538110</a></p>	<p>Modelling: used tracking data to model effectiveness of IPC</p> <ul style="list-style-type: none"> <li>- Isolation has the biggest impact on outbreak prevention modelling with random movement and prophylaxis has the biggest impact for data driven models. Limitations included no actual outbreak data from the facility.</li> </ul>	<p>C</p>

O'Neil 2017 DOI: 10.1017/ice.2017.232 <a href="https://www.ncbi.nlm.nih.gov/pubmed/29173225">https://www.ncbi.nlm.nih.gov/pubmed/29173225</a>	Evaluation of HCW knowledge, attitudes and practices preventing respiratory viral transmission <ul style="list-style-type: none"> <li>- 45% could describe transmission based precautions</li> <li>- 42% worked while sick</li> <li>- 54% said policies made staying home while ill difficult</li> </ul>	C
Rainwater-Lovett 2014. DOI:10.1111/irv.12203 <a href="https://www.ncbi.nlm.nih.gov/pubmed/24373292">https://www.ncbi.nlm.nih.gov/pubmed/24373292</a>	Systematic Review (37 articles describing 60 influenza outbreaks) <ul style="list-style-type: none"> <li>- Chemoprophylaxis is the most effective means of preventing outbreak (OR 0.52 95% CI 0.29-0.93)</li> <li>- Non pharm interventions (NPI) included PPE (defined as glove and mask use), hand hygiene, droplet precautions, social distancing (restriction of visitors, admissions, staff restrictions), isolation (limiting movement within the facility, cohorting on site) <ul style="list-style-type: none"> <li>o PPE OR 0.99 (0.49-1.93) and social distancing 1.07 (0.58 – 1.90)</li> <li>o p. 79 “While our results were inconsistent with a protective effect of PPE, this effect was not statistically significant.”</li> </ul> </li> <li>- Limitations: Acknowledges reporting bias in studies, included observational studies, NPI not described in detail, null results not reported, likely underestimation of NPI since LTC’s with good infection control practices experienced fewer outbreaks or lower case numbers and these were not reported.</li> <li>- p.80 “Chemoprophylaxis may fail in the face of a novel or resistant virus strain. NPI will be our only option for control and the importance of understanding which measures are most effective and how effective they are is paramount.”</li> </ul>	A
Drinka PJ, 2004, <a href="https://pubmed.ncbi.nlm.nih.gov/15086679/">https://pubmed.ncbi.nlm.nih.gov/15086679/</a>	Comparative study of infection rates of Influenza A due to built environment <ul style="list-style-type: none"> <li>- More public space per resident and a higher proportion of outside air being circulated inside is NOT associated with fewer influenza A cases.</li> </ul>	C
Drinka PJ, 2003, <a href="https://pubmed.ncbi.nlm.nih.gov/14649779/">https://pubmed.ncbi.nlm.nih.gov/14649779/</a>	Surveillance of infection rates of Influenza A in double occupancy rooms <ul style="list-style-type: none"> <li>- Living in a double occupancy room with an influenza A+ roommate presents a 3.07 RR of acquiring influenza (CI95, 1.61-5.78).</li> </ul>	Full text not available.
Drinka 2005 doi:10.1111/j.1532-5415.2005.53433_1.x	Observational study <ul style="list-style-type: none"> <li>- Increased transmission of influenzae in double room occupancy than private room</li> </ul>	C
Ho WW, 2003, <a href="https://onlinelibrary.wiley.com/doi/full/10.1046/j.15">https://onlinelibrary.wiley.com/doi/full/10.1046/j.15</a>	Descriptive study of SARS outbreak in LTCF. <ul style="list-style-type: none"> <li>- Crowding, limited ability to physically separate residents, and communal bathroom facilities thought to propagate viral spread in the LTCF studied.</li> </ul>	C

32-5415.2003.514841.x?sid=nlm%3Apubmed		
Sze-To et al., 2014 <a href="https://www.ncbi.nlm.nih.gov/pubmed/24955468">https://www.ncbi.nlm.nih.gov/pubmed/24955468</a>	Modelling study of indirect contact transmission of Influenza A, RSV, and rhinovirus in indoor environment (included all ages). <ul style="list-style-type: none"> <li>- “reducing the contact rate is relatively more effective than increasing the ventilation rate to lower the infection risk” – p.818</li> <li>- “in some situations increase in ventilation rate was also found to increase the risks of some susceptible persons”</li> <li>- “reducing unnecessary hand contacts on surface and on eyes and nose are important personal hygiene practices” –p.828</li> </ul>	B
Jones et al., 2013 <a href="https://www.ncbi.nlm.nih.gov/pubmed/23231621">https://www.ncbi.nlm.nih.gov/pubmed/23231621</a>	Modelling study of infection probability and total costs of interventions (all ages included) <ul style="list-style-type: none"> <li>- NPI, which includes social distancing and hygiene interventions (respirator or mask), may significantly impact influenza epidemics.</li> <li>- Refine the model to “incorporate a more realistic population structure and more representative cost estimates” to “enable informative exploration of the roles of NPI in influenza epidemic mitigation” – p. 1485</li> </ul>	B
Chami et al., 2012 <a href="https://www.ncbi.nlm.nih.gov/pubmed/22682697">https://www.ncbi.nlm.nih.gov/pubmed/22682697</a>	Randomized controlled trial of hygiene encouragement program on total infection rate (urinary, respirator and GI) <ul style="list-style-type: none"> <li>- The hygiene-encouragement program had no effect on infection rates among residents in NHs at 5-month follow-up (the incidence rate of the first episode of infection was lower for interventional group – 2.11 versus 2.15 for control group; however, the difference did not reach statistical significance).</li> <li>- The multicomponent intervention was targeted to caregivers and included educational meeting, posters, a kit of hygienic products, and knowledge surveys.</li> </ul>	C
Hutt et al., 2011 <a href="https://www.ncbi.nlm.nih.gov/pubmed/21450174">https://www.ncbi.nlm.nih.gov/pubmed/21450174</a>	Unblinded interventional trial examining effect of comprehensive intervention to implement national consensus guidelines for infection control on hospitalization rates from pneumonia. <ul style="list-style-type: none"> <li>- Intervention had no impact on hospitalization rates (hospitalization decisions made by attending physicians and mid-level providers at the intervention homes).</li> <li>- “The study highlights the difficulty of changing care provider behavior, particularly in the face of unclear evidence for the benefit of the behavioral change” – stronger interventions needed to change provider behavior p.504</li> </ul>	C
Zoutman et al., 2009	Survey of surveillance and infection control indices <ul style="list-style-type: none"> <li>- “Infection prevention and control resources and programming in Canadian LTCFs in 2004 fell</li> </ul>	C

<a href="https://www.ncbi.nlm.nih.gov/pubmed/19217188">https://www.ncbi.nlm.nih.gov/pubmed/19217188</a>	<p>short of the suggestions of Canadian and United States experts” p.362</p> <ul style="list-style-type: none"> <li>- 34% response rate</li> <li>- 87% LTCFs had infection control committees, 91% had 24 hour RN on site, 84% had on site infection control professional staff (ICP), only 8% of ICP were certified</li> <li>- Mean of 0.6 FTE (SD 1.0) infection control professionals per 250 beds</li> <li>- Conclusion: “Considerable investment, and more and better trained infection control professionals (ICPs) are essential. “</li> </ul>	
<p>Hutt et al., 2008</p> <a href="https://www.ncbi.nlm.nih.gov/pubmed/18948562">https://www.ncbi.nlm.nih.gov/pubmed/18948562</a>	<p>Modelling of human resources</p> <ul style="list-style-type: none"> <li>- More than 1.2 licensed nurse hours per resident per day was significantly associated with appropriate hospitalization and guideline-recommended antibiotic use</li> <li>- “An NH’s ability to implement evidence-based care may depend on adequate staffing ratios and stability” p.1105</li> </ul>	C
<p>Nuno et al., 2008</p> <a href="https://www.ncbi.nlm.nih.gov/pubmed/18647829">https://www.ncbi.nlm.nih.gov/pubmed/18647829</a>	<p>Modelling study of use of nonpharmaceutical interventions (NPIs) for infection control alone were effective in preventing introduction of a pandemic virus into a LTCF.</p> <ul style="list-style-type: none"> <li>- Limitations: modelling based on the assumption of low levels of asymptomatic carriers, and low <math>R_0</math> transmissibility and maintained a visitation rate of 1/5 residents for 2 hours/day</li> <li>- Model simulated the consequences of implementing the following NPIs: (i) Restrictions on visitors and staff entering the facility, (ii) social distancing measures for staff and visitors, (iii) monitoring of staff returning to the facility, and (iv) isolation of symptomatic residents and immediate removal from the premises of symptomatic staff.</li> <li>- “Employee entry–reentry was the most important element in the control of influenza introductions into a facility”</li> <li>- “The model assumed an initial population size of 40 visitors who had contact with residents (only 1 resident in 5 receives any visitors at all), visitations averaging 2 h, and homogenous mixing of the effect of visitation on all residents.”</li> <li>- “Conventional NPIs sufficed to curtail only mild outbreaks, and that higher levels of NPIs, requiring greater social restriction and higher levels of cooperation, were needed to manage more severe outbreaks.”</li> <li>- “The consequences of a 4-days-on/4-days-off/2.3-days isolation period lowered the probability of reintroduction of the virus by approximately a 16-fold (at <math>\mathcal{R}_0 = 2</math>) compared with daily 12-h shifts; and was considered socially acceptable by collaborators working closely with residential care facilities.”</li> </ul>	B
<p>Ho et al., 2012</p> <a href="https://www.cambridge.o">https://www.cambridge.o</a>	<p>Randomized controlled trial of intervention to improve IPC practices including direct observation of hand hygiene (HH)</p>	C

<a href="http://rg/core/journals/infection-control-and-hospital-epidemiology/article/efficacy-of-multifaceted-hand-hygiene-interventions-in-long-term-care-facilities-in-hong-kong-a-clusterrandomized-controlled-trial/F3447F8DB21A4B1A0DE014EED028C2BE">rg/core/journals/infection-control-and-hospital-epidemiology/article/efficacy-of-multifaceted-hand-hygiene-interventions-in-long-term-care-facilities-in-hong-kong-a-clusterrandomized-controlled-trial/F3447F8DB21A4B1A0DE014EED028C2BE</a>	<ul style="list-style-type: none"> <li>- HH compliance increased from 27% to 61% and 22% to 49% for two intervention groups</li> <li>- Respiratory outbreaks were reduced after intervention</li> <li>- A promotion program applying the WHO multimodal strategy – intervention listed on p.762</li> </ul>	
<p>Koh et al., 2011</p> <p><a href="https://dx.doi.org/10.1111/j.1744-1609.2011.00242.x">https://dx.doi.org/10.1111/j.1744-1609.2011.00242.x</a></p>	<p>Systematic review of 14 quantitative and 2 qualitative studies on HCW’s risk perceptions with acute respiratory infections and organizational infection control strategies.</p> <ul style="list-style-type: none"> <li>- HCWs identified risks to health, social risks, and risk acceptance.</li> <li>- Individual strategies identified were both negative (avoiding caring for affected patients) and positive (compliance to protective measures)</li> <li>- Organizational strategies were vital in reducing their risk perceptions and increasing their personal level of preparedness</li> <li>- Implications for practice for employers/policy-makers and institutions on p.41</li> </ul>	A
<p>McCleary L, 2005,</p> <p><a href="https://www.tandfonline.com/doi/pdf/10.1300/J181v03n03_02?needAccess=true">https://www.tandfonline.com/doi/pdf/10.1300/J181v03n03_02?needAccess=true</a></p>	<p>Descriptive study of SARS response in a Toronto LTCF, which included limiting visitors to the facility</p> <ul style="list-style-type: none"> <li>- “Staff members from throughout the organization were deployed to resident care tasks and, in many situations were trained by speech language pathologists to feed residents.”</li> <li>- “Social workers provided training and information to staff regarding the potential impact of the visiting restrictions and use of protective gear for all residents.”</li> <li>- “Specific interventions were offered to meet the additional needs of those with cognitive impairment...”</li> <li>- “The Social Work department was asked to coordinate efforts to address families’ need for information and reassurance. Within 24 hours, the Social Work department developed a family and resident support plan...Social workers telephoned family members several times a week to update them and reassure them that their relative was being cared for. The main goals were to keep families informed, maintain communication, and respond to crises.”</li> <li>- “Social workers were available in the evening and on weekends.”</li> </ul>	D
<p>McInnes K, 2005,</p>	<p>Descriptive study of an education program to train people to properly screen for SARS to be employed as</p>	D

<a href="https://journals.lww.com/jnsdonline/Fulltext/2005/03000/Keeping_SARS_Out_An_Education_Program_for_SARS.8.aspx">https://journals.lww.com/jnsdonline/Fulltext/2005/03000/Keeping_SARS_Out_An_Education_Program_for_SARS.8.aspx</a>	<p>hospital entry screeners</p> <ul style="list-style-type: none"> <li>- "...intention is to assist other staff development educators to ensure that appropriate, timely, and thorough training and support are provided whenever healthcare organizations face unusual crisis situations because of such things as communicable disease outbreaks..."</li> <li>- "...screeners, from the ambulatory care and outpatient laboratory departments, were hastily prepared for screening duty, despite assertions from staff development educators that significant learning was required to help screeners understand the need for screening and how to implement the screening protocol."</li> <li>- Contains good information regarding the types of education employed to train high quality screeners in a hospital setting.</li> </ul>	
<p>Checovich 2020 DOI: <a href="https://dx.doi.org/10.1016/j.jamda.2019.09.003">https://dx.doi.org/10.1016/j.jamda.2019.09.003</a></p>	<p>3 year intervention trial on screening and testing for respiratory viruses in LTC</p> <ul style="list-style-type: none"> <li>- Nursing staff (unspecified whether RNs, LPNs, CCAs) can screen and test residents for respiratory viruses</li> <li>- Feasible and led to increased detection rates in LTC</li> </ul>	B
<p>Davidson 2020 <a href="https://onlinelibrary.wiley.com/doi/epdf/10.1111/jocn.15297">https://onlinelibrary.wiley.com/doi/epdf/10.1111/jocn.15297</a></p>	<p>Narrative review</p> <ul style="list-style-type: none"> <li>- Few RNs and NPs providing care in LTC; more LPNs and CCAs.</li> <li>- COVID-19 pandemic reveals need for increased NP and RN presence in LTC, possible role for telemedicine to support</li> </ul>	D
<p>Demirbilek 2020 <a href="https://dx.doi.org/10.3906/sag-2004-187">https://dx.doi.org/10.3906/sag-2004-187</a></p>	<p>Narrative review paper describing Turkey's MOH response to COVID-19 pandemic</p> <ul style="list-style-type: none"> <li>- Measures of prevention in workplaces include granting leaves to pregnant or breastfeeding, immunocompromised chronic disease, people &gt;60y; flexible working time tables and home offices promoted; increased screening measures; border closure.</li> <li>- Early monitoring credited with delaying spread</li> <li>- PPE masks, diagnostic tests, and treatment medication provided to public for free</li> </ul>	D
<p>Dosa 2020 <a href="https://doi.org/10.1016/j.jamda.2020.03.004">https://doi.org/10.1016/j.jamda.2020.03.004</a></p>	<p>Expert opinion on LTC practical guidelines for highest risk pandemic preparedness</p> <ul style="list-style-type: none"> <li>- Appropriate preparedness includes 5 key elements: <ul style="list-style-type: none"> <li>o 1) reduce morbidity and mortality among those infected;</li> <li>o 2) minimize transmission;</li> <li>o 3) ensure protection of health care workers;</li> <li>o 4) maintain health care system functioning; and</li> <li>o 5) maintain communication with worried residents and family members.</li> </ul> </li> </ul>	D
<p>Fallon 2020 <a href="https://dx.doi.org/10.1093">https://dx.doi.org/10.1093</a></p>	<p>Narrative Review</p> <ul style="list-style-type: none"> <li>- Significant amount of close contact physical care in LTC; low staff to resident ratios are an issue compounded by COVID-19 sick leave/quarantine/absconding – these make IC protocols</li> </ul>	D

<a href="#">/qjmed/hcaa136</a>	<p>challenging (page 2)</p> <ul style="list-style-type: none"> <li>- Isolation challenge to achieve with residents who have cognitive impairment</li> <li>- From SARS 2003, staff reported concerns for own health in coming to work</li> <li>- Need for early, collaborative advanced care planning, decision-making support, and adequate staffing to provide palliative care (page 3)</li> <li>- Need to safeguard the mental and physical health of staff; importance of education for LTC staff (page 4)</li> </ul>	
<p>Gardner 2020  <a href="https://www.tandfonline.com/doi/pdf/10.1080/08959420.2020.1750543?needAccess=true">https://www.tandfonline.com/doi/pdf/10.1080/08959420.2020.1750543?needAccess=true</a></p>	<p>Expert opinion</p> <ul style="list-style-type: none"> <li>- Many residents are unable to independently complete ADLs related to IC (e.g., handwashing)</li> <li>- Staff not trained in providing care for serious respiratory illness; skill mix of LTC</li> <li>- Need to maintain adequate staffing levels, already difficult to recruit to LTC pre-pandemic, much of the pool of workers affected by school and day care closures therefore HR challenge</li> <li>- Need to quickly hire and train replacement workers if staff affected by an outbreak – LTC homes will need help doing this</li> <li>- Quality of care at risk with limitations on visitors and family</li> <li>- LTC should be classed as a priority site for PPE and testing</li> <li>- Monitoring quality of care needed by oversight teams going for on-site visits</li> </ul>	D
<p>Keeley 2020  <a href="https://dx.doi.org/10.2807/1560-7917.ES.2020.25.14.2000433">https://dx.doi.org/10.2807/1560-7917.ES.2020.25.14.2000433</a></p>	<p>Expert opinion</p> <ul style="list-style-type: none"> <li>- In UK, Screening and rapid testing of staff was used to ensure adequacy of workforce</li> <li>- LTC staff screened for symptoms and then provided tools (supplies and training images) to self-swab for virus</li> <li>- Rapid testing and results communicated to staff the same or next day</li> <li>- This policy was enacted b/c in UK community testing was not readily available in March so anyone reporting symptoms was asked to self-isolate for 7 days; following this recommendation would not allow for adequate staffing in LTC</li> <li>- A challenge exists if staff have a household member who is required to isolate; authors recommend extending the rapid testing to care staff household members as well</li> </ul>	D
<p>McMichael 2020  DOI:10.15585/mmwr.mm6912e1</p>	<p>Observational study describing a COVID-19 outbreak in LTCF</p> <ul style="list-style-type: none"> <li>- “The findings of the report suggest that once CoVID-19 has been introduced into a LTC facility it has the potential to result in high attack rates among residents, staff members, and visitors.”</li> <li>- 57% of residents, 36% of visitors and 6% of staff were admitted to hospital. Mortality among residents and visitors was 27.2% and 7.1% respectively.</li> <li>- Contributing factors to spread included 1) staff members working while symptomatic 2) staff members who worked in more than one facility 3) inadequate familiarity and adherence to</li> </ul>	C

	<p>standard droplet and contact precautions 4) challenges to implementing infection control practices including inadequate supplies of PPE and other items 5) delayed case recognition because of low index of suspicion and limited testing availability.</p> <ul style="list-style-type: none"> <li>- Recommendations: identify and exclude symptomatic staff, restrict visitation except in compassionate care situations, strengthen infection prevention and control guidance and adherence. Communicate more broadly to all stakeholders.</li> </ul>	
<p>Mills 2020 DOI: org/10.1172/jci.insight.139292</p>	<p>Observational – expert opinion</p> <ul style="list-style-type: none"> <li>- “one Seattle outbreak...highlighted infection prevention disparities, deficiencies, and staffing challenges within a sector that cares for one of our most fragile populations.” P.5</li> <li>- “unintended consequences of social distancing have resulted in more isolation among older nursing home residents, reduced physical activity and lack of friendly visitors as a way to enhance psychosocial wellbeing, and CoVID-19 patients dying alone.”</li> <li>- p. 6 “These risks can be mitigated to some extent by rapid testing of vulnerable population caregivers and having good honest, and in-time communications with families early and often.”</li> <li>- “developing, adopting and testing disaster preparedness plans, including for pandemics, in [senior’s facilities] is paramount. P.8</li> <li>- “proactive pandemic planning includes active symptom screening among HCW and staff, strict visitor limitations, limiting group activities, practicing universal masking and droplet precautions once local community transmission is identified”. P.9</li> </ul>	D
<p>Yen 2020 doi.org/10.1016/j.jmii.2020.04.003</p>	<p>Expert opinion based on SARS outbreak</p> <ul style="list-style-type: none"> <li>- “In LTCF the elderly live in close proximity while under the care of often inadequately trained and under-resourced nurse assistants.”</li> <li>- Designate a chief officer responsible for preparedness and response</li> <li>- Maintaining surveillance and reporting for health workers/caregivers and residents</li> <li>- Ensure education and training</li> <li>- Allocate adequate supplies</li> <li>- Engage in environmental cleaning and disinfection</li> <li>- Enhanced traffic control bundling (eTCB) learned from SARS and includes triage prior to entry, separate zones of risk and checkpoint hand hygiene throughout,</li> <li>- Compartments for daily work – staff and residents remain in their area and not move/work between areas. Hand hygiene if staff must move between (eg housekeeping or laundry)</li> <li>- Transition zone for new residents (isolation and use of PPE)</li> <li>- Limit visitors (Tawain CDC high attack rate among house contact). If urgent visits, max 30 min, 3 metre distance in a controlled public area</li> </ul>	D

	<ul style="list-style-type: none"> <li>- Minimize transfers to hospital, if possible. Use telemedicine</li> <li>- Compartmentalize or cohort unwell patients</li> <li>- Plan for evacuation/shut down if more than one compartment affected – remove the sick to hospital, evacuate all residents and HCW and disinfect the building.</li> </ul>	
<p>Lee 2018</p> <p><a href="https://pdfs.semanticscholar.org/2d34/7b2b9a5c72eafeb542413868a36d47308d99.pdf">https://pdfs.semanticscholar.org/2d34/7b2b9a5c72eafeb542413868a36d47308d99.pdf</a></p>	<p>Qualitative Study on infection control practices in LTC – nursing focus groups</p> <ul style="list-style-type: none"> <li>- Healthcare Associate Infections “not only threaten the health status of residents but also place a considerable burden on healthcare workers in terms of workload and responsibilities.” p.1</li> <li>- “perceptions LTCF in Korea are generally regarded as under-resourced, under-staffed, and uncaring environments especially where nurses are concerned.” P.2</li> <li>- Results: Facility manager’s leadership an important component (culture of clinical excellence, effective communicator)</li> <li>- defining role boundaries for tasks and distribution of responsibilities.</li> <li>- unclear distinction between IC practices in LTCF and geriatric hospitals (less capacity)</li> <li>- need for improvement in staffing and employee support</li> <li>- challenges in communication and cooperation among HCP</li> <li>- disagreement with external organizations and inter-institutional regulations</li> <li>- family noncompliance with resident visitation regulations</li> <li>- lack of clinical guidelines specific to LTCF</li> <li>- need for performance evaluation on infection control practices</li> </ul>	C
<p>French 2016</p> <p><a href="https://doi.org/10.1111/irv.12379">doi.org/10.1111/irv.12379</a></p>	<p>Narrative synthesis on RSV outbreaks and infection control measure effectiveness</p> <ul style="list-style-type: none"> <li>- risk of bias high</li> <li>- recommendations: case-finding, screening patients on admission, screening staff and/or visitors, staff/patient cohorting, visitor restrictions (no children), staff training and or compliance monitoring</li> <li>- PPE evidence: use of googles for all staff transmission risk 43% in control and 6% in intervention.</li> <li>- monitoring staff compliance with PPE lower risk of transmission RR 2.9% CI 1.5 – 5.7)</li> <li>gown/glove/mask</li> <li>- goggles and masks decreased staff transmission</li> <li>- staff/patient cohorting may prevent transmission</li> </ul>	D
<p>Ursic 2016 doi:</p> <p><a href="https://doi.org/10.1186/s12879-016-1962-8">10.1186/s12879-016-1962-8</a></p>	<p>Descriptive study</p> <ul style="list-style-type: none"> <li>- lower acute respiratory infections in patients with dementia (Locked unit) attributed to few visitors or less intensive personal contact among family members</li> <li>- incidence rate of ARI higher in staff than residents (5.9 vs 3.8/1000 person days p=0.03)</li> <li>- one goal of this study was to assess the influence of visitors numbers on ARI incidence. Because</li> </ul>	D

	visits prohibited during the influenza outbreak, inconclusive results.	
Lee 2020 <a href="https://www.ncbi.nlm.nih.gov/pubmed/32155208">https://www.ncbi.nlm.nih.gov/pubmed/32155208</a>	Systematic Review of 37 studies – qualitative synthesis on causes of transmission and control measures of outbreaks in LTCFs <ul style="list-style-type: none"> <li>- Suboptimal infection control practices including inadequate decontamination and poor hand hygiene were the most frequently raised issue propagating transmission.</li> <li>- Lapses in specific care procedures were linked with outbreaks.</li> <li>- About 60% of the included studies reported affected cases among staff, but only a few studies implemented work restriction during outbreaks.</li> </ul>	A
Duffy and Richardson 2020 for the Northern Health and Social Care Trust 2020 <a href="http://www.yhscn.nhs.uk/media/PDFs/mhdn/Dementia/Covid%2019/Supporting%20People%20with%20Dementia%20During%20Covid%2019%20NHSCT%20final.pdf">http://www.yhscn.nhs.uk/media/PDFs/mhdn/Dementia/Covid%2019/Supporting%20People%20with%20Dementia%20During%20Covid%2019%20NHSCT%20final.pdf</a>	Expert Opinion booklet for supporting residents with dementia during COVID-19 <ul style="list-style-type: none"> <li>- Outlines personal care issues pg 15</li> <li>- Anxiety is common due to recognition that usual visits from family are not taking place</li> <li>- Recognize that something is wrong – may require additional reassurance</li> </ul>	D
WHO 2020 Mental health and psychosocial considerations during COVID <a href="https://apps.who.int/iris/bitstream/handle/10665/331490/WHO-2019-nCoV-MentalHealth-2020.1-eng.pdf">https://apps.who.int/iris/bitstream/handle/10665/331490/WHO-2019-nCoV-MentalHealth-2020.1-eng.pdf</a>	Expert opinion on care needs of LTC residents <ul style="list-style-type: none"> <li>- Section 22. Older adults, especially in isolation and those with cognitive decline/dementia, may become more anxious, angry, stressed, agitated and withdrawn during the outbreak or while in quarantine. HCWs will need to provide additional attention, care and reassurance, especially if there is a reduction in visitation time with family caregivers.</li> <li>- Provide practical and emotional support through informal networks (families) and health professionals.</li> <li>- HCWs will need to support remote communication with residents and families.</li> </ul>	D
Wang et al. 2020 <a href="https://www.thelancet.com/action/showPdf?pii=S0140-6736%2820%2930755-8">https://www.thelancet.com/action/showPdf?pii=S0140-6736%2820%2930755-8</a>	Expert opinion on dementia care during COVID-19 <ul style="list-style-type: none"> <li>- People living with dementia have limited access to accurate information and facts about the COVID-19 pandemic.</li> <li>- They might have difficulties in remembering safeguard procedures, such as wearing masks, or in understanding the public health information issued to them.</li> <li>- Ignoring the warnings and lacking sufficient self-quarantine measures could expose them to higher chance of infection.</li> </ul>	D

	<ul style="list-style-type: none"> <li>- People living with dementia, who have little knowledge of telecommunication and depend primarily on in-person support might feel lonely and abandoned, and become withdrawn.</li> <li>- Reduction of group activities, non-clinical visitors (e.g. musicians, hair dressers) within the home and restrictions on family visitors places residents with dementia at great risk of poor outcomes due to psychosocial burdens.</li> <li>- “We have observed that under the dual stress of fear of infection and worries about the residents’ condition, the level of anxiety among staff in nursing homes increased and they developed signs of exhaustion and burnout after a month-long full lockdown of the facilities.”</li> <li>- Mental health care for residents and staff in LTC is urgently needed.</li> </ul>	
<p>Siegel 2007 DOI: 10.1016/j.ajic.2007.10.007</p>	<p>Clinical guidelines for isolation (includes all ages)</p> <ul style="list-style-type: none"> <li>- Probability of HCW developing SARS strongly associated with &lt; 2 hours of IC training and poor understanding of procedures</li> <li>- Use of PPE by visitors in a health care setting has not been addressed in the scientific literature</li> <li>- Provide human and fiscal resources to meet occupational health needs 1B/1C</li> <li>- Develop and implement systems for early detection and management 1B</li> <li>- Limit visitation by those with signs and symptoms 1B</li> <li>- Balance psychosocial risks and needs of infection control</li> </ul>	D
<p>Brown 2020 Doi:10.1016/j.jagp202004.010</p>	<p>Expert Opinion on Alzheimer’s’ and related dementia</p> <ul style="list-style-type: none"> <li>- risks of social isolation, change in behaviour, reduced access to medication, challenges following recommendations regarding social isolation</li> <li>- Residents with dementia are less able to use electronic tools</li> <li>- Absence of ongoing medical care during pandemic</li> <li>- Resources unavailable eg. day program, meals on wheels, other community supports, home care</li> <li>- Difficulty accessing government resources, limited public transportation</li> <li>- Suggest contingency plans if an emergency, increased telephone contact, planning for disruption or temporary move</li> <li>- Isolation, decreased activities and restricted visitors may worsen cognitive symptoms</li> <li>- LTC no physical distancing as proximity is required for ADL’s</li> <li>- Disruptions in care staff if outbreak</li> </ul>	D
<p>Murphy 2006 <a href="https://www.ncbi.nlm.nih.gov/pubmed/16629506">https://www.ncbi.nlm.nih.gov/pubmed/16629506</a></p>	<p>Expert opinion on global challenges and innovative infection control measures during SARS</p> <ul style="list-style-type: none"> <li>- Onsite inspections included assessment of infection control capacity, underlying policy context, review of triage procedures, isolation capacity, available PPE, staff health monitoring, screening and limitation of visitors, inter and intra-hospital patient transfer policies</li> <li>- Novel ideas: limit movement until specialized unit (security at entrance, locked down all</li> </ul>	D

	<p>elevators but one)</p> <ul style="list-style-type: none"> <li>- Isolation buddy remained outside the room and observed HCW for breaches in PPE</li> <li>- Public confidence included regular media releases, designated call centres, provision of updated stats</li> </ul>	
Mody 2005 doi: 10.1016/j.ajic.2005.01.011	<p>Observational study and survey of LTCFs regarding update of infection control practices</p> <ul style="list-style-type: none"> <li>- Rapid turnover of staff limits infection control implementation</li> <li>- Significant variation exists in implementation</li> </ul>	C
Wong 2005 doi:10.1111/j.1365-2788.2005.00687.x	<p>Observational study on SARS precautions in a severe intellectual disabilities hospital in Hong Kong</p> <ul style="list-style-type: none"> <li>- Risk from carers, visitors, volunteers, staff and patients of general hospital</li> <li>- Quarantine unit for anyone who might have had close contact with a SARS patient from hospital or home leave (no home leave and decreased hospital transfers during this time)</li> <li>- Audits and inspection rounds to ensure IC activities implemented, and to provide psychological and practical support</li> <li>- Increased access to hand hygiene supplies required</li> </ul>	C
Saskatchewan LTC Network review of publicly available information on SK LTC and assisted living facility websites and social media	<p>A review of provincial LTC and assisted living home communication capabilities conducted on April 28, 2020 revealed the following:</p> <ul style="list-style-type: none"> <li>- Among 62 sampled LTC homes and assisted living facilities, 32 (52%) provide information about COVID-19 through different means such as newsletters, updates on websites, private Facebook groups or Facebook pages.</li> <li>- 45% have home updates or information unrelated to COVID-19 posted on Facebook after February 2020.</li> <li>- Limitations: the screening only included LTC and assisted living communications that are publicly available (via websites and Facebook page). No internal source/information was used, and therefore, the results cannot be used to conclude that homes without a website/Facebook page are not engaging in active communications with family during the pandemic.</li> <li>- Contact <a href="mailto:susan.tupper@usask.ca">susan.tupper@usask.ca</a> for full report</li> </ul>	D
Saskatchewan LTC Network	<p>Observation: interviews with 16 family caregivers through the Saskatchewan LTC Network on communication with LTC families during a pandemic</p> <p>Role of Communication</p> <ul style="list-style-type: none"> <li>- Provides reassurance - reduces worry and distress</li> <li>- Builds confidence and trust</li> <li>- Improves community and builds support for health care providers</li> <li>- Regular social contact between resident and family is indispensable.</li> <li>- Frequency of contact will vary between residents/families (e.g. spouses requests are</li> </ul>	D

	<p>often more frequent) and videoconferencing is the preferred format</p> <ul style="list-style-type: none"><li>- Regular telephone updates about health status was appreciated and time commitment was acknowledged</li><li>- Requested increased communication by SHA and MOH regarding the pandemic plan for LTC. A dedicated section on the provincial website for LTC was requested.</li><li>- Contact <a href="mailto:susan.tupper@usask.ca">susan.tupper@usask.ca</a> for full report</li></ul>	
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## References Included in Summary

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See evidence summary attachments.

## Appendix: Evidence Search Details

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### *Search Strategies*

See evidence search reports – attached; LTC042201-01 ESR, LTC042201-02 ESR, LTC042201-03 ESR

### *Sources*

- CDC website/database
- CINAHL
- EMBASE
- Google Scholar
- LitCovid
- MEDLINE
- medRxiv
- PHAC database
- PubMed
- Reference/Citation Lists
- WHO Global Research on COVID-19
- Reference and citation searching



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