What works to prevent COVID-19 in care homes?

HIS Evidence were asked to search for evidence on what works to prevent COVID-19 in care homes. This is to support the work of the work of the Scottish Government Clinical Cell. In line with the HIS Evidence rapid response process, a search of the relevant evidence sources from the McMaster University Health Forum COVID-19 resource list was undertaken and the findings summarised in this report. The search was limited to items published in 2020. The Medline and grey literature search strategy is in Annex 1. A summary of the findings of the included resources and UK guidance is in Annex 2.

**HIS Evidence Conclusion:** Aside from hand hygiene, there was no high quality evidence identified on what works to prevent respiratory virus introduction and spread in care homes. Measures recommended by clinical guidelines appear to be based predominantly on expert opinion.

**Unpublished reviews**

Two unpublished rapid evidence reviews were identified (1, 2). These have not undergone peer review. The first examined systematic reviews (SRs) of any form of infection prevention and control (IPC) for respiratory illnesses in people aged 60 years and above residing in long-term care facilities (1). A comprehensive literature review and quality appraisal was conducted. There was an absence of systematic review evidence for most of the interventions stated in the protocol including; respiratory hygiene, triage, source control, daily monitoring for respiratory illness in residence, environmental cleaning, cleaning of linen and medical equipment, restrictions on resident movement, restrictions on visitors, restrictions on travel for facility staff, waste management, dead body management. There were mixed results for hand hygiene (1 SR, 3 intervention studies, evidence certainty low) and inconclusive findings for personal protective equipment and social distancing (1 SR, 18 observational studies of outbreaks).

The second rapid review evaluated measures to minimise the risk of infection spread among residents and staff within care home settings. Searches were limited to PubMed and Google Scholar. All study types were included. No formal appraisal of study quality was undertaken. There was randomised controlled trial evidence of benefit for availability of pocket sized hand sanitiser (plus education) in reducing infections (study encompassed in review above). One before and after study...
supported ultraviolet light for room disinfection. A modelling study supported limiting staff movement between care homes. The review highlighted a case study of a COVID-19 outbreak in a US care facility. Factors contributing to the outbreak included delayed recognition of cases, staff continuing to work whilst symptomatic and inadequate supplies of personal protective equipment (PPE) and hand sanitiser.

An unpublished comprehensive review and assessment of 17 clinical guidelines for preventing respiratory illness in adults aged 60 years and above living in long-term care reported that most guidelines supported environmental measures for infection prevention(3). Few of the guidelines reported an explicit strategy for identifying evidence so it is likely that most recommendations were based on expert opinion.

**Published systematic reviews**

One published systematic review of observational studies identified critical issues contributing to infection transmission in pathogen outbreaks as hand hygiene, use of PPE, cleaning and disinfection, and sharing of reusable devices(4). A Cochrane rapid qualitative evidence synthesis (all non-UK studies) described barriers and facilitators to implementing IPC guidelines(5).
References


Annex 1 Search strategy

Medline

Database: Ovid MEDLINE(R) ALL <1946 to April 28, 2020>

Search Strategy:

--------------------------------------------------------------------------------
1 exp Coronavirus/ (12748)
2 (coronavirus or "corona virus").tw. (13363)
3 (covid19 or covid-19 or "covid 19").tw. (6261)
4 "2019 nCoV".tw. (561)
5 or/1-4 (22361)
6 exp Home Care Services/ (46918)
7 exp Home Nursing/ (9340)
8 exp Nursing Homes/ (38857)
9 exp Residential Facilities/ (51962)
10 ("care home*" or "care at home" or "community care" or "home care" or "residential care" or "nursing home*" or "sheltered housing" or "domiciliary care").tw. (55847)
11 or/6-10 (119000)
12 exp communicable disease control/ or exp infection control/ (337487)
13 prevent*.tw. (1393270)
14 (infect* adj2 control*).tw. (38444)
15 exp Cross Infection/ (58785)
16 or/12-15 (1751964)
17 5 and 10 and 16 (11)

Web search examples:
covid OR covid19 OR coronavirus OR covid-19 "prevention" site:https://www.nice.org.uk/covid-19
care home coronavirus prevention
"care home*" or "care at home" or "community care" or "home care" or "residential care" or "nursing home*" or "sheltered housing" or "domiciliary care"
Annex 2 Findings of included resources and UK guidance

<table>
<thead>
<tr>
<th>Evidence reviews</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Rios P, Radhakrishnan A, Thomas S, Darvesh N, Straus S and Tricco A. Preventing respiratory illness in older adults aged 60 years and above living in long-term care. 2020 [cited 2020 Apr 27]; Available from: <a href="https://www.cebm.net/covid-19/preventing-respiratory-illness-in-older-adults-aged-60-years-and-above-living-in-long-term-care/">https://www.cebm.net/covid-19/preventing-respiratory-illness-in-older-adults-aged-60-years-and-above-living-in-long-term-care/</a></td>
<td>Rapid overview of reviews. Pre-print. Not peer reviewed. Comprehensive search March 2020. Preventing respiratory illness in long-term care facilities: One high quality SR found mixed results for the effectiveness of hand hygiene to prevent infection with 2 studies reporting statistically significant positive results in favour of hand hygiene and 1 study reporting non-statistically significant results. One moderate quality SR with meta-analysis found a moderate non-statistically significant effect in favour of personal protective equipment (PPE) in preventing infection. The same SR and meta-analysis also examined the effectiveness of social isolation to prevent infection and found no statistically significant results. [For both interventions findings could be consistent with reduced or with increased infection]. Conclusion (for non-pharmacological interventions). Can be used in long term care facilities but limited evidence to support their use. Report also stated (Based on one review of observational studies) that: The current evidence suggests that with antiviral chemoprophylaxis with amantadine is effective in managing respiratory illness in residents of long-term care facilities. NICE TA158 notes Amantadine is not recommended for the prophylaxis of influenza. <a href="https://www.nice.org.uk/guidance/TA158/chapter/1-Guidance">https://www.nice.org.uk/guidance/TA158/chapter/1-Guidance</a> <a href="http://www.healthcareimprovementscotland.org/our_work/technologies_and_medicines/mta_resources/appraisal_158.aspx">http://www.healthcareimprovementscotland.org/our_work/technologies_and_medicines/mta_resources/appraisal_158.aspx</a></td>
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</tbody>
</table>

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While education interventions to improve hand hygiene in care homes achieve limited results, adequate provision of hand sanitiser and gloves, along with line management support, have been shown to reduce infection rates. Regular disinfection of high-traffic surfaces reduces infection spread. Disinfection devices may support this. The evidence supports limiting movement of staff between care homes. Care homes relying on temporary staff should be aware that these staff are a key potential source of infection. No evidence on restricting visitors was identified, but if visitors have similar impact as staff re-entry, then restriction is supported. Rapid identification of cases among both staff and residents through testing may facilitate a coordinated response that minimises within-care home spread, although further evidence is needed. Cited a case study re Covid-19 in USA which, through surveys and on-site visits identified factors contributing to outbreak:
- staff continuing to work while symptomatic;
- staff members working in more than one facility;
- inadequate adherence to standard droplet and contact precautions, and eye protection recommendations; |

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- Hand hygiene  
- Use of PPE  
- Cleaning and disinfectant  
- Sharing of devices. |
| --- | --- |
| (5)Houghton C, Meskell P, Delaney H, Smalle M, Glenton C, Booth A, Chan XHS, Devane D, Biesty LM. Barriers and facilitators to healthcare workers’ adherence with infection prevention and control (IPC) guidelines for respiratory infectious diseases: a rapid qualitative evidence synthesis. Cochrane Database of Systematic Reviews 2020, Issue 4. [Link](https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD013582/full) | Rapid review – largely qualitative studies. No studies from UK context included. Healthcare workers felt unsure when local guidelines were long, unclear or did not match national or international guidelines. They could feel overwhelmed because local guidelines were constantly changing. They also described how IPC strategies led to increased workloads and fatigue. Responses affected by the level of support they felt they received from their management team.  

Clear communication about IPC guidelines was seen as vital. But healthcare workers pointed to a lack of training about the infection itself and about how to use PPE.  

Having enough space to isolate patients was seen as vital. Too few isolation rooms, anterooms and shower facilities was a problem. Other important practical measures described by healthcare workers included minimising overcrowding, fast-tracking infected patients, restricting visitors, and providing easy access to handwashing facilities. |
A lack of PPE, or PPE that was of poor quality, was a serious concern for healthcare workers and managers. They also highlighted the need to adjust the amount of supplies as infection outbreaks continued.

<table>
<thead>
<tr>
<th>Overview of clinical guidelines</th>
<th>Overview of guidelines. A comprehensive literature search identified clinical practice guidelines. None of the clinical practice guidelines specifically focused on issues related to residents with severe comorbidities or frailty. Preventing respiratory illness in long-term care facilities: Most of the clinical practice guidelines failed to address multiple AGREE-II items, suggesting that they are most likely based on expert opinion. Two or more clinical practice guidelines recommended the following: hand hygiene (n=13), wearing personal protective equipment (n=13), social distancing/isolation (n=13), disinfecting surfaces (n=12), droplet precautions (n=12), surveillance and evaluation (n=11), conducting diagnostic testing to confirm suspected respiratory illness (n=10), policies and procedures for visitors (n=9), respiratory hygiene/cough etiquette (n=9), policies and procedures for staff and/or residents (n=9), providing supplies (n=9), education of staff and/or residents (n=8), increasing communication (n=6), consulting or notifying health professionals (n=6), appropriate ventilation practices (n=2), and cohorting equipment (n=2) (Table 2, Appendix 6). One clinical practice guideline recommended appropriate air ventilation or smoking cessation. The recommendations from current guidelines overall seem to support environmental measures for infection prevention. Recommendations should be viewed with caution as it is unclear how many of these guidelines are based on the best available evidence due to their poor overall quality.</th>
</tr>
</thead>
</table>
### Guidance documents – Scotland and UK

<p>| Health Protection Scotland. COVID-19: Information and Guidance for Care Home Settings. 2020 [cited 2020 Apr 27]; Available from: <a href="https://hpspubsrepo.blob.core.windows.net/hps-website/nss/2980/documents/1_covid-19-information-and-guidance-for-care-homes.pdf">https://hpspubsrepo.blob.core.windows.net/hps-website/nss/2980/documents/1_covid-19-information-and-guidance-for-care-homes.pdf</a> | Section 2.1 provides general principles that care home facilities and individuals can follow to prevent the spread of respiratory viruses, including COVID-19. Daily monitoring of symptoms. Isolation of residents who may have Coronavirus (cohorting where individual isolation is unavailable) Isolation of contacts Signage on residents rooms and minimal entry and exit Testing of all admissions and symptomatic residents PPE use appropriate to sustained transmission context Avoidance of aerosol generating procedures where possible Single use disposable equipment where possible otherwise decontamination immediately after each use Avoid use of fans (Portable cooling fans) Safe management of laundry/linen. COVID-19 affected areas should be cleaned twice daily paying particular attention to common touch surfaces such as door handles and bed rails. A combined detergent disinfectant solution at a dilution of 1000 parts per million available chlorine or a detergent clean followed by disinfection (1000ppm av.cl.). Review visiting policy. A log of all visitors should be kept. Visiting may be suspended if considered appropriate by the facility. |
| Scottish Government. Coronavirus (COVID-19): clinical guidance for nursing home and residential care residents - updated March 26. 2020 [cited 2020 Apr 27]; Available from: | Symptom monitoring and triage. Routine visiting should be suspended. For family and friends, visits should be restricted to end of life care situations or people with dementia who are |</p>
<table>
<thead>
<tr>
<th>Source</th>
<th>Summary</th>
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</table>
Published 26th May 2020

*This report has been prepared in line with the HIS Evidence rapid response process. It has not been peer reviewed, and does not constitute recommendations. It should be considered alongside existing guidance applicable to NHS Scotland.*