NHS National Services Scotland

Patient and Resident Placement for Isolation and Cohorting Literature Review Considered Judgement Form

Version 1.0

2 March 2026

Antimicrobial Resistance & Healthcare Associated Infection (ARHAI) Scotland
An NHS Scotland Assure Service

Version history

Version	Date	Summary of changes
V1.0	2 March 2026	New document

Approvals

Version	Date Approved	Group/Individual
V1.0	February 2026	National Policy Guidance and Evidence Working Group (NPGE)
		Care Home Infection Prevention and Control Working Group (CHIPC)

Contents

Research question 1: How should patients or residents be assessed for infection risk prior to placement within the health and care setting?

A Quality of evidence

1.1 How reliable is the body of evidence?

(see SIGN 50, section 5.3.1, 5.3.4)

Comment here on the quantity of evidence available on this topic and its methodological quality. Please include citations and evidence levels.

If there is no available evidence to answer the key question, go to section B.

Comments	Evidence level
Twenty-four pieces of evidence were included for this research question.[1-24] Two of these were carried over from the last version of this review.[21, 22] • Two guidelines graded AGREE 'Recommend with modifications'.[18, 19] For some of these, the link between recommendations and evidence was not always clear. The recommendations from one guideline were based on expert opinion, as no evidence was found in the systematic review.[18] • Two documents published by the Scottish Government, graded 'mandatory'.[21, 24] • Twenty guidance documents graded SIGN 50 Level 4 expert opinion.[1-17, 20, 22, 23] This class of evidence presents a potential risk of bias because of its unclear methodology and the lack of supporting evidence for its recommendations.	2 x AGREE 'Recommend with modifications' 2 x SIGN 50 Mandatory 20 x SIGN 50 Level 4

1.2 Is the evidence consistent in its conclusions?

(see SIGN 50, section 5.3.2)

Comment here on the degree of consistency demonstrated by the evidence. Where there are conflicting results, indicate how the judgement was formed as to the overall direction of the evidence.

Comments

Symptom-based triage

- The evidence was consistent (two guidelines graded AGREE II with modifications, 16 guidance documents graded SIGN 50 level 4 expert opinion) that some form of symptom-based assessment of infection risk was required before as part of the assessment for patient placement.[1, 3-11, 14, 15, 17-19, 22].
- Eleven documents (two guidelines graded AGREE II with modifications, nine guidance documents graded SIGN 50 level 4 expert opinion) discuss symptom-based triage as a prelude to testing.[3-8, 10, 17-19, 22] Seven of the 11 documents are specific to SARS-CoV-2,[3-7, 18, 19] with one each for *Clostridiodes difficile* infections (CDI),[22] MDROs[10], influenza,[8] and mpox.[17] The symptoms of interest differed according to the infectious agent concerned.

Criteria other than symptoms

Other criteria were also proffered for use in patient assessment, but these varied with the disease of focus. This includes the Scottish Government's mandatory policy for CPE admission screening based on previous CPE positivity, prior admission to a hospital outside Scotland, or exposure to a case.[21] These criteria were reinforced and labelled mandatory by a more recent Scottish Government document published in 2017.[24] Other criteria identified in the evidence base include:

- immunosuppression or immunocompromise[9, 11] (two SIGN 50 level 4 expert opinion)
- international travel[3, 9, 10, 15, 23] (four SIGN 50 level 4 expert opinion)
- contact with animals[3] (one SIGN 50 level 4 expert opinion)

Comments

- treatment in an overseas hospital,[2, 10, 20, 21] (one document graded mandatory, three SIGN 50 level 4 expert opinion)
- transfer from another health facility where there have been known cases[2, 12] (two SIGN 50 level 4 expert opinion)
- vaccination status[7, 9, 14] (three SIGN 50 level 4 expert opinion)
- exposure to case(s)[4, 9, 18] (one AGREE II 'Recommend with modifications' and two level 4 expert opinion)
- membership of an under-vaccinated population group[23] (one SIGN 50 level 4 expert opinion)
- previous positive test for an MDRO[9, 21] (one document graded mandatory, one SIGN 50 level 4 expert opinion)
- presence of a long-term indwelling catheter or in situ endotracheal tubes[10] (one SIGN 50 level 4 expert opinion)
- wounds or breaks in the skin[9, 10] (two SIGN 50 level 4 expert opinion)
- patient is a neonate[10] (one SIGN 50 level 4 expert opinion)
- patient has an increased risk of complications[7] (one SIGN 50 level 4 expert opinion)
- patient is unable to maintain personal hygiene[1] (one SIGN 50 level 4 expert opinion)

Location for assessment:

- Virtual assessment. Three guidance documents graded SIGN 50 Level 4 are consistent in recommending some form of virtual consultation to assess risk before placement. The documents are specific for influenza,[8] measles,[14] and acute respiratory infections[3] in primary care and outpatient settings. They recommend that suspected patients be assessed by phone before visiting a primary care facility.[3, 8, 14] However, if this is not feasible or the patient presents in the clinical setting before any suspicion is raised, they should be isolated on arrival and assessed there.[14] The measles guidance also states that ambulance services should pre-alert accident and emergency departments if they are transporting a patient with suspected measles. This is to ensure the patient is admitted directly into a segregated area or side room.[14]

Comments

- Assessment at first contact. Three documents, two SIGN 50 Level 4 expert opinions specific to influenza,[8] and measles[14] as well as a COVID-19-specific guideline[19] graded AGREE II 'Recommend with modifications', advise that patients should be assessed on arrival to a facility at the entrance or reception.
- Continuous review. Two SIGN 50 level 4 expert opinion guidance, one specific to measles in healthcare settings[14] and the other to COVID-19 in adult social care,[9] advise that patients' infectious risk assessment be continuously reviewed throughout their stay in a healthcare facility or the period of use of the social care service.

1.3 Is the evidence applicable to Scottish health and care settings?

(see SIGN 50, section 5.3.3)

For example, do the studies include interventions, comparators or outcomes that are common to Scottish health and care settings?

Comments

The countries in which the guidance documents apply are listed below.

- UK (n=10)[7, 9, 11, 13-15, 20, 21, 23, 25]
- EU (n=3)[3, 18, 22]
- International (n=3)[6, 16, 19]
- New Zealand (n=4)[2, 4, 10, 12]
- United States (n=4)[1, 5, 8, 17]

One of the documents published in the UK is specific to Scotland,[21] six to England,[9, 11, 14, 20] two to Northern Ireland,[7, 13] and two to the whole of the UK.[15, 25] Four are particular to healthcare,[14, 15, 20, 25] and two to social care settings.[9, 11]

Three documents published by the WHO apply globally.[6, 16, 19] They apply to a lesser degree to Scottish health and care settings and can, therefore, be adapted.

Comments
Guidance documents published in New Zealand[2, 4, 10, 12] and the United States[1, 5, 8, 17] are specific to the health and care settings of these countries. However, their recommendations are generally applicable to Scottish settings.

1.4 Are the studies generalisable to the target population?

Comment here on sample size and methods of sample selection. Is the sample representative of the specific population or group of interest? Generalisability is only relevant to primary research studies.

Comments
No primary studies were included for this research question, hence, the issue of generalisability is irrelevant.

1.5 Are there concerns about publication bias?

(see SIGN 50, section 5.3.5)

Comment here on whether there is a risk in the evidence base that studies have been selectively published based on their results and thus a risk that results from published studies are systematically different from unpublished evidence.

Comments
No primary studies were included for this research question; hence, risk of bias is not a concern.

B: Evidence to decision

1.6 Recommendations

What Recommendations or Good Practice Points are appropriate based on this evidence?

Note the following terminology:

- **"must"** implies that the health and care setting must implement the recommended approach and is used where a recommendation has been directly lifted from legislation or mandatory guidance
- **"should"** implies that the health and care setting "should" implement the recommended approach unless a clear and compelling rationale for an alternative approach is present
- **"should consider"** implies that the health and care setting should consider implementing the recommended approach

Recommendation	Grading
GPP1.1 Service users should be promptly assessed for infection risk on arrival at the healthcare facility (and if possible, before transfer of a service user to or from another care area or care home). Infection risks to be considered include, but are not limited to: • symptoms such as diarrhoea, vomiting, fever or respiratory symptoms • foreign travel • open wounds • known exposure to a case or an area with cases of transmissible infection • hospitalisation or receipt of medical or cosmetic treatments in any country outside of Scotland in the last 12 months • inability to maintain appropriate hygiene	Good Practice Point

Recommendation	Grading
• being previously positive for a multidrug-resistant organism (MDRO)	
R1.1 Service users who may present a particular transmission risk, as per national protocols, must be isolated on arrival, appropriate screening undertaken, and clinical samples collected as required to establish the causative infectious agent. This includes but is not limited to patients who: • have been previously positive for Carbapenemase-producing Enterobacteriaceae (CPE), or • have been hospitalised outside of Scotland in the last 12 months (including those who received dialysis), or • have been transferred from a hospital abroad.	Recommendation
GPP1.2 The infection risks of service users should be continuously reviewed throughout their stay. **[New]**	Good practice point
GPP1.3 Virtual assessments (by telephone, email or other appropriate media) of infection risk should be conducted where possible for patients due to attend in-person outpatient appointments, including general practice and dental settings. **[New]**	Good practice point

1.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation or Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond infection prevention and control.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation or Good Practice Point were followed correctly. Be explicit and clear about benefits.

Benefits
GPP1.1, GPP1.2 and R1.1: Prompt and continuous assessment of infection risk will enable informed decisions to be made regarding patient placement and the necessary application/review of transmission-based precautions, thereby reducing the risk of infectious agent transmission to staff, other patients, and individuals within hospital premises. R1.1, GPP1.1, GPP1.2: Prompt assessment of infection risk and collection of appropriate samples to help identify the causative agent will support prompt and appropriate treatment of infection where required. GPP1.3 Virtual assessments allow for informed decisions and adequate preparation to be made regarding precautions to be taken for an infectious patient, including whether isolation is required. GPP1.3 Virtual assessments also reduce the risk of exposing staff and other patients, especially vulnerable ones, to an infectious patient. GPP1.3 Patients may be seen more quickly and spend less time overall in the health facility if virtual assessments are conducted in advance of their visit.

Risks and harms

List the adverse events or other unfavourable outcomes that may occur if the Recommendation or Good Practice Point were followed correctly. Be explicit and clear about risks and harms.

Risks and harms
GPP1.1, GPP1.2 No risks or harms anticipated.

Risks and harms
R1.1 No risks or harms anticipated. GPP1.3 Some patients may struggle to describe their symptoms effectively during a virtual consultation, which could lead to suboptimal decisions and preparations. GPP1.3 There are also risks associated with data privacy and security, including malicious and inadvertent data breaches. GPP1.3 There may be technological barriers (including poor connectivity, platform glitches) and patient-related factors, such as a lack of digital literacy or access to devices and services, that can disrupt virtual assessments.

Benefit-Harm assessment

Classify as “benefit outweighs harm” (or vice versa) or a “balance of benefit and harm.” Description of this balance can be from the individual service user, staff or visitor perspective, the societal perspective, or both. Recommendations or Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
GPP1.1, GPP1.2 Only benefits identified. R1.1 Only benefits identified. GPP1.3 Although there are risks associated with virtual assessment, including patient-related factors, technological barriers and data security, these may be offset by the risk reduction, time saving and quicker turnaround times. These risks can also be mitigated by using secure platforms that are continuously monitored for security, as well as properly tested virtual triage protocols with a user-friendly interface and visual aids where necessary. It is expected that if implemented with the proper mitigations, the benefits will outweigh the risks.

1.8 Feasibility

Is the Recommendation or Good Practice Point implementable in the Scottish context?

Describe (if applicable):

- financial implications
- opportunity costs
- material or human resource requirements
- facility needs
- sustainability issues
- human factors

and any other issues that may be associated with following a Recommendation or Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
GPP1.1, GPP1.2 There will be resource implications related to staff time, education and training. R1.1 There will be implications related to staff time, cost of diagnostic or screening tests, and the availability of isolation rooms. GPP1.3 There will be resource implications related to staff education and training. Patients' digital literacy and access to devices and internet services may also affect the smooth implementation of this GPP.

1.9 Expert opinion

Summarise the expert opinion used in creating the Recommendation or Good Practice Point. If none were involved, state "none". Translating evidence into action often involves expert opinion where evidence is insufficient. Clearly outlining that expert opinion helps users understand their influence on interpreting objective evidence. Expert opinion may also be required where there is no evidence available.

Expert opinion

GPP1.1 This GPP is based on 20 documents, including two COVID-19 guidelines graded AGREE 'Recommend with modifications',[18, 19] a mandatory Scottish Government DL[21] and 17 guidance documents graded SIGN 50 level 4.[1, 3-12, 14, 15, 17, 20, 22, 23] These documents recommend a range of criteria that should be considered in assessing the infectious risk of service users. The evidence was deemed insufficient for a recommendation, as the AGREE II guidelines are specific to COVID-19, and all other evidence consists of expert opinion.

R.1.1 This recommendation is based on the Scottish Government's mandatory policy for CPE admission screening.[21, 24] It is also supported by a COVID-19 specific guideline, published by ESCMID and graded as AGREE II 'recommend with modifications',[18] along with nine SIGN 50 level 4 guidance documents.[3, 4, 7, 9-11, 14, 15, 23]

GPP1.2 This GPP is based on two English SIGN 50 expert opinion guidance, one of which is specific to measles in healthcare settings[14] and the other to COVID-19 in adult social care,[9] which recommends that patients' infectious risk should be continuously reviewed throughout their stay in a healthcare facility or as long as they use the social care service.

GPP1.3 This GPP is based on three guidance documents graded SIGN 50 Level 4 specific for influenza,[8] measles,[14] and acute respiratory infections[3] in primary care and outpatient settings, which recommend virtual risk assessments before patients visit a primary care facility.

1.10 Value judgements

Summarise value judgements used in creating the Recommendation or Good Practice Point. If none were involved, state "none". Translating evidence into action often involves value judgements, which include guiding principles, ethical considerations, or other beliefs and priorities. Clearly outlining value judgements helps users understand their influence on interpreting objective evidence.

Value judgements
R1.1 None to note. GPP1.1, GPP1.2, GPP1.3 None to note.

1.11 Intentional vagueness

State reasons for any intentional vagueness in the Recommendation or Good Practice Point. If none was intended, state “none”. Recommendations or Good Practice Points should be clear and specific, but if there is a decision to be vague, acknowledging the reasoning clearly promotes transparency. Reasons for vagueness may include:

- inadequate evidence
- inability to achieve consensus regarding evidence quality, anticipated benefits or harms, or interpretation of evidence
- legal considerations
- economic reasons
- ethical or religious reasons

Intentional vagueness
R1.1 The type of clinical samples to be collected or screening to be conducted has not been specified, as this will depend on the patient presentation, relevant guidelines, and agreed local policies. GPP1.1 No example of the infectious agents to which a service user could have been exposed has been provided, as there could be many different ones. GPP1.3 How virtual assessments will be done has not been specified, as this will depend on local policies.

1.12 Exceptions

List situations or circumstances in which the Recommendation or Good Practice Point should not be applied.

Exceptions
None

1.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
None

Research Question 2: What different types of isolation areas are there and when should patients or residents be placed in these areas?

A Quality of Evidence

2.1 How reliable is the body of evidence?

(see SIGN 50, section 5.3.1, 5.3.4)

Comment here on the quantity of evidence available on this topic and its methodological quality. Please include citations and evidence levels.

If there is no available evidence to answer the key question, go to section B.

Comments	Evidence level
Forty-nine pieces of evidence were included for this research question.[1-6, 8, 9, 11, 12, 14-17, 19, 20, 22, 23, 25-55] • One guideline graded AGREE 'Recommend',[26] and four others graded AGREE 'Recommend with modifications'.[19, 25, 27, 54] Some limitations of the latter category include unclear links to evidence[19] and the non-availability of high-quality evidence to support the recommendations concerning patient placement.[27] • A retrospective cohort study graded SIGN 50 level 2+.[46] • Three studies graded SIGN 50 level 3: a before-and-after study,[47] and two interrupted time series (ITS).[45, 52] There were general limitations in the studies, including that the two ITS reported the outcomes of single room isolation and cohorting together, making it impossible to evaluate the effectiveness of either. • Forty guidance documents graded SIGN 50 Level 4 expert opinion.[1-6, 8, 9, 11, 12, 14-17, 20, 22, 23, 28-44, 48-51, 53, 55]	1 x AGREE 'Recommend' 4 x AGREE 'Recommend with modifications' 1 x SIGN 50 level 2+ 3 x SIGN 50 level 3 40 x SIGN 50 level 4

2.2 Is the evidence consistent in its conclusions?

(see SIGN 50, section 5.3.2)

Comment here on the degree of consistency demonstrated by the evidence. Where there are conflicting results, indicate how the judgement was formed as to the overall direction of the evidence.

Comments

Types of isolation areas

Within the evidence base, two broad isolation areas were consistently described: specialised ventilated isolation facilities[1, 3-5, 14, 15, 17, 26, 28, 29, 32, 33, 35, 40-42, 44, 48-51] and single rooms[1-6, 8, 12, 14-17, 19, 22, 25-35, 37, 39-41, 43, 49, 50] with several variations.

Specialised ventilated isolation facilities

Specialised ventilated isolation facilities were identified in one form or another in 23 pieces of evidence.[1, 3-5, 14, 15, 17, 26, 28, 29, 32, 33, 35, 40-42, 44, 48-51, 53-55] These include:

- Negative pressure isolation rooms (NPIR),[1, 3-5, 14, 15, 17, 26, 28, 29, 32, 33, 35, 40-42, 48, 50, 51, 53-55]
- High-level isolation units (HLIU)[55]
- Expedient patient isolation rooms (EPIR).[44]
- Enhanced single rooms with ensuite facilities and a ventilated lobby,[49]
- Positive pressure ventilated lobby isolation suites (PPVL),[51, 53]
- Positive pressure isolation rooms (PPIR)[48, 51, 53]

Negative pressure isolation rooms (NPIR)

Twenty SIGN 50 level 4 guidance documents,[1, 3-5, 14, 15, 17, 28, 29, 32, 33, 35, 40-42, 44, 48-51] one guideline, graded AGREE 'Recommend'[26] and another graded AGREE 'Recommend with modifications'[54] provided evidence regarding the indications for placement in an NPIR. The two key indications include: Source isolation - the containment of individuals with known or suspected infections caused by infectious agents transmitted through the airborne route, and aerosol-generating procedures (AGPs).

Comments

- **Source isolation:** Seven sources are consistent in advising that NPIRs should be used as an airborne precaution for source isolation, that is, to contain persons with known or suspected airborne infectious diseases in hospital settings to protect other patients and hospital staff. [1, 40, 44, 48-51] An ECDC guidance on IPC practices for respiratory viral infections in healthcare settings, graded SIGN 50 level 4, states that NPIRs should be used for respiratory infections with pandemic potential or high impact. It also lists MERS-CoV and avian influenza as examples of such infections.[3] Eight guidance documents[1, 3, 4, 14, 15, 32, 35, 42] and two guidelines[26, 54] specify using an NPIR for patients suspected or confirmed to be infected with a specific infectious agent. This included the following: Andes virus,[1] Nipah virus,[1] Avian influenza,[3, 15, 35] MERS-CoV,[3, 42] novel influenza A viruses,[32] measles (within hospital settings),[14, 54] SARS-CoV-2,[4] smallpox,[48] Varicella zoster virus in mpox patients,[54] and multi-drug-resistant TB (MDR-TB).[26] A CDC guidance, graded SIGN 50 level 4, also recommends placing patients with viral haemorrhagic fevers (VHFs) in NPIRs (preferably those with anterooms) as a matter of prudence (despite the lack of evidence for airborne transmission), to reduce the risk of exposure to aerosolised infectious agents in blood and body fluids.[48]
- **Aerosol-generating procedures:** Nine sources recommend NPIRs for carrying out AGPs in patients with suspected or confirmed airborne diseases. [3-5, 17, 28, 29, 33, 41, 54] This represents the only indication for NPIR placement of Mpox patients within the included evidence.[17, 33, 41, 54] And of the four SARS-CoV-2-specific evidence recommending NPIRs,[4, 5, 28, 29] three[5, 28, 29] recommend them only for AGPs.

High-Level Isolation Units (HLIU)

- One SIGN 50 level 4 guidance published in the UK discusses the specifications and use of HLIUs.[55]
- The primary indication for placement in an HLIU is the containment of patients with confirmed infection with an ACDP hazard group 4 pathogen, including VHF. Patients placed in an HLIU can be cared for using a negative pressure patient isolator (Trexler) within a negative pressure isolation suite with minimal PPE or simply in a bed in a negative pressure room with the complete ensemble of PPE/RPE for HCID.[55]

Comments

Expedient Patient Isolation Room (EPIR)

- This room type was identified in one piece of evidence graded SIGN 50 level 4. The EPIR approach creates a high-ventilation-rate inner isolation zone (encompassing the space immediately surrounding the bed of an infected patient) within a larger ventilated zone, with a HEPA filtration system between both zones.[44]
- The indications for placement in an EPIR are the same as those for NPIRs. EPIRS are recommended for use in outbreaks or other situations where the need for NPIRs exceeds NPIR capacity.[44]

Positive Pressure Isolation Rooms (PPIR)

- Two pieces of evidence, both graded SIGN 50 level 4, provide information on the design and indications of positive pressure isolation rooms (PPIRs).[48, 51] They define PPIRs as a specialised patient care area, usually in hospital settings, with rooms at positive pressure relative to the surrounding areas.[48, 51] This positive pressure setting prevents the ingress of contaminated air from the surrounding environment, thus protecting the room occupant.[51]
- The primary indication for using PPIRs is to minimise the exposure of severely immunocompromised patients (including solid organ transplant patients, allogenic neutropenic patients, and gene therapy patients) to opportunistic airborne pathogens.[48, 51, 53]

Positive pressure ventilated lobby isolation suites (PPVL)

One expert opinion guidance document, graded SIGN 50 level 4, describes PPVL isolation suites as single rooms with an entry lobby set at positive pressure relative to the room and the corridor and ensuite facilities with extract ventilation.[51] According to the guidance, PPVL isolation suites are indicated for both source and protective isolation and are especially useful for patients whose exact condition is unknown. This is also echoed in SHTM 03-01.[51, 53] This is cited as an advantage, as there is no need to switch ventilation settings or provide special staff training on managing the ventilation system.[51] The versatility of PPVL isolation suites was also noted, as they can be used to care for patients who are not in isolation but require a single room for other reasons.[51] A guidance document published by the US CDC advises that immunocompromised patients with an airborne infectious

Comments

disease should be placed in isolation rooms that utilise an anteroom or lobby to maintain positive pressure in the bedroom.[48] The room description is unclear; however, it appears to provide for a design which allows for a positive pressure bedroom, which differs from the PPVL design specified in UK guidance.[48]
HBN 04-01 recommends against using isolation rooms that are switchable between positive and negative pressure in new or upgraded facilities because of the risk to the isolated patient and/or the population outside the room if the settings are incorrect.[51]

Single Rooms

Thirty-three pieces of evidence provide evidence regarding the indications for placement in single rooms.[1-6, 8, 12, 14-17, 19, 22, 25-35, 37, 39-41, 43, 49, 50, 52, 54]

- **Definition:** Two documents, both graded SIGN 50 level 4 from Ireland[49] and England (HBN 00-09)[50] define a single room as a bedroom accommodating a single patient. HBN 00-09 stated in its definition that, as a minimum, single rooms should contain a bed, locker, clinical wash hand basin and a small cupboard with a worktop. It also noted that single bedrooms without ensuite facilities are not recommended.[50]
- **Indications:** The primary indication for isolation in a single room is to reduce the transmission of diseases spread by contact[1, 27, 31, 40, 49, 54] or droplet routes.[1, 49] This was consistently recommended in five sources, including two guideline graded AGREE II 'recommend with modifications'[27, 54] and four expert opinion guidance.[1, 31, 40, 49] It is also recommended as an alternative isolation placement when NPIRs are unavailable for patients with avian influenza,[15, 35] measles,[14] and COVID-19.[4] Five sources, including a guideline graded AGREE 'recommend'[26] and four expert opinion guidance[3, 28, 29, 33] also recommend their use in performing AGPs when NPIRs are unavailable.[3, 26, 28, 29, 33]
- **Effectiveness:** Four studies assessed the effectiveness of single-room isolation in reducing HAI transmission; a retrospective cohort study was graded SIGN 50 level 2+,[46] and three studies were graded SIGN 50 level 3: two interrupted time series[45, 52] and a before-and-after study.[47] Overall, the evidence of effectiveness is uncertain, with two of the studies reporting significant reductions associated with single-room isolation,[47, 52] while the other two, including the cohort study, found no significant benefit.[45, 46] There were

Comments

general limitations in the studies, including a lack of detail on how neonates were assigned to beds (single room or open bay) in the cohort study.[45]

- **Prioritisation for single rooms:** Six sources, including five SIGN 50 level 4 guidance documents[3, 12, 25, 30, 34, 39] and one guideline graded AGREE II 'Recommend with modifications'[25] were consistent in recommending that patients should be prioritised for single rooms if they have more pronounced symptoms or are likely to be most infectious (for example, those with cough, diarrhoea, uncontrolled secretions, or draining wounds).[3, 12, 25, 30, 34, 39] A WHO guideline graded AGREE 'Recommend with modifications', recommends that when single rooms are in short supply, patients with suspected and probable mpox should be prioritised over confirmed cases (who should be cohorted). It must be noted, however, that this was a conditional recommendation based on low-certainty evidence. [54]
- **Signage:** Documents from Canada[43] and New Zealand[2, 40] (all graded SIGN 50 level 4) recommend providing clear signage indicating the use of contact/droplet precautions with appropriate PPE on the doors of single rooms used for patient isolation.
- **Ventilation:** Two sources—a WHO guideline graded SIGN 50 'recommend with modifications'[19] and expert opinion guidance[33]— were consistent in recommending that the rooms be well-ventilated.[19, 33] However, no specifications were provided. A CDC document graded SIGN 50 level 4 notes that special air handling is not required for rooms housing suspected or confirmed Mpox patients, except that the door is kept closed if it is safe.[17]
- **Care home settings:** Seven sources, all graded SIGN 50 level 4, indicate that single-room isolation is a vital infection control tool in care homes, with similar considerations for prioritisation. [5, 9, 11, 12, 31, 36, 39] This is noted by guidance documents on ARIs,[11] COVID-19,[5, 9] *Candidozyma auris*,[39] iGAS,[36] MDROs[31] and VRE.[12] Two documents specify that the rooms should have an ensuite – a SIGN 50 level 4 guidance on VRE published in New Zealand,[12] and a similarly graded guidance on iGAS published in the UK.[36] The latter document also recommends that residents infected with iGAS be provided with their dedicated equipment,[36] a provision echoed by a US MDRO-specific guidance graded SIGN 50 level 4.[31]

2.3 Is the evidence applicable to Scottish health and care settings?

(see SIGN 50, section 5.3.3)

For example, do the studies include interventions, comparators or outcomes that are common to Scottish health and care settings?

Comments

The countries in which the guidance/research was conducted or apply are listed below:

- UK (n=17)[9, 11, 14, 15, 20, 23, 25, 26, 30, 36-38, 45, 50, 51, 53, 55]
- Canada (n=5)[28, 29, 41, 43, 52]
- EU/EEA (n=4)[3, 22, 33, 35]
- International (n=5)[6, 16, 19, 34, 54]
- Ireland (n=1)[49]
- Israel (n=1)[47]
- New Zealand (n=4)[2, 4, 12, 40]
- United States (n=12)[1, 5, 8, 17, 27, 31, 32, 39, 42, 44, 46, 48]

Of the documents published in the UK, one is specific to Scotland,[53] eight are specific to England.[9, 11, 14, 20, 23, 38, 50, 51] Two of these are particular to care homes[9, 11] and one to hospices.[38] These guidance documents are generally applicable to Scottish settings.

Five documents were published by the WHO and apply globally.[6, 16, 19, 34, 54] They apply to a lesser degree to Scottish health and care settings but can be adapted.

Guidance documents published in Canada,[28, 29, 41, 43], New Zealand,[2, 4, 12, 40], the EU/EEA,[3, 33, 35], and the United States[1, 5, 8, 17, 27, 31, 32, 39, 42, 44] are specific to these countries' and regions' health and care settings. However, their recommendations are generally applicable to Scottish settings.

The relevance of the before-and-after study might be limited by its age, as it's unclear how its findings apply to today’s ICU context.[47]

2.4 Are the studies generalisable to the target population?

Comment here on sample size and methods of sample selection. Is the sample representative of the specific population or group of interest? Generalisability is only relevant to primary research studies.

Comments
The primary studies included cover patients of all age groups, including neonates,[46] children[47] and adults.[45, 52] The studies for neonates and children were conducted in the ICU and may not be generalisable to non-ICU settings within the healthcare system.[46, 47] Only one study attempted a pre-study power calculation, but it was abandoned because the authors stated that the MRSA prevalence during the study was considerably higher than initially assumed.[45] The three other studies did not report any sample size calculations; however, two of the studies included over 1,500 patients.[46, 47, 52] In terms of sample selection, all patients in the hospital (or unit) during the study period who met the inclusion criteria were included. This is true for all four primary studies included.[45-47, 52]

2.5 Are there concerns about publication bias?

(see SIGN 50, section 5.3.5)

Comment here on whether there is a risk in the evidence base that studies have been selectively published based on their results and, thus, a risk that results from published studies are systematically different from unpublished evidence.

Comments
There is no concern about publication bias.

B: Evidence to decision

2.6 Recommendations

What Recommendations or Good Practice Points are appropriate based on this evidence?

Note the following terminology:

- **"must"** implies that the health and care setting must implement the recommended approach and is used where a recommendation has been directly lifted from legislation or mandatory guidance
- **"should"** implies that the health and care setting "should" implement the recommended approach unless a clear and compelling rationale for an alternative approach is present
- **"should consider"** implies that the health and care setting should consider implementing the recommended approach

Recommendation	Grading
GPP2.1 Service users who are known or suspected to be infected with a high-consequence infectious disease (HCID) spread by the airborne route, a novel respiratory infection with pandemic potential or any other air-transmitted infection that poses a public health risk should be placed in a negative-pressure isolation room, preferably with an anteroom. **[New]**	Good practice point
GPP2.2 If negative pressure isolation rooms are not available, service users who are known or suspected to be infected with an HCID spread by the airborne route, a novel respiratory infection with pandemic potential or any other air-transmitted infection that poses a public health risk, should be placed in positive pressure ventilated lobby (PPVL) rooms or, if these are not	Good practice point

Recommendation	Grading
available, single rooms (preferably with an ensuite) with appropriate risk assessment. **[New]**	
GPP2.3 Service users with confirmed viral haemorrhagic fevers (VHFs) should be placed in specialist high-level isolation units (HLIUs). When it is not possible to do so, they should be placed in negative-pressure isolation suites. **[New]**	Good practice point
GPP2.4 Severely immunocompromised service users (including those who have undergone solid organ transplants as well as allogenic neutropenic patients) should be placed in positive-pressure isolation rooms for protective isolation to minimise exposure to opportunistic airborne infectious agents. **[New]**	Good practice point
GPP2.5 In the absence of a positive-pressure room, severely immunocompromised service users (including those who have undergone solid organ transplants as well as allogenic neutropenic patients) should be placed in a positive-pressure ventilated lobby (PPVL) isolation suite or in the absence of this, a single room, with **appropriate risk assessment**. **[New]**	Good practice point
GPP2.6 Service users who require both source and protective isolation should be placed in a positive-pressure ventilated lobby (PPVL) isolation suite or a positive-pressure room with a negative-pressure lobby. In the absence of these, a single room may be used with appropriate risk assessment. **[New]**	Good practice point
GPP2.7 Service users who are known or suspected to be infected with an infectious agent spread by contact or	Good practice point

Recommendation	Grading
droplet should be placed in a single isolation room or suite. **[New]**	
GPP2.8 Rooms used for service user isolation should have an ensuite facility. If these are not available, a dedicated commode should be considered for the duration of the isolation period or until a suitable ensuite room becomes available. **[New]**	Good practice point
GPP2.9 Rooms used for service user isolation should have a lobby for PPE donning, doffing, and disposal. If a lobby is not available, arrangements should be made, with appropriate risk assessment, to ensure that these procedures can be performed safely. **[New]**	Good practice point
GPP2.10 In situations where there are not enough isolation rooms for managing infectious patients, service users should be prioritised with an appropriate risk assessment. Such risk assessment should consider factors such as: • severity of illness caused • organism transmissibility (including organisms that may be transmitted in the absence or before the onset of symptoms) • symptoms (for example, those with cough, diarrhoea, uncontrolled secretions, or draining wounds). **[New]**	Good practice point
GPP2.11 Clear and accessible signage, noting the type of precaution, should be put up on the doors of rooms in use for patient isolation. **[New]**	Good practice point
Although EPIRs were encountered in the evidence, no recommendations were made due to the limited evidence.	No recommendation

Recommendation	Grading
Although there is an extant body of evidence to suggest appropriate patient placement when AGPs are performed. No recommendations or good practice points have been made in this regard. This is in recognition of ongoing work by ARHAI Scotland to review transmission-based precautions, including how infectious agents are released into the air of the health and care environment from the respiratory tract, with consideration of particle size, distance and clearance/fallout time. It is anticipated that new content which will take account of AGPs as they are currently described in the context of the new transmission descriptors will be published soon.	No recommendation

2.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation or Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond infection prevention and control.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation or Good Practice Point were followed correctly. Be explicit and clear about benefits.

Benefits
• GPP2.1 Isolating patients in a negative-pressure isolation suite reduces the risk of transmitting the infectious agent, thereby protecting staff, other patients, and visitors in the hospital area. This protection also extends to the local community and the public, as these systems provide a better chance that an infectious agent of public health significance will be contained.

Benefits

- GPP2.1 Isolating patients in this manner also means that entire wards do not need to be closed due to one or a few infectious patients that can be appropriately managed.
- GPP2.2 Whilst not as effective, isolation of service users with infectious agents spread through the airborne route in single en-suite rooms provides some degree of protection for staff and other patients in the absence of a negative-pressure isolation room.
- GPP2.2 Conducting a risk assessment enables better prioritisation of isolation facilities.
- GPP2.2 Conducting a risk assessment ensures patients are placed appropriately and raises awareness of mitigations or precautions that may need to be addressed if the preferred negative pressure isolation room is not available.
- GPP2.3 Whilst VHFs are not known to spread usually via the airborne route, isolating VHF patients in Negative-pressure rooms reduce the risk of spread via aerosolised body fluids or blood.
- GPP2.4 Placing immunocompromised patients in a positive-pressure room protects them from potential infectious agents which transmit via the air which may cause serious illness to this group of individuals. It also provides psychological reassurance to patients, staff, and family members.
- GPP2.5 Placing immunocompromised patients in PPVL or in single rooms when positive pressure rooms are unavailable provides some protection from exposure to potential infectious agents transmitted via the air. A risk assessment will ensure that there is a consideration of the possible risks to the patient that may result from this placement.
- GPP2.6 Placing patients in PPVL isolation suites ensures protective isolation for the patient while minimising risks to other patients, staff, and visitors within the hospital premises.
- GPP2.7 Isolating service users in single rooms reduces the risk of transmitting infectious agents spread by contact or droplet route and to some degree the airborne route, thereby protecting staff, other patients, and visitors in the hospital or care home area.

Benefits
• GPP2.8 Having ensuite facilities in isolation rooms minimises the risk to other patients through contact or environmental contamination resulting from use of communal toileting facilities. It also provides comfort and privacy for the isolated service users. • GPP2.9 Having a lobby attached to isolation rooms reduces the risk of infectious agent dispersal or environmental contamination when PPE is doffed by ensuring that the contamination is contained within the lobby. • GPP2.10 Prioritising isolation rooms for service users with visible symptoms reduces the risk of transmission from those more likely to spread the infectious agents through coughing, diarrhoea or body fluids, etc. • GPP2.10 Prioritising isolation rooms for service users with infectious agents of higher transmissibility helps mitigate the risk of such infectious agents spreading. • GPP2.10 Prioritising isolation rooms for service users with infectious agents that cause more severe illness reduces the risk of transmission to other service users of a disease with more adverse outcomes. • GPP2.11 Clear signage on the doors of rooms used for isolation provides an immediate reminder and may encourage proper PPE use, which can help reduce the risk of transmission to staff and other patients.

Risks and harms

List the adverse events or other unfavourable outcomes that may occur if the Recommendation or Good Practice Point were followed correctly. Be explicit and clear about risks and harms.

Risks and harms
• GPP2.1, 2.2, 2.3, 2.5, 2.6 Isolation may be associated with adverse psychological effects. • GPP2.1, 2.2, 2.3, 2.5, 2.6. Reliance on isolation can undermine the implementation of complementary infection control measures. • GPP 2.6 There is a risk of leakage of infectious particles from a PPVL room and from a non-specialist ventilation single room to the corridor. It is not possible to quantify this risk, and more research is required.

Risks and harms
• GPP2.4, 2.7. 2.8, 2.10, 2.11, No harms or risks anticipated.

Benefit-Harm assessment

Classify as “benefit outweighs harm” (or vice versa) or a “balance of benefit and harm.” Description of this balance can be from the individual service user, staff or visitor perspective, the societal perspective, or both. Recommendations or Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
• GPP2.1, 2.2, 2.3, 2.5, 2.6 It is anticipated that benefits will outweigh harms, if implemented appropriately/safely. • GPP2.4, 2.7. 2.8, 2,9, 2.10, 2.11 Only benefits identified. • GPP2.5 While a PPVL or a single room may not offer the same level of protection as a positive pressure room, they provide the next best safeguard in their absence. • GPP 2.6 Whilst there may be some leakage from a PPVL room to the corridor, it is anticipated that the source isolation capabilities of a PPVL room outweigh a single nonspecialised ventilated room. • GPP 2.6 Whilst there may be air leakage from a single non-specialised ventilated room, it is anticipated that the source isolation capabilities of a single non-specialised ventilated room outweigh a multi-bed ward area.

2.8 Feasibility

Is the Recommendation or Good Practice Point implementable in the Scottish context?

Describe (if applicable):

- financial implications
- opportunity costs
- material or human resource requirements

- facility needs
- sustainability issues
- human factors

and any other issues that may be associated with following a Recommendation or Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
GPP2.1, 2.2, 2.3, 2.5, 2.6, 2.7 There will be resource implications, including costs, staff training and education, personnel, and equipment availability, in establishing and maintaining isolation rooms, especially specialised isolation rooms, and in managing patients whilst in isolation. GPP2.1, 2.2, 2.3, 2.5, 2.6, 2.7 Not all types of isolation facilities will be available across NHS Scotland Estates, so risk assessments are necessary to make the best possible decisions.

2.9 Expert opinion

Summarise the expert opinion used in creating the Recommendation or Good Practice Point. If none were involved, state “none”. Translating evidence into action often involves expert opinion where evidence is insufficient. Clearly outlining that expert opinion helps users understand their influence on interpreting objective evidence. Expert opinion may also be required where there is no evidence available.

Expert opinion
GPP2.1 Two guidelines (one graded AGREE ‘Recommend’[26] and another graded AGREE ‘Recommend with modifications’[54]) and 8 SIGN 50 level 4 guidance documents[1, 3, 4, 14, 15, 32, 35, 42] inform this good practice point that patients with known or suspected infections spread through the airborne route should be contained in negative-pressure isolation rooms. Although not all pieces of evidence specify the types of airborne infections that require this placement, a WHO guideline graded ‘AGREE recommend with modifications’[54] and an ECDC expert opinion guidance[3] state that such infections should be novel, high-impact, or have the potential to pose a public health risk. This is also borne out by the specific examples noted in

Expert opinion

the evidence. They include the Andes virus,[1] Nipah virus,[1] Avian influenza,[3, 15, 35] MERS-CoV,[3, 42] novel influenza A viruses,[32] measles (within hospital settings),[14, 54] SARS-CoV-2,[4] smallpox,[48] Varicella zoster virus in patients with mpox,[54] and multi-drug-resistant TB.[26] The evidence was insufficient for a recommendation however, as the AGREE guidelines were deemed too narrow in scope, being specific to mpox[54] and tuberculosis.[26] It is ARHAI Scotland's expert opinion that all notifiable organisms spread via the airborne route are covered by this GPP.

GPP2.2 This GPP is informed by five pieces of evidence, all graded SIGN 50 level 4, which recommends the use of single rooms for isolation if negative-pressure isolation rooms are unavailable.[3, 4, 14, 15, 35] It is the expert opinion of ARHAI Scotland that PPVL rooms will provide more protection than single rooms without special ventilation. As a result, they have been proposed ahead of single rooms when negative-pressure rooms are not available. It is also noted that there is an unquantifiable risk of air leakage from the anteroom of PPVLs to the adjoining corridor, which may be especially important if vulnerable patients are nearby. However, despite this risk, they are considered to provide more protection than single rooms.

GPP2.3 This good practice point is based on the expert opinion of ARHAI Scotland and its stakeholders. It also follows the provisions of a UK guidance document, graded SIGN 50 level 4, published by the Department of Health and Social Care, which recommends HLIUs for the management of patients with confirmed VHF.[55]

The second half of the GPP is also informed by a CDC guidance, graded SIGN 50 level 4,[49] which recommends placing patients with viral haemorrhagic fevers in negative-pressure isolation rooms, preferably those with anterooms. Although the document notes that while there is no evidence for transmission via the airborne route, it is prudent to isolate them in negative-pressure isolation rooms to reduce the risk of exposure to aerosolised infectious agents in vomitus, respiratory secretions, liquid stool, and blood.

GPP2.4 This good practice point is based on three SIGN 50 level 4 guidance,[48, 51, 53] which recommend the use of positive-pressure isolation rooms to minimise the

Expert opinion

exposure of severely immunocompromised patients to opportunistic infectious agents spread through the airborne route. The documents comprise HBN 04-01, published by NHS England;[51] general IPC guidance by the US CDC.[48] and guidance on specialised ventilation for healthcare facilities issued by Health Facilities Scotland[53] which notes that this is a usual practice.

GPP2.5 This good practice point is supported by HBN 04-01 Supplement 1, published by NHS England, which notes that PPVL isolation suites and single rooms may be used for protective isolation.[51] These are provided as solutions when positive-pressure isolation rooms are unavailable. It should be noted, however, that HBN 04-01 Supplement 1 is under review by NHS Scotland Assure at the time of writing, and its use is not currently encouraged in NHS Scotland. This GPP is therefore based on ARHAI Scotland's expert opinion.

GPP2.6 This good practice point is based on two SIGN 50 level 4 guidance,[51, 53] which recommends the use of positive-pressure ventilated lobby isolation rooms for placement of patients requiring both source and protective isolation. The use of a positive-pressure room with a negative-pressure lobby is informed by American SIGN 50 Level 4 guidance, which recommends that immunocompromised patients with an airborne infectious disease be placed in isolation rooms that utilise an anteroom or lobby to maintain positive pressure in the bedroom.[48] It is ARHAI Scotland’s expert opinion that both room types will achieve the same outcome, as no evidence was identified to indicate superiority of one over the other.

GPP2.7 This good practice point is based on three SIGN 50 Level 4 guidance documents that recommend placing patients with infectious agents that are spread by contact or droplet routes in single rooms.[1, 40, 49] It is also supported by pathogen-specific guidelines or guidance, which recommend single-room placement. They include *Candidozyma auris*,[2, 39] Carbapenemase-producing enterobactererales (CPE),[30] *Clostridioides difficile*,[22] MDROs,[31] MRSA,[25] mpox,[17, 33, 41, 54] norovirus,[27] laryngeal or pulmonary TB,[26] pertussis,[1] pneumonia in cystic fibrosis patients infected with *Burkholderia cepacia*,[1] and VRE.[12]

Expert opinion

A recommendation for patients receiving haemodialysis with BBV infections which stated as follows: “Where possible, patients who are receiving haemodialysis and are known or suspected to be positive for a blood-borne virus (BBV) should be managed in a single-bed room using dedicated equipment” was not carried over to the present review, as the evidence underpinning it was not considered to be of sufficient quality for inclusion.

GPP2.8 This good practice point is based on 12 SIGN 50 level 4 guidance documents, which recommend that isolation rooms be en-suite or have access to a designated commode (or toilet) and sink where en-suite rooms are unavailable.[2, 12, 14, 17, 28, 30, 33, 35, 40, 41, 43, 50]

GPP2.9 This good practice point is based on the expert opinion of ARHAI Scotland and its stakeholders that if rooms used for service user isolation have no lobby, a designated space directly outside the room should be provided for PPE donning, doffing, and disposal, following a risk assessment.

GPP2.10 This good practice point is based on one guideline graded AGREE II ‘Recommend with modifications’[25] and five SIGN 50 level 4 guidance,[3, 12, 30, 34, 39] which recommend that patients with more pronounced symptoms or those most likely to be infectious should be prioritised for single room placement in a situation where there’s not enough available. The evidence was deemed insufficient for a recommendation as the AGREE II guideline was too narrow, being specific to MRSA.[25]

GPP2.11 Although EPIR was referenced in an American guideline graded SIGN 50 level 4, no additional sources were identified. Therefore, no recommendation was made.

2.10 Value judgements

Summarise value judgements used in creating the Recommendation or Good Practice Point. If none were involved, state “none”. Translating evidence into action often involves value judgements, which include guiding principles, ethical

considerations, or other beliefs and priorities. Clearly outlining value judgements helps users understand their influence on interpreting objective evidence.

Value judgements
None to note.

2.11 Intentional vagueness

State reasons for any intentional vagueness in the Recommendation or Good Practice Point. If none was intended, state “none”. Recommendations or Good Practice Points should be clear and specific, but if there is a decision to be vague, acknowledging the reasoning clearly promotes transparency. Reasons for vagueness may include:

- inadequate evidence
- inability to achieve consensus regarding evidence quality, anticipated benefits or harms, or interpretation of evidence
- legal considerations
- economic reasons
- ethical or religious reasons

Intentional vagueness
GPP2.9 It is expected that isolation rooms should have a lobby. However, if this is not available, arrangements should be made to facilitate safe PPE donning, doffing and disposal, following a risk assessment. No specific arrangements have been provided. This has been intentionally left vague as it will depend on several factors, including the organism type, workflow and local building facilities. GPP2.10 No infectious agent has been provided for this GPP, as factors to consider may vary with infectious agents.

2.12 Exceptions

List situations or circumstances in which the Recommendation or Good Practice Point should not be applied.

Exceptions
GPP2.2 MDR TB patients, deemed to be infectious, should only be isolated in negative-pressure rooms. If none are available, they should be transferred to another hospital with such facilities. MDR TB is regarded as a disease that presents a substantial public health risk.

2.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
More research is needed to understand the effectiveness of the different placements for isolation.

Research Question 3: What is a cohort area, and when should patients or residents be placed in these areas?

A Quality of Evidence

3.1 How reliable is the body of evidence?

(see SIGN 50, section 5.3.1, 5.3.4)

Comment here on the quantity of evidence available on this topic and its methodological quality. Please include citations and evidence levels.

If there is no available evidence to answer the key question, go to section B.

Comments	Evidence level
Twenty-five pieces of evidence were included for this research question.[3-6, 11-14, 18-20, 22, 25, 27, 28, 30, 31, 34, 36, 39, 49, 54, 56-58] Five of these were carried over from the previous version of this review.[22, 49, 56-58] • Five guidelines graded AGREE 'Recommend with modifications'.[18, 19, 25, 27, 54] Some limitations to these guidelines include a lack of a direct link between recommendations of interest and the underlying evidence,[19] a lack of external review by independent experts before publication,[18] a narrow scope,[27] and the availability of only moderate to low-quality evidence.[27] • Three studies graded SIGN 50 level 3[56-58] including two retrospective chart reviews,[56, 57] and an outbreak study.[58] • Seventeen guidance documents graded SIGN 50 Level 4 expert opinion.[3-6, 11-14, 20, 22, 28, 30, 31, 34, 36, 39, 49] This class of evidence is potentially biased due to its	5 x AGREE 'Recommend with modifications' 3 x SIGN 50 level 3 17 x SIGN 50 level 4

Comments	Evidence level
unclear methodology and the lack of supporting evidence for its recommendations.	

3.2 Is the evidence consistent in its conclusions?

(see SIGN 50, section 5.3.2)

Comment here on the degree of consistency demonstrated by the evidence. Where there are conflicting results, indicate how the judgement was formed as to the overall direction of the evidence.

Comments
There was a generally high level of consistency in the definition of patient or resident cohorting and its indications. The evidence around the effectiveness was mixed. **Definition of cohorting** Four sources (including a guideline graded AGREE II 'recommend with modifications'[19] and three SIGN 50 level 4 guidance[4, 34, 50]) provide some definition for cohorting. Within the included evidence, cohorting was defined as the co-location or grouping of patients with the same infectious disease, in a multi-bedded room, part of a ward, or an entire ward, separate from patients who do not share these characteristics.[4, 19, 34, 50] **The cohort area** • There was no clear definition of the cohort area in the evidence base, but a few general descriptions were identified. The evidence suggests a cohort area could be as small as a shared room,[27, 28, 39] or as big as dedicated wards or units,[3, 5, 27, 30, 39] or contiguous sections within a facility.[27] An American guidance, graded SIGN 50 level 4, recommends the use of makeshift NPIRs for cohorting infectious patients as an airborne precaution during outbreaks involving many patients (this is already discussed under NPIRs).[1] • Four sources, including a document graded 'AGREE recommend with modifications',[19] and three SIGN 50 level 4 guidance[3, 5, 28] were consistent in

Comments

advising that the cohort area be adequately ventilated, but no specification was found.[3, 5, 19, 28]

- Three pieces of evidence, including a guideline graded AGREE 'recommend with modifications' [19] and two expert opinion guidance[1, 3] were consistent in advising that beds should be separated by at least 1 metre during cohorting.[1, 3, 19] A New Zealand document recommended alternative measures, such as leaving every second bed vacant.[4]
- Two sources, both graded SIGN 50 Level 4, recommended physical barriers between cohorted patients,[3, 12] one of which specified disposable antimicrobial curtains.[12]
- There were also recommendations for dedicated (one for each patient) or, when possible, disposable equipment to be used during cohorting.[19, 30]

Indications for cohorting

- Fifteen sources (3 guidelines graded AGREE II 'recommend with modifications' and 12 guidance graded SIGN 50 level 4 expert opinion) were consistent in noting that the primary indication for cohorting is in situations where more than one patient or resident cannot be isolated individually due to a lack of single room provision or availability in inpatient or care home settings.[1, 3, 5, 6, 12, 14, 19, 20, 22, 27, 28, 30, 31, 36, 39]
- In a measles-specific SIGN 50 level 4 guidance published in the UK, cohorting was also provided as a third choice behind NPIRs and single rooms.[14]

Cohorting of contacts or suspected cases in inpatient settings

- Four guidelines,[18, 19, 27, 54] all graded AGREE recommend with modifications, and five guidance documents[3-5, 12, 14] discuss the cohorting of contacts or suspected cases. While there is consistency that suspected cases/contacts should not be cohorted with confirmed cases, not all documents are consistent on whether suspected cases or contacts can be cohorted together.

Contact cohorting

- Three out of four pieces of evidence that discuss cohorting of contacts recommend its use.[12, 18, 27] They include a COVID-19 guideline published by ESCMID during the pandemic,[18] an American norovirus guideline[27] and a New

Comments

Zealand VRE guidance graded SIGN 50 level 4.[12] All three recommendations are specific to inpatient settings.[12, 18, 27]

- The norovirus guideline,[27] COVID-19 guideline[18] and the VRE guidance[12] all recommend contact cohorting during outbreaks, although the latter permits it even in non-outbreak situations when no single rooms are available. The former categorises three possible patient cohorts: symptomatic, asymptomatic exposed (which aligns with contacts as described in this literature review), and asymptomatic unexposed.[27] In contrast, the fourth document, a COVID-19 guidance from New Zealand, advises against cohorting of contacts but provides no further details or alternatives for outbreak situations. It, however, curiously lists the ability to cohort contacts as part of the factors to consider in developing a plan to manage patients who develop COVID-19 during or after hospital admission.[4]

Suspected or probable cases

- Three of the four documents that discuss the cohorting of suspected cases recommend it for outbreak situations.[14, 19, 54] One of these, a measles guidance published by NHS England, made this recommendation for outbreak situations in inpatient settings.[14] The recommendation in the others, WHO guidelines graded AGREE 'recommend with modifications' specific to mpox[54] and COVID-19,[19] apply to many settings, including inpatients.
    - All three documents note that a risk assessment should be carried out before cohorting, which should consider the similarity of clinical diagnoses and epidemiological risk factors.[14, 19, 54]
- An ECDC guidance on respiratory viral infections differed in its provision on the subject.[3] It recommends avoiding the cohorting of patients with suspected respiratory viral infections in inpatient settings. It provides no alternative for situations where there is not enough single-room capacity for suspected cases.[3]
- It is worth noting that cohorting contacts or suspected cases is very much a short-term measure, as patients can be reassigned to the appropriate location once test results are available.

Comments

Cohorting in outpatient settings

- A WHO COVID-19 guideline published during the pandemic recommends that patients in emergency units, outpatient departments, or primary care clinics who meet the case definition for suspected COVID-19 should be cohorted with other suspected cases that share similar diagnoses or epidemiological risk factors, if there is not enough space for single-room isolation.[19]
- Another SARS-CoV-2 guidance document published by the CDC and graded SIGN 50 Level 4 recommends that COVID-19 patients who need to use dialysis facilities be cohorted according to shift (for example, treated at the end of a session or during the last shift of the day) when separate rooms or hepatitis B isolation rooms are not available.[5]

Effectiveness of cohorting

- Three pieces of primary evidence, all graded SIGN 50 level 3, provide mixed results about the effectiveness of cohorting.[56-58] Two retrospective chart reviews,[56, 57] reported a higher rate of CDI recurrence in cohort patients compared to those left in open bays, but only one was statistically significant.[56] The third study reported the effective management of an outbreak of *Serratia marcescens* using a bundle of interventions, including cohorting, which was applied as a last resort.[58]

Principles for safe cohorting

- Three expert opinion guidance documents note that suspected and confirmed cases should not be cohorted together.[4, 5, 14] CDC SARS-CoV-2 guidance recommends that only patients with the same respiratory infectious agent be cohorted together and that MDRO colonisation status and the presence of other communicable diseases be considered in the cohorting process.[5] A UK CPE guidance graded SIGN 50 Level 4 also advises that patients or residents with varying mechanisms of resistance should not be cohorted together.[30]
- VRE-specific guidance published in New Zealand proposes a traffic light (3-zone) system for cohorting: a red zone to accommodate VRE cases, an orange zone for contact patients with negative screening results, and a green zone for patients who were not contacts or have tested negative.[12]

A WHO mpox guideline graded AGREE ‘recommend with modifications’ prescribes that in situations where there are not enough single rooms, confirmed mpox

Comments

patients should be cohorted, while single rooms are prioritised for suspected and probable cases.[54]

Staff Cohorting

Three pieces of evidence (SIGN 50 level 4) also recommend some form of staff cohorting as an adjunct to patient cohorting.[12, 28, 30]

3.3 Is the evidence applicable to Scottish health and care settings?

(see SIGN 50, section 5.3.3)

For example, do the studies include interventions, comparators or outcomes that are common to Scottish health and care settings?

Comments

The countries in which the guidance or research was conducted or apply are listed below:

- UK (n=8)[11, 13, 14, 20, 25, 30, 36, 56]
- Canada (n=1)[28]
- EU/EEA (n=3)[3, 18, 22]
- International (n=4)[6, 19, 34, 54]
- Ireland (n=1)[49]
- Mexico (n=1)[57]
- New Zealand (n=2)[4, 12]
- USA (n=5)[5, 27, 31, 39, 58]

Of the documents published in the UK, three are specific to England,[11, 14, 20] and one to Northern Ireland.[13] These are applicable to Scottish settings.

Although two of the three primary studies were published outside the UK (USA and Mexico), their conclusions should apply to Scottish settings.[57, 58]

Comments
Four documents published by the WHO apply globally.[6, 19, 34, 54] They apply to a lesser degree to Scottish health and care settings and can, therefore, be adapted. Guidance documents published in Canada,[28] EU/EEA,[3, 18] New Zealand,[4, 12] and the USA[5, 27, 31, 39] are specific to these countries' and regions' health and care settings. However, their recommendations are generally applicable to Scottish settings.

3.4 Are the studies generalisable to the target population?

Comment here on sample size and methods of sample selection. Is the sample representative of the specific population or group of interest? Generalisability is only relevant to primary research studies.

Comments
Only adult patients were included in the two primary studies. The evidence may therefore not be generalisable to infants and neonates. In both studies, all patients in the hospital or units during the study period were included, provided they met the inclusion criteria. No sample size calculations were performed for either study. Hence, it is possible that they may not be sufficiently powered to demonstrate the effects they consider and thus may have limited generalisability.

3.5 Are there concerns about publication bias?

(see SIGN 50, section 5.3.5)

Comment here on whether there is a risk in the evidence base that studies have been selectively published based on their results and thus a risk that results from published studies are systematically different from unpublished evidence.

Comments
No concerns about publication bias.

B: Evidence to decision

3.6 Recommendations

What Recommendations or Good Practice Points are appropriate based on this evidence?

Note the following terminology:

- **"must"** implies that the health and care setting must implement the recommended approach and is used where a recommendation has been directly lifted from legislation or mandatory guidance
- **"should"** implies that the health and care setting "should" implement the recommended approach unless a clear and compelling rationale for an alternative approach is present
- **"should consider"** implies that the health and care setting should consider implementing the recommended approach

Recommendation	Grading
GPP3.1 In situations where more than one service user is infected with the same infectious agent, cohorting of service users should be considered if there is an inability to place them in single rooms and following appropriate risk assessment in conjunction with the IPCT.	Good practice point
GPP3.2 Risk assessment should be carried out before cohorting of service users is implemented to ensure that the following are not cohorted together. • Service users with different infectious agents • Service users with the same infectious agents but with varying mechanisms of antimicrobial resistance, Service users with a co-infection with other communicable diseases other than the infectious agent (s) being cohorted for. **[New]**	Good practice point

Recommendation	Grading
GPP3.3 Service users with suspected infection and those with confirmed infection (with the same infectious agent) should not be cohorted together. **[New]**	Good practice point
GPP3.4 In circumstances where there are insufficient single rooms for isolation, confirmed cases should be prioritised for cohorting, while single rooms should be preferentially allocated to suspected or probable cases. **[New]**	Good practice point
GPP3.5 In circumstances where there are not enough single rooms, asymptomatic individuals identified as contacts exposed to the same infectious source may be cohorted together with risk assessment and consultation with the IPC team. Such risk assessment should consider the infectious agent, individual patient risk factors (that may make them particularly prone to infection or at risk of more serious disease if infected), and epidemiological risk factors. **[New]**	Good practice point
GPP3.6 In circumstances where there are not enough single rooms, individuals who meet the case definition for suspected cases (same infectious agent) may be cohorted together following risk assessment and consultation with the IPC team. Such risk assessment should consider the infectious agent(s), similarities in clinical symptoms, individual risk factors (that may make them particularly prone to infection or at risk of more serious disease if infected), and epidemiological risk factors. **[New]**	Good practice point
GPP3.7 Service users' beds/chairs should be adequately spaced in a cohort area, and bed curtains	Good practice point

Recommendation	Grading
(where available) should be drawn as an additional physical barrier where it is safe to do so. Where possible, dedicated or disposable equipment should be used. **[New]**	

3.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation or Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond infection prevention and control.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation or Good Practice Point were followed correctly. Be explicit and clear about benefits.

Benefits
GPP3.1 Cohorting provides hospitals and care homes with good surge capacities, allowing them to quickly scale up isolation of infected patients without overwhelming the entire facility. GPP3.1 Cohorting can result in more efficient use of resources such as staffing and cleaning supplies compared to individual isolation. GPP3.1 Cohorting may decrease the risk of infection transmission to non-infected patients. GPP3.1 Cohorting may be associated with less adverse mental health effects, compared to individual isolation. GPP3.2 A risk assessment will enhance patient outcomes by minimising the chance of cohort patients contracting more nosocomial pathogens or strains than

Benefits
they were initially isolated for. It will also help reduce the cross-transmission of strains of the same organisms with varying resistance profiles. GPP3.3 Separating individuals with confirmed infections from those suspected of having the infection reduces the risk of acquisition of infection for those who are suspected (but potentially uninfected) . GPP3.4 By cohorting confirmed cases and prioritising single rooms for suspected/probable cases, it ensures that suspected cases who are potentially uninfected are not exposed to suspected cases who are genuinely infected. GPP3.5 & 3.6 Cohorting contacts offer an alternative placement solution for situations where there are insufficient isolation rooms. By cohorting individuals at higher risk of infection, other patients are safeguarded from potential exposure. GPP3.7 Bed separation, physical barriers and the use of dedicated equipment within the cohort will help to reduce the cross-transmission of strains of the same organisms with varying resistance profiles. GPP3.7 Physical barriers within the cohort may also provide a sense of privacy for patients.

Risks and harms

List the adverse events or other unfavourable outcomes that may occur if the Recommendation or Good Practice Point were followed correctly. Be explicit and clear about risks and harms.

Risks and harms
GPP3.1 Cohorting may result in the closure of specific hospital or care home areas to other individuals, reducing the number of beds available to them, even if some beds in the cohort area remain unoccupied. GPP3.1 Cohorting may increase staffing pressure and workforce strain, which can negatively influence the operations of the entire unit or facility, particularly if staffing

Risks and harms
levels are already inadequate. Furthermore, this situation may result in an increased workload for the remaining personnel who are not assigned to the cohort area. GPP3.2 Even if a thorough risk assessment is carried out, there remains a risk that some critical factors might be overlooked. GPP3.3 Cohorting suspected and confirmed individuals separately may require a larger area, making even more beds unavailable to other patients. GPP3.4 Isolation in single rooms may be associated with negative psychological effects. GPP3.5 Cohorted contacts may have a higher risk of further exposure within a cohort compared to those isolated in a single room. GPP3.6 Cohorted suspected cases may have a higher risk of further exposure within a cohort compared to those isolated in a single room. GPP3.7 The physical barriers can themselves become fomites.

Benefit-Harm assessment

Classify as “benefit outweighs harm” (or vice versa) or a “balance of benefit and harm.” Description of this balance can be from the individual service user, staff or visitor perspective, the societal perspective, or both. Recommendations or Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
GPP3.1 Although cohorting may lead to inefficiencies in bed utilisation, this is offset by the gains in reduction in infectious agent transmission, more efficient use of resources, and provision of surge capacity. Therefore, the benefits outweigh the potential harms.

Benefit-Harm assessment
GPP3.2 Despite the possibility that some factors that may prove critical may be overlooked, only known factors can be assessed. Therefore, the benefits outweigh the potential harms. GPP3.3 The unavailability of beds to other patients caused by separate cohorting of suspected and confirmed patients is offset by the reduced risk of transmission to suspected but not infected patients. Therefore, the benefits outweigh the potential harms. GPP3.4 Even though there may be adverse mental health effects for contacts or suspected cases in single room isolation, this is offset by a reduction in the risk of exposure to confirmed cases. The isolation period is also expected to be short, as their status will be confirmed by testing. Therefore, the benefits outweigh the potential harms. GPP3.5 and 3.6 Although this situation is not ideal, as uninfected contacts or suspected cases may be at higher risk of further exposure compared to if they had been isolated in single rooms, it provides a solution for situations where enough isolation rooms are not available and protects other patients from potential exposure. Therefore, the benefits outweigh the potential harms in such situations, especially as this placement is only required for a short time until the status is confirmed by testing. GPP3.7 Although there is a risk that curtains may become fomites, the use of physical barriers may offer some gains, including privacy and reducing the risk of droplets travelling from one bedside to another. Therefore, the benefits outweigh the risks.

3.8 Feasibility

Is the Recommendation or Good Practice Point implementable in the Scottish context?

Describe (if applicable):

- financial implications
- opportunity costs
- material or human resource requirements
- facility needs
- sustainability issues
- human factors

and any other issues that may be associated with following a Recommendation or Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
GPP3.1, 3.3 and 3.4 There may be a need to consider patient placement across the facility to plan for eventualities and to identify the most suitable areas for cohorting. There will also be a need for designated staff to support patients in cohort areas. GPP3.7 Providing dedicated or disposable equipment will require financial resources. It may also mean that such equipment is unavailable for patients outside the infected cohort. There may also be concerns regarding the storage of such equipment, alongside issues related to sustainability.

3.9 Expert opinion

Summarise the expert opinion used in creating the Recommendation or Good Practice Point. If none were involved, state “none”. Translating evidence into action often involves expert opinion where evidence is insufficient. Clearly outlining that expert opinion helps users understand their influence on interpreting objective evidence. Expert opinion may also be required where there is no evidence available.

Expert opinion
GPP3.1 This good practice point is informed by three guidelines graded AGREE II 'Recommend with modifications'[19, 27, 54] and 12 SIGN 50 level 4 guidance,[3, 5, 6, 12, 14, 20, 22, 28, 30, 31, 36, 39] which recommend that patients be cohorted together when

Expert opinion

individual isolation is not possible for patients who require it. The evidence was not considered sufficient for a recommendation for two reasons. The first is that the evidence underpinning the cohorting recommendations is either unclear or of low quality in all three AGREE II guidelines.[19, 27, 54] Secondly, the primary evidence that assessed the effectiveness of cohorting included for this research question provided mixed results. Two retrospective chart reviews reported higher CDI recurrence in cohort patients compared to those left in open bays.[56, 57] A third study, however, reported effective management of an outbreak of *Serratia marcescens* through patient cohorting.[58]

GPP3.2 This GPP is informed by three SIGN 50 level 4 guidance, specific to SARS-CoV-2[4, 5] and VRE,[12] which prescribe several considerations for safe cohorting.[4, 5, 12] They include MDRO colonisation status, presence of other communicable diseases, and varying mechanisms of antimicrobial resistance (specific to CPE infection). The rationale for these is to ensure that patients admitted to a cohort are not exposed to other infectious agents within the cohort.

GPP3.3 This GPP is informed by three guidance documents graded SIGN 50 level 4, which recommend that suspected and confirmed patients should not be cohorted together.[4, 5, 14] One of these was specific to measles,[14] while the other two were specific to SARS-CoV-2.[4, 5] The rationale for this is to prevent suspected patients who are truly negative for the infectious agent in question from being exposed to confirmed patients and thus risking infection through contact within the cohort.

GPP3.4 This GPP is informed by a WHO mpox guideline graded 'AGREE Recommend with modifications'[54] which recommends prioritising single rooms for isolating suspected or probable cases while cohorting confirmed cases in situations where there are not enough single rooms. The evidence was not considered sufficient for a recommendation due to its narrow scope, which was specific to mpox. The reason for this GPP is to prevent suspected patients who are genuinely negative for the infectious agent from being exposed to suspected patients who are true positives, thereby reducing the risk of infection through contact within the cohort.

Expert opinion

GPP3.5 This GPP is informed by three documents which recommend that contacts may be cohorted together: a COVID-19 guideline graded AGREE recommend with modifications published by ESCMID during the pandemic,[18] an American norovirus guideline[27] and a New Zealand VRE guidance graded SIGN 50 level 4.[12]
A COVID-19 guidance published in New Zealand and graded SIGN 50 level 4 guidance advises that this be avoided; it however provide no alternatives for situations where this cannot be safely done.[4]

GPP3.6 This GPP is based on three documents (two guidelines and one guidance) that recommend that suspected or probable cases may be cohorted together in situations where there are not enough single rooms. These documents were specific to COVID-19,[19] measles,[14] and mpox.[54] It must be noted that although an ECDC guidance on viral respiratory infections graded SIGN 50 level 4 recommends avoiding this, they provide no alternatives for situations where it cannot be safely done.[3]

GPP3.7 This GPP is informed by one guideline graded AGREE 'Recommend with modifications'[19] and two expert opinion guidance documents,[1, 3] which recommend a bed separation of at least one metre or leaving every second bed vacant. Three expert opinion guidance documents also recommend physical barriers between patients.[1, 3, 12] The use of dedicated or disposable equipment is supported by the guideline and one expert opinion guidance document.[19, 30] the minimum distance between service users is specified as at least one metre, the maximum distance has not been provided, as this will depend on the available space, layout and other considerations. It is ARHAI Scotland's expert opinion that the more space between service users, the better. These measures are intended to reduce the risk of transmission of other infectious agents between cohorted patients.

3.10 Value judgements

Summarise value judgements used in creating the Recommendation or Good Practice Point. If none were involved, state "none". Translating evidence into action often involves value judgements, which include guiding principles, ethical

considerations, or other beliefs and priorities. Clearly outlining value judgements helps users understand their influence on interpreting objective evidence.

Value judgements
None.

3.11 Intentional vagueness

State reasons for any intentional vagueness in the Recommendation or Good Practice Point. If none was intended, state “none”. Recommendations or Good Practice Points should be clear and specific, but if there is a decision to be vague, acknowledging the reasoning clearly promotes transparency. Reasons for vagueness may include:

- inadequate evidence
- inability to achieve consensus regarding evidence quality, anticipated benefits or harms, or interpretation of evidence
- legal considerations
- economic reasons
- ethical or religious reasons

Intentional vagueness
GPP3.6 has not distinguished between suspected and probable cases. Some case definitions may delineate separate categories for suspected and probable cases, and this distinction should be considered when cohorting is to be done.

3.12 Exceptions

List situations or circumstances in which the Recommendation or Good Practice Point should not be applied.

Exceptions
None.

3.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
Higher-quality evidence is required to understand the effectiveness of service user cohorting in different contexts. Such evidence, where applicable, should incorporate the use of genetic typing to improve the reliability of its findings. For instance, no typing or sequencing was performed for the two retrospective cohort studies included (both specific to CDI) for this research question, making it impossible to distinguish between recurrence and reinfection.[56, 57] Outbreak situations also offer a good opportunity to study the effectiveness of cohorting, especially since this is when it is most commonly employed. However, as responses to most outbreaks are often bundled, it is difficult to attribute outcomes to any specific intervention. A stepwise approach to deploying interventions, when possible, may help bridge this gap.

Research Question 4: What is staff cohorting and when should it be implemented?

A Quality of Evidence

4.1 How reliable is the body of evidence?

(see SIGN 50, section 5.3.1, 5.3.4)

Comment here on the quantity of evidence available on this topic and its methodological quality. Please include citations and evidence levels.

If there is no available evidence to answer the key question, go to section B.

Comments	Evidence level
Twelve pieces of evidence were included for this research question.[11, 14, 19, 22, 25, 27, 28, 32, 34, 59-61] • Three guidelines graded AGREE 'Recommend with modifications'.[19, 25, 27] Some limitations to these guidelines include a lack of a direct link between recommendations of interest and the underlying evidence,[19] a narrow scope,[27] and the availability of only moderate to low-quality evidence.[27] • A retrospective cohort study graded SIGN 50 level 2+.[59] Key limitations included a lack of routine testing, possible cross-coverage by nurses, unassessed transmission via staff, and no control for catheterisation or demographic data.[59] • Eight guidance documents graded SIGN 50 level 4.[11, 14, 22, 28, 32, 34, 60, 61] This class of evidence is potentially biased because of its unclear methodology and the lack of supporting evidence for its recommendations.	3 x AGREE 'Recommend with modifications' 1 x SIGN 50 Level 2+ 8 x SIGN 50 Level 4

4.2 Is the evidence consistent in its conclusions?

(see SIGN 50, section 5.3.2)

Comment here on the degree of consistency demonstrated by the evidence. Where there are conflicting results, indicate how the judgement was formed as to the overall direction of the evidence.

Comments

There is a moderate degree of consistency regarding the indications for staff cohorting, but no clear definition was found in the evidence.

Definition

Staff cohorting was not clearly defined in the included evidence. However, seven sources, including one guideline graded AGREE 'recommend with modifications'[19] and six guidance documents graded SIGN 50 level 4,[11, 19, 28, 32, 34, 60, 61] were consistent in generally describing it as the designation of a team of healthcare workers to care solely for a patient or resident (or a group) based on a characteristic of the patient or resident (or group) that separates them from others for a period. [11, 19, 28, 32, 34, 60, 61]

Indications

- Three SIGN 50 level 4 guidance,[11, 14, 60] two of which are specific to social care settings, [11, 60] and one specific to healthcare settings[14] recommended staff cohorting as an outbreak control measure.
- Five sources, including one guideline graded AGREE 'recommend with modifications'[19] and four SIGN 50 level 4 guidance documents were consistent in recommending it as an adjunct to patient isolation,[14, 28, 32, 34]
- A guideline graded AGREE 'recommend with modifications' also recommends it as an alternative when isolation is not possible.[25]

Outbreak control

Two English guidance documents list restricting staff to wings or areas to avoid seeding the outbreak to other places as an outbreak control measure.[11, 60] One of the documents also notes that in an area with both cases and non-cases, staff

Comments

should work only with one of the groups to reduce the risk of staff members cross-contaminating service users.[11] These guidance documents also list cohorting staff to care for symptomatic or positive and non-symptomatic or negative residents as examples of outbreak control measures.[11, 60]

Adjunct to patient isolation or cohorting

Five sources recommend designating healthcare workers (HCWs) to care for patients/residents in isolation[14, 19, 28, 32, 34] or those who are being cohorted,[14, 19, 22, 28, 34] where possible. They note that this designation reduces the exposure of these HCWs to non-infected patients and other HCWs, thereby minimising the risk of transmission.[28, 32 22]

Alternative to isolation

A European guideline graded AGREE II 'recommend with modifications', includes a good practice point, suggesting nurse cohorting as an alternative strategy when isolation of an MRSA patient is not possible due to competing demands on single-room use.[25]

Considerations for safe staff cohorting

- Staff characteristics such as pregnancy status,[11] immune status,[11] vaccination,[11] and previous exposure to the infectious agent of interest[27, 61] were found within the evidence to play a role in how they are cohorted (one AGREE II Recommend with modifications and two SIGN 50 level 4)
- An American norovirus-specific guideline graded AGREE II 'Recommend with modifications' recommends that recently recovered staff may be best suited to care for symptomatic norovirus patients during an outbreak.[27] Similarly, another US guidance specific to SARS-CoV-2 suggests that during outbreaks where there are staff shortages, staff with confirmed SARS-CoV-2 may deliver direct care solely to other SARS-CoV-2 patients, ideally in a cohort environment.[61]

Comments

Effectiveness of staff cohorting

A retrospective study graded SIGN 50 Level 2+ investigated a VREfm outbreak in a Japanese hospital.[59] A higher, but not statistically significant, VREfm incidence among patients housed in the same ward with VREfm confirmed patients and cared for by the same team compared to those housed in similar circumstances but with a different care team (IRR: 2.01 after 1 day, 1.48 after 7 days).[59] The study included 272 patients observed over 4,038 patient days, and 43 VRE cases were identified.[59]

4.3 Is the evidence applicable to Scottish health and care settings?

(see SIGN 50, section 5.3.3)

For example, do the studies include interventions, comparators or outcomes that are common to Scottish health and care settings?

Comments

The countries in which the guidance or research was conducted or apply are listed below.

- UK (n=4)[11, 14, 25, 60]
- Canada[28]
- EU/EEA[22]
- International (n=2)[19, 34]
- Japan[59]
- USA (n=3)[27, 32, 61]

Two of the four UK documents are specific to English social care settings, but they may generally apply to Scottish social care settings.[11, 60]

Although conducted in Japan, the conclusions of the cohort study are applicable to Scottish settings.[59]

Comments
Two documents published by the WHO apply globally.[19, 34] They apply to a lesser degree to Scottish health and care settings and can, therefore, be adapted. Guidance documents from Canada,[28] EU/EEA[22] and USA[27, 32, 61] apply to the countries and regions where they were published and have general applicability to Scottish settings.

4.4 Are the studies generalisable to the target population?

Comment here on sample size and methods of sample selection. Is the sample representative of the specific population or group of interest? Generalisability is only relevant to primary research studies.

Comments
Only one primary study was included. The study provided no demographic details of the patients involved. Consequently, it is not possible to determine whether the study's findings are generalisable to all patient groups or age groups. All patients in the hospital during the study period who met the inclusion criteria were included. No sample size calculation was performed.

4.5 Are there concerns about publication bias?

(see SIGN 50, section 5.3.5)

Comment here on whether there is a risk in the evidence base that studies have been selectively published based on their results and thus a risk that results from published studies are systematically different from unpublished evidence.

Comments
Only one study was included; the risk of publication bias is unclear.

B: Evidence to decision

4.6 Recommendations

What Recommendations or Good Practice Points are appropriate based on this evidence?

Note the following terminology:

- **"must"** implies that the health and care setting must implement the recommended approach and is used where a recommendation has been directly lifted from legislation or mandatory guidance
- **"should"** implies that the health and care setting "should" implement the recommended approach unless a clear and compelling rationale for an alternative approach is present
- **"should consider"** implies that the health and care setting should consider implementing the recommended approach

Recommendation	Grading
GPP 4.1 Staff cohorting should be considered during outbreaks as a control measure for outbreak management. **[New]**	Good practice point
GPP4.2 The following should be considered for staff, in conjunction with Occupational Health, when implementing staff cohorting. These include: • Pregnancy status • Immune status • Vaccination status • Co-morbidities that may mean staff are vulnerable to infection or at risk of severe outcomes if infected • Previous exposure (with confirmed infection) to the infectious agent of interest **[New]**	Good practice point

4.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation or Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond infection prevention and control.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation or Good Practice Point were followed correctly. Be explicit and clear about benefits.

Benefits
GPP4.1 Staff cohorting also reduces the risk of transmission between cohorted and non-cohorted service users, as well as between cohort and non-cohort staff, by preventing staff caring for infected service users from becoming a source of transmission. This is especially helpful in disease situations that require isolation for case contacts. GPP4.1 Staff cohorting also ensures continuity of care as the allocated staff cohort regularly sees these service users. It should enhance their experience of the disease and their knowledge of individual service users' conditions. GPP4.2 Consideration of individual staff members' occupational health risks may reduce the risk of adverse outcomes for that staff.

Risks and harms

List the adverse events or other unfavourable outcomes that may occur if the Recommendation or Good Practice Point were followed correctly. Be explicit and clear about risks and harms.

Risks and harms
GPP4.1 Staff cohorting may increase staffing pressure and workforce strain, which can negatively influence the operations of the entire unit or facility, particularly if staffing levels are already inadequate. Furthermore, this situation may result in an

Risks and harms
increased workload for the remaining personnel who are not assigned to the cohort area. GPP4.1 Cohorting specialist staff could mean that they are not accessible to patients in a different cohort or the wider patient or resident population. Therefore, cohorting of these staff may not be possible to achieve and may increase the risk of infection transmission. GPP4.1 Due to the higher number of infected patients within one space, PPE breaches, if they occur, may lead to a higher risk of infection because of the higher load of infectious particles within the environment. GPP4.2 No harms identified.

Benefit-Harm assessment

Classify as “benefit outweighs harm” (or vice versa) or a “balance of benefit and harm.” Description of this balance can be from the individual service user, staff or visitor perspective, the societal perspective, or both. Recommendations or Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
GPP4.1 Staff cohorting reduces the number of staff exposed to the infectious agent and therefore the number at risk of acquisition leading to staff absence from the workplace. This should reduce staff absence and the risk of transmission to other patients and staff members. Staff cohorting will provide continuity of care for the individuals within the cohort. While it is recognised that staff cohorting may increase staffing pressure and workforce strain, particularly if the cohort is in place for an extended period, this should be considered as part of the ongoing assessment of the need for a cohort. In cases where contacts require isolation, there is also a benefit for continuity of care through consistent care and monitoring. Therefore, the benefits outweigh the harms.

Benefit-Harm assessment
GPP4.2 Only benefits identified.

4.8 Feasibility

Is the Recommendation or Good Practice Point implementable in the Scottish context?

Describe (if applicable):

- financial implications
- opportunity costs
- material or human resource requirements
- facility needs
- sustainability issues
- human factors

and any other issues that may be associated with following a Recommendation or Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
GPP4.1 Staff may require continued support. GPP4.1 Staff may require additional resources to prevent burnout during prolonged outbreaks, including extended breaks. GPP4.1 and 4.2 Implementing staff cohorting will require substantial rota management, particularly in ensuring that staff occupational health risks, relevant experience, and specialisations are considered. GPP4.1 and 4.2 Staff allocated to the cohort to care for infectious patients may decline the assignment.

4.9 Expert opinion

Summarise the expert opinion used in creating the Recommendation or Good Practice Point. If none were involved, state “none”. Translating evidence into action often involves expert opinion where evidence is insufficient. Clearly outlining that expert opinion helps users understand their influence on interpreting objective evidence. Expert opinion may also be required where there is no evidence available.

Expert opinion
GPP 4.1 This GPP was informed by one guideline graded AGREE II ‘recommend with modifications’,[27] and three expert opinion guidance documents[11, 60, 61] (two of which were specific to care homes), which recommend staff cohorting as a tool for outbreak management. It is also supported by a retrospective cohort study specific to VREfm, which reported a lower but statistically insignificant incidence rate ratio associated with staff cohorting.[59] The evidence was deemed insufficient for a recommendation as the AGREE II document was narrow in scope, being specific to norovirus. The results from the retrospective cohort study, although favouring staff cohorting, were not statistically significant.[59] GPP4.2 This GPP is informed by three documents: an American norovirus guideline graded AGREE II ‘recommend with modifications’,[27] a UKHSA guidance specific to acute respiratory infections in care homes[11] and a CDC guidance on strategies to mitigate healthcare personnel staffing shortages which was published during the COVID-19 pandemic.[61] which prescribed considerations to be made before implementing staff cohorting.

4.10 Value judgements

Summarise value judgements used in creating the Recommendation or Good Practice Point. If none were involved, state “none”. Translating evidence into action often involves value judgements, which include guiding principles, ethical considerations, or other beliefs and priorities. Clearly outlining value judgements helps users understand their influence on interpreting objective evidence.

Value judgements
None.

4.11 Intentional vagueness

State reasons for any intentional vagueness in the Recommendation or Good Practice Point. If none was intended, state “none”. Recommendations or Good Practice Points should be clear and specific, but if there is a decision to be vague, acknowledging the reasoning clearly promotes transparency. Reasons for vagueness may include:

- inadequate evidence
- inability to achieve consensus regarding evidence quality, anticipated benefits or harms, or interpretation of evidence
- legal considerations
- economic reasons
- ethical or religious reasons

Intentional vagueness
GPP4.2 is deliberately vague regarding the type of vaccination needed and the infectious agent involved. These will be evaluated as necessary in each scenario.

4.12 Exceptions

List situations or circumstances in which the Recommendation or Good Practice Point should not be applied.

Exceptions
None.

4.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research

More evidence is required to assess the effectiveness of staff cohorting. This is demonstrated by the fact that only one study was identified for inclusion in this research question. Outbreak situations also provide a good opportunity to examine the effectiveness of staff cohorting, especially since this is when it is most frequently utilised. However, as responses to most outbreaks are often bundled, it is challenging to attribute outcomes to any specific intervention. A stepwise approach to deploying interventions, when possible, may help address this issue.

Research Question 5: How should patients or residents be assessed for infection risk prior to discontinuing isolation and cohorting?

A Quality of Evidence

5.1 How reliable is the body of evidence?

(see SIGN 50, section 5.3.1, 5.3.4)

Comment here on the quantity of evidence available on this topic and its methodological quality. Please include citations and evidence levels.

If there is no available evidence to answer the key question, go to section B.

Comments	Evidence level
A total of 21 pieces of evidence were identified for this research question.[3-5, 7, 9, 11, 12, 17, 20, 22, 26-28, 35, 42, 43, 62-66] This includes one study carried over from the previous version of this review.[22] • Two guidelines were included: one[27] of which were graded AGREE II 'Recommend with modifications' and one[26] graded 'AGREE II Recommend'. Some limitations of the former category include unclear method of formulating recommendations[18] and the non-availability of high-quality evidence to support the recommendations concerning patient placement.[18, 27] • Nineteen guidance documents graded SIGN 50 level 4.[3-5, 7, 9, 11, 12, 17, 20, 22, 28, 35, 42, 43, 62-66] This class of evidence is potentially biased because of its unclear methodology and the lack of supporting evidence for its recommendations.	1 x AGREE 'Recommend' 1 x AGREE 'Recommend with modifications' 19 x SIGN 50 Level 4

5.2 Is the evidence consistent in its conclusions?

(see SIGN 50, section 5.3.2)

Comment here on the degree of consistency demonstrated by the evidence. Where there are conflicting results, indicate how the judgement was formed as to the overall direction of the evidence.

Comments

There was consistency in existing guidance regarding the criteria for ending isolation, many of which applied across different infectious agents.

Infectious agent-specific criteria

Eleven documents described infectious agent-specific criteria for ending patient isolation, including:

- a negative diagnostic test,[5, 11, 20, 26, 35] (One AGREE II 'recommend' and four SIGN 50 level 4)
- time after symptom resolution,[11, 22, 27, 28, 64-66] (Two AGREE II 'recommend with modifications' and five SIGN 50 level 4)
- time after symptom onset,[11, 28, 35] (Three SIGN 50 level 4)
- time after a positive test,[35] (One SIGN 50 level 4)
- time since treatment initiation,[26] (One AGREE II ' recommend')
- symptom resolution.[64] (One SIGN 50 level 4)

Long-term shedding

- Extant guidance is consistent in stating that immunocompromised patients may shed infectious agents for a longer period, potentially remaining infectious for an extended duration, and that this should be considered when ending isolation for this category of patients.[3, 4, 9, 11, 27, 35, 63]
- One guidance each also noted that this may occur in the elderly,[11] and children (under 2 years).[27]
- Except for a norovirus guideline graded AGREE 'recommend with modifications',[27] all the evidence (n=5) behind this were graded SIGN 50 Level 4 and specific to SARS-CoV-2 (or other respiratory viruses)[3, 9, 11, 63] or Avian influenza.[35] Other documents (six SIGN 50 level 4) also provide that immune

Comments

status be considered to discontinue precautions,[5, 7] or that time spent in isolation should be higher among immunocompromised patients/residents than among immunocompetent ones.[4, 28, 43, 64]

Consideration of other vulnerable patients

A NICE tuberculosis guideline graded 'AGREE Recommend' noted that isolation can be discontinued after two weeks of treatment, after a consideration of risks and benefits, if, amongst other factors, including cough resolution and improvement of other symptoms, there are no immunocompromised individuals in the same ward, care home or accommodation to which the patient will be transferred or discharged.[26] As this was only found in one piece of evidence, it is not possible to evaluate consistency.

5.3 Is the evidence applicable to Scottish health and care settings?

(see SIGN 50, section 5.3.3)

For example, do the studies include interventions, comparators or outcomes that are common to Scottish health and care settings?

Comments

The countries in which the guidance/research was conducted or apply are listed below:

- Canada (n=3)[28, 43, 64]
- UK (n=7)[7, 9, 11, 20, 26, 62, 66]
- EU/EEA (n=4)[3, 22, 35, 63]
- New Zealand (n=3)[4, 12, 65]
- USA (n=4)[5, 17, 27, 42]

Of the seven documents published in the UK, three were specific to England[9, 11, 20] and one to Northern Ireland.[7] Two of the English documents are specific to care

Comments
settings but would generally apply within Scottish Care settings.[9, 11] The other documents also generally apply to Scottish healthcare settings. Guidance documents published in Canada,[6, 30, 45] the EU,[3, 22, 35, 63] New Zealand[4, 12, 65] and the US[5, 17, 42] apply in the countries/regions where they were published, with limited applicability to Scottish health and care settings.

5.4 Are the studies generalisable to the target population?

Comment here on sample size and methods of sample selection. Is the sample representative of the specific population or group of interest? Generalisability is only relevant to primary research studies.

Comments
Not relevant as no primary studies were included.

5.5 Are there concerns about publication bias?

(see SIGN 50, section 5.3.5)

Comment here on whether there is a risk in the evidence base that studies have been selectively published based on their results and thus a risk that results from published studies are systematically different from unpublished evidence.

Comments
Not relevant as no primary studies were included.

B: Evidence to decision

5.6 Recommendations

What Recommendations or Good Practice Points are appropriate based on this evidence?

Note the following terminology:

- **"must"** implies that the health and care setting must implement the recommended approach and is used where a recommendation has been directly lifted from legislation or mandatory guidance
- **"should"** implies that the health and care setting "should" implement the recommended approach unless a clear and compelling rationale for an alternative approach is present
- **"should consider"** implies that the health and care setting should consider implementing the recommended approach

Recommendation	Grading
GPP5.1 Isolation should be discontinued when the service user is no longer considered to be infectious. **[New]**	Good practice point
GPP5.2 The following factors may inform the assessment of service user infectivity for ending isolation, and these should be continually reviewed: • characteristics of the infectious agent, including the probability of prolonged carriage or long-term shedding and/or recurrence • time since the onset or resolution of specific signs and symptoms • time since known exposure • clinical test results • evidence of effective treatment • immune status and/or age of infected person **[New]**	Good practice point

Recommendation	Grading
GPP5.3 When determining whether or when to terminate isolation, the vulnerability of other service users in the vicinity should be considered. **[New]**	Good practice point
GPP5.4 The need for a cohort should be continually assessed. Some considerations for ending or closing a cohort include: • availability of enough single rooms to isolate the individual patients • recovery of the service users in the cohort **[New]**	

5.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation or Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond infection prevention and control.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation or Good Practice Point were followed correctly. Be explicit and clear about benefits.

Benefits
GPP5.1 Keeping service users in isolation until they are no longer deemed infectious will decrease the risk of transmission. GPP5.2 Considering the characteristics of the infectious agent, symptom resolution, and testing requirements (where applicable) helps to reduce the risk of patients being released from isolation while they can still spread the infectious agent.

Benefits
GPP5.2 Regularly reviewing these characteristics may help to ensure that patients are not kept in isolation for longer than necessary, which will reduce the mental health impacts of isolation. GPP5.3 Considering how ending isolation affects other vulnerable service users helps safeguard those who are most susceptible. GPP5.4 Continuous assessment of the need for cohorting will ensure that cohorts are not in place for longer than they are needed.

Risks and harms

List the adverse events or other unfavourable outcomes that may occur if the Recommendation or Good Practice Point were followed correctly. Be explicit and clear about risks and harms.

Risks and harms
GPP5.1 No harms identified. GPP5.2 No harms identified. GPP5.3 Such considerations could result in extended isolation with associated effects on mental health. GPP5.3 In acute healthcare settings, such considerations may delay transfer of a patient to continuing care areas placing additional pressures on acute bed availability. GPP5.4 No harms identified.

Benefit-Harm assessment

Classify as “benefit outweighs harm” (or vice versa) or a “balance of benefit and harm.” Description of this balance can be from the individual service user, staff or visitor perspective, the societal perspective, or both. Recommendations or Good

Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
GPP5.1 Only benefits identified. GPP5.2 Only benefits identified. GPP5.3 The benefits will surpass the risks if implemented appropriately. GPP5.4 Only benefits identified.

5.8 Feasibility

Is the Recommendation or Good Practice Point implementable in the Scottish context?

Describe (if applicable):

- financial implications
- opportunity costs
- material or human resource requirements
- facility needs
- sustainability issues
- human factors

and any other issues that may be associated with following a Recommendation or Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
GPP5.3 Service users in prolonged isolation might need extra support. GPP5.2 & GPP5.3 There will also be resource and staff training needs to conduct clinical and IPC risk assessments for each scenario and patient.

5.9 Expert opinion

Summarise the expert opinion used in creating the Recommendation or Good Practice Point. If none were involved, state “none”. Translating evidence into action often involves expert opinion where evidence is insufficient. Clearly outlining that expert opinion helps users understand their influence on interpreting objective evidence. Expert opinion may also be required where there is no evidence available.

Expert opinion
GPP5.1 This good practice point is informed by a guideline graded AGREE ‘recommend,’[26] another graded AGREE ‘recommend with modifications’[27] and 19 SIGN 50 level 4 guidance documents,[3-5, 7, 9, 11, 12, 17, 20, 22, 28, 35, 42, 43, 62-66] which , proffer a variety of methods to determine whether a patient is infectious for the purpose of ending isolation. Such methods include a negative diagnostic test,[5, 11, 20, 26, 35] time after symptom resolution,[11, 22, 27, 28, 64-66] time after symptom onset,[11, 28, 35] time after a positive test,[35] time since treatment initiation,[26] possibility of long-term shedding,[3, 4, 9, 11, 27, 35, 63] and symptom resolution.[64] . The evidence was deemed insufficient for a recommendation as the AGREE II guidelines were considered too narrow in scope, being specific to norovirus[27] and tuberculosis. GPP5.2 This good practice point is informed by one guideline graded AGREE ‘recommend’,[26] another graded AGREE ‘recommend with modifications,’[27] and ten SIGN 50 level 4 guidance documents,[5, 11, 20, 22, 28, 35, 42, 64-66] which proffer a variety of criteria to be considered before ending patient isolation, for a variety of infectious agents. The evidence was deemed insufficient for a recommendation due to the narrow scope of the AGREE guidelines, which are specific to norovirus and tuberculosis. GPP5.3 This good practice point is informed by a NICE guideline grade AGREE ‘recommend’, which recommends that isolation can be discontinued after two weeks of treatment, after a risk assessment, as long as there are no immunocompromised people in the same accommodation.[26] The evidence was deemed insufficient for a recommendation due to the narrow scope of the AGREE

Expert opinion
guideline, which is specific to tuberculosis. However, ARHAI Scotland considers this GPP relevant to other infectious agents beyond tuberculosis (TBC). GPP5.4 This good practice point is based on ARHAI Scotland's expert opinion that continuous assessment provides reassurance that the cohort will not be in place for longer than needed and that this may reduce the impact on the overall clinical service.

5.10 Value judgements

Summarise value judgements used in creating the Recommendation or Good Practice Point. If none were involved, state "none". Translating evidence into action often involves value judgements, which include guiding principles, ethical considerations, or other beliefs and priorities. Clearly outlining value judgements helps users understand their influence on interpreting objective evidence.

Value judgements
None.

5.11 Intentional vagueness

State reasons for any intentional vagueness in the Recommendation or Good Practice Point. If none was intended, state "none". Recommendations or Good Practice Points should be clear and specific, but if there is a decision to be vague, acknowledging the reasoning clearly promotes transparency. Reasons for vagueness may include:

- inadequate evidence
- inability to achieve consensus regarding evidence quality, anticipated benefits or harms, or interpretation of evidence
- legal considerations
- economic reasons
- ethical or religious reasons

Intentional vagueness
GPP5.2 Only high-level details have been provided, as the specifics will depend on the infectious agent.

5.12 Exceptions

List situations or circumstances in which the Recommendation or Good Practice Point should not be applied.

Exceptions
None.

5.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
None.

References

1. Siegel JD, Rhinehart E, Jackson M, et al. 2007 guideline for isolation precautions: preventing transmission of infectious agents in health care settings. American journal of infection control 2007; 35: S65.
2. Health New Zealand. Candida auris - infection prevention and control guidance for healthcare (2023, accessed January 6, 2025 2025).
3. European Centre for Disease Prevention and Control. Considerations for infection prevention and control practices in relation to respiratory viral infections in healthcare settings, (2023, accessed Jan 6 2025).
4. Health New Zealand. COVID-19 infection prevention and control guidance for acute care hospitals, (2024, accessed January 6, 2025).
5. Centers for Disease Control and Prevention. Infection Control Guidance: SARS-CoV-2, (2024, accessed January 6, 2025).
6. World Health Organization. Infection prevention and control in the context of COVID-19: A guideline, 21 December 2023, (2023, accessed January 6, 2025).
7. HSC Public Health Agency. Infection Prevention and Control Measures for Respiratory illnesses, (2023, accessed January 6, 2025).
8. Centers for Disease Control and Prevention. Infection Prevention and Control Strategies for Seasonal Influenza in Healthcare Settings, (2021, accessed January 6, 2025).
9. Department of Health & Social Care. Infection prevention and control: resource for adult social care, (2024, accessed January 6, 2025).
10. Health New Zealand. Interim minimal guidance for MDRO admission screening and placement in a NZ hospital. (2024, accessed January 6, 2025).
11. UK Health Security Agency. Management of acute respiratory infection outbreaks in care homes guidance, (2024, accessed January 6, 2025).
12. Health New Zealand. New Zealand Vancomycin resistant Enterococci (VRE) infection prevention and control guidelines, (2024, accessed January 6, 2025).

13. HSC Public Health Agency. Update COVID-19 Testing Arrangements in Care Homes and Hospices. (2024, accessed January 6, 2025).

14. NHS England. Guidance for risk assessment and infection prevention and control measures for measles in healthcare settings version 1.1, (2024, accessed January 6, 2025).

15. UK Health Security Agency. Investigation and initial clinical management of possible human cases of avian influenza with potential to cause severe human disease, (2024, accessed January 6, 2025).

16. World Health Organization. Standard precautions for the prevention and control of infections: aide-memoire, (2022, accessed January 6, 2025).

17. Centers for Disease Control and Prevention. Mpox Infection Prevention and Control in Healthcare Settings, (2024, accessed January 6, 2025).

18. Carrara E, Ong DSY, Hussein K, et al. ESCMID guidelines on testing for SARS-CoV-2 in asymptomatic individuals to prevent transmission in the health care setting. Clinical microbiology and infection : the official publication of the European Society of Clinical Microbiology and Infectious Diseases 2022; 28: 672-680.

19. World Health Organization. Clinical management of COVID-19 Living Guideline, (2023, accessed January 6, 2025).

20. UK Health Security Agency. Candidozyma auris: guidance for acute healthcare settings. (2025, accessed September 10, 2025).

21. Scottish Government. CMO/SGHD(2013) 14: Antimicrobial resistance, (2013).

22. Vonberg RP, Kuijper EJ, Wilcox MH, et al. Infection control measures to limit the spread of Clostridium difficile. Clinical microbiology and infection 2008; 14: 2-20.

23. UK Health Security Agency. National measles guidelines, (2024, accessed January 13, 2025).

24. Scottish Government. Carbapenemase-producing Enterobacteriaceae (CPE) Policy Requirement, (2017, accessed 19 June, 2025).

25. Coia JE, Wilson JA, Bak A, et al. Joint Healthcare Infection Society (HIS) and Infection Prevention Society (IPS) guidelines for the prevention and control of meticillin-resistant Staphylococcus aureus (MRSA) in healthcare facilities. J Hosp Infect 2021; 118s: S1-s39. 20211029.

26. National Institute for Health and Care Excellence. Tuberculosis: clinical diagnosis and management of tuberculosis, and measures for its prevention and control, (2016, accessed January 13, 2025).

27. MacCannell T, Umscheid CA, Agarwal RK, et al. Guideline for the prevention and control of norovirus gastroenteritis outbreaks in healthcare settings. Infection Control & Hospital Epidemiology 2011; 32: 939-969.

28. Public Health Agency of Canada. Infection Prevention and Control for COVID-19: Interim Guidance for Long Term Care Homes, (2020).

29. Public Health Agency of Canada. Infection prevention and control for COVID-19: Interim guidance for outpatient and ambulatory care settings, (2021, accessed January 13, 2025).

30. UK Health Security Agency. Framework of actions to contain carbapenemase-producing Enterobacterales.

31. Centers for Disease Control and Prevention. Implementation of Personal Protective Equipment (PPE) Use in Nursing Homes to Prevent Spread of Multidrug-Resistant Organisms (MDROs), (2022, accessed January 13, 2025).

32. Centers for Disease Control and Prevention. Interim Guidance for Infection Control Within Healthcare Settings When Caring for Confirmed Cases, Probable Cases, and Cases Under Investigation for Infection with Novel Influenza A Viruses Associated with Severe Disease, (2022, accessed January 13, 2025).

33. European Centre for Disease Prevention and Control. Monkeypox infection prevention and control guidance for primary and acute care settings, (2022, accessed January 13, 2022).

34. World Health Organization. Transmission-based precautions for the prevention and control of infections: aide-memoire, (2022, accessed January 13, 2025).

35. European Centre for Disease Prevention and Control. Investigation Protocol for human exposures and cases of avian influenza in the EU/EEA, (2023, accessed January 13, 2025).

36. UK Health Security Agency. UK guidelines for the management of contacts of invasive group A streptococcus (iGAS) infection in community settings, (2023, accessed January 13, 2025).

37. UK Health Security Agency. Clade I mpox virus infection, (2024, accessed January 13, 2025).

38. UK Health Security Agency. COVID-19: testing for hospices, (2021, accessed January 13, 2025).

39. Centers for Disease Control and Prevention. Infection Control Guidance: Candida auris. (2024, accessed January 13, 2025).

40. Health New Zealand. Infection prevention and control, (2024, accessed January 13, 2025).

41. Public Health Agency of Canada. Interim guidance on infection prevention and control for patients with suspected, probable or confirmed mpox within healthcare settings. (2024, accessed January 13, 2025).

42. Centers for Disease Control and Prevention. Prevention and Control for Hospitalized MERS Patients, (2024, accessed January 13, 2025).

43. Public Health Agency of Canada. Updated guidance for infection prevention and control in health care settings when COVID-19 is suspected or confirmed, (2024, accessed January 13, 2025).

44. Centers for Disease Control and Prevention. Expedient Patient Isolation Rooms, (2024, accessed January 13, 2025).

45. Cepeda JA, Whitehouse T, Cooper B, et al. Isolation of patients in single rooms or cohorts to reduce spread of MRSA in intensive-care units: prospective two centre study. The Lancet 2005; 365: 295-304.

46. Julian S, Burnham CA, Sellenriek P, et al. Impact of neonatal intensive care bed configuration on rates of late-onset bacterial sepsis and methicillin-resistant Staphylococcus aureus colonization. Infect Control Hosp Epidemiol 2015; 36: 1173-1182. 2015/06/26.

47. Ben-Abraham R, Keller N, Szold O, et al. Do isolation rooms reduce the rate of nosocomial infections in the pediatric intensive care unit? Journal of critical care 2002; 17: 176-180.

48. Sehulster LM CR, Arduino MJ, Carpenter J, Donlan R, Ashford D, Besser R, Fields B, McNeil and MM WC, Wong S, Juranek D, Cleveland J. . Guidelines for environmental infection control in health-care facilities: recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC). In: CDC, (ed.). MMWR, 2003.

49. Health Information and Quality Authority. National Standards for the prevention and control of healthcare-associated infections in acute healthcare services, (2017, 04/04/2025).

50. Department of Health and Estates & Facilities. HBN 00-09: Infection control in the built environment. (2013, accessed 09/04/2025).

51. NHS England. Health Building Note 04-01 Supplement 1: Special ventilated isolation facilities for patients in acute settings, (2025, accessed 09/04/2025).

52. Marshall C, Richards M and McBryde E. Do active surveillance and contact precautions reduce MRSA acquisition? A prospective interrupted time series. PloS one 2013; 8: e58112.

53. Health Facilities Scotland. Specialised Ventilation for Healthcare Premises (Part A), (2022, accessed 11 June, 2025).

54. World Health Organisation. Clinical management and infection prevention and control for mpox: living guideline, (2025, accessed June 12, 2025).

55. Department of Health & Social Care. Risk assessment and immediate management of viral haemorrhagic fevers (contact high consequence infectious diseases) in acute hospitals, (2024, accessed July 10, 2025).

56. Islam J, Cheek E, Navani V, et al. Influence of cohorting patients with Clostridium difficile infection on risk of symptomatic recurrence. The Journal of hospital infection 2013; 85: 17-21.

57. García-Lecona DA, Garza-González E, Padilla-Orozco M, et al. Outcomes of Clostridium difficile–infected patients managed in a common isolation unit compared with isolation in their bed of diagnosis. American journal of infection control 2018; 46: 103-104.

58. Maragakis LL, Winkler A, Tucker MG, et al. Outbreak of Multidrug-Resistant Serratia marcescens Infection in a Neonatal Intensive Care Unit. Infection control and hospital epidemiology 2008; 29: 418-423.

59. Kakimoto K, Nishiki S, Kaga Y, et al. Effectiveness of patient and staff cohorting to reduce the risk of vancomycin-resistant enterococcus (VRE) acquisition: a retrospective cohort study during a VRE outbreak in Japan. The Journal of hospital infection 2023; 134: 35-42.

60. UK Health Security Agency and Department of Health & Social Care. Infection prevention and control in adult social care: acute respiratory infection, (2024, accessed January 20, 2025).

61. Centers for Disease Control and Prevention. Strategies to Mitigate Healthcare Personnel Staffing Shortages, (2022, accessed January 20, 2025).

62. UK Health Security Agency. De-isolation and discharge of mpox-infected patient (2022, accessed January 21, 2025).

63. European Centre for Disease Prevention and Control. Guidance on ending the isolation period for people with COVID-19, third update, (2022, accessed January 21, 2024).

64. Public Health Agency of Canada. Routine Practices and Additional Precautions for Preventing the Transmission of Infection in Healthcare Settings, (2013, accessed January 6, 2025).

65. New Zealand Ministry of Health. Guidelines for the Management of Norovirus Outbreaks in Hospitals and Elderly Care Institutions, (2009, accessed January 27, 2025).

66. Norovirus Working Party. Guidelines for the management of norovirus outbreaks in acute and community health and social care settings, (2012, accessed January 27, 2025).

Appendix 1 – Definitions

Term used	Description	Evidence
Recommendation	In general, 'Recommendations' should be supported by high- to moderate-quality evidence. In some circumstances, however, 'Recommendations' may be made based on lower quality evidence when high-quality evidence is impossible to obtain, and the anticipated benefits strongly outweigh the harms or when the Recommendation is required by Legislation or Mandatory Guidance.	Sufficient evidence (SIGN50 level 1++, 1+, 2++, 2+, 3, 4* AGREE Recommend AGREE Recommend (with Modifications) Legislation, or mandatory guidance
Good Practice Point	Insufficient evidence or a lack of evidence to make a recommendation but identified best practice based on the clinical/technical experience (expert opinion) of the Working Group, with a clear balance between benefits and harms.	Insufficient evidence + Working Group expert opinion OR No evidence + Working Group expert opinion
No Recommendation	Both a lack of pertinent evidence and an unclear balance between benefits and harms.	No evidence

* A Recommendation cannot be developed when there is only SIGN50 level 4 evidence available.

The considered judgement form and recommendation system are adapted from the following three sources:

- Update to the Centers for Disease Control and Prevention and the Healthcare Infection Control Practices Advisory Committee Recommendation Categorization Scheme for Infection Control and Prevention Guideline Recommendations. (2019)
- Scottish Intercollegiate Guidelines Network (SIGN). A guideline developer's handbook. (2019)
- Grading of Recommendations, Assessment, Development and Evaluation (GRADE) Handbook. (2013)