NHS National Services Scotland

Safe Management of Linen Literature review

Considered Judgement Form

Version 1.0

31 January 2025

ARHAI Scotland

Antimicrobial Resistance and Healthcare Associated Infection

Version History

Version	Date	Summary of changes
V1.0	31 January 2025	New document

Approvals

Version	Date Approved	Group/Individual
V1.0	31 January 2025	National Policy Guidance and Evidence Working Group (NPGE)

Contents

Summary of Recommendations (R) and Good Practice Points (GPP)

Research question 1: What is the definition of linen in health and care settings?

This research question outlined how healthcare linen is currently described within the literature. It therefore does not have any associated recommendation(s) or good practice point(s).

Research question 2: Are there any legislative/mandatory requirements or standards for the safe handling and processing of linen?

R2.1	**The following legislation must be adhered to in the management of linen in Scottish health and social care settings:** • **The Control of Substances Hazardous to Health (Amendment) Regulations 2004** • **The Personal Protective Equipment at Work (Amendment) Regulations 2022 (PPER 2022)** • **The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (also called the Carriage Regulations)**
GPP2.1	**Linen, linen products and processes used to manage linen should meet the relevant standards detailed in Appendix 3 of the literature review.**

Research Question 3: How should linen be categorised?

GPP3.1	**Linen which has been processed and is ready for use should be categorised as clean linen.**
GPP3.2	**Linen that has been used for non-infectious service users, with no visible soiling or contamination by blood or body fluids should be categorised as used linen.**

GPP3.3	**Linen categorised as used linen should be stored and transported to the laundry in white bags or hampers.**
R3.1	**Linen used for service users with confirmed or suspected infections, or linen soiled with blood or body fluids (for example, faeces) should be categorised as infectious linen.**
GPP3.4	**Linen categorised as infectious linen should be stored and transported to the laundry in red bags or hampers.**
R3.2	**Uniforms visibly contaminated with blood or body fluids should be categorised as infectious linen**
GPP3.5	**Linen that will be damaged by thermal disinfection should be categorised as heat-labile linen (including used and infectious).**
GPP3.6	**Shared heat-labile linen should not be used in health and care settings.**
GPP3.7	**Linen categorised as heat-labile linen should be stored and transported to the laundry in blue bags or hampers. If infectious, the heat-labile linen should be placed in an alginate/water-soluble bag before putting them in the blue bags or hampers.**

Research Question 4: What is the available evidence on products or methods for effective laundering of linen?

GPP4.1	**The washing process should have a disinfection phase in which the load temperature is maintained at 65ºC for at least 10 minutes or at 71ºC for 3 minutes or more (thermal disinfection).**
R4.1	**Heavily soiled items should be processed with an extra pre-wash or sluice cycle.**
R4.2	**R4.2 Adequate concentrations of disinfecting agents (according to manufacturer's instructions) should be added when linen is laundered at low temperatures (chemothermal/chemical disinfection).**

Research Question 5: How should beds be stripped/made to minimise risk of infection?

GPP5.1 Appropriate PPE should be worn when removing bed linen:

- **Infectious linen (soiled with blood or body fluids): single-use disposable non-sterile gloves and single-use disposable aprons (and masks when there is a risk of splashing or spraying)**
- **Unsoiled infectious linen: single-use disposable aprons (other items of PPE may be used depending on risk assessment)**
- **Used linen: single-use disposable aprons (other items of PPE may be used depending on risk assessment)**

GPP5.2	**Gross soiling (e.g. lump of faeces) should be removed before bed linen removal.**
GPP5.3	**Bed linen should be removed carefully from beds so that the heaviest soil is contained in the centre of the bundle, and unnecessary shaking is avoided to prevent the dispersal of particles.**
R5.1	**Hand hygiene should be performed as per NIPCM after changing bed linen.**

There was no evidence on the process of bed making hence no recommendation or good practice point can be made.

Research Question 6: How should clean linen be handled?

GPP6.1	**Hand hygiene should be performed as per NIPCM before handling clean linen.**

Research Question 7: How should clean linen be stored?

GPP7.1	**Clean linen should be stored in a dedicated clean, dry area or a dedicated bay, separate from used or infectious linen.**

GPP7.2	**The clean linen storage facility (including cupboards, trolleys, pods or similar systems) should be such that linen is protected from dust, vermin, moisture, and unintended or unnecessary handling.**
GPP7.3	**Clean linen should be stored above floor level, away from water and direct sunlight and in a way that allows free air movement.**
GPP7.4	**Clean linen should be stored in a way that allows rotation of stock.**
GPP7.5	**Clean linen storage areas and/or systems should be easily cleanable and have a regular cleaning schedule.**
GPP7.6	**Hand hygiene facilities should be provided near the bay or space where clean linen is stored.**
GPP7.7	**Only the appropriate quantity of clean linen required should be taken out for bedmaking rounds. Once taken out on such rounds, they should not be returned to clean linen storage (including sleep-knit storage trolleys or similar systems).**

Research Question 8: How should clean linen be transported?

GPP8.1	**Clean linen should be protected from contamination during transportation.**
GPP8.2	**Clean linen should not be transported together with used or infectious linen unless separated by a suitable physical barrier.**
GPP8.3	**Transport vehicles including trolleys and carts used to transport clean linen must be cleaned daily, whenever they appear soiled and between trips if used to transport used or infectious linen.**
GPP8.4	**Drivers transporting clean linen should have access to hand rubs and spill kits.**

Research Question 9: How should ‘used’ linen be safely handled?

GPP9.1	**Used linen should be handled carefully with minimum agitation.**
GPP9.2	**Used linen should be placed directly into appropriate bags at the point of use with care taken to check for and remove extraneous items including personal property, loss of which could be distressing for service users and other objects which may cause contamination or injury**
GPP9.3	**Used linen should not be placed on the floor or other surfaces within the healthcare environment.**
GPP9.4	**Single-use disposable plastic aprons should be used when handling used linen (other items of PPE may be used depending on risk assessment).**
GPP9.5	**Wet linen, not assessed as not being infectious (not contaminated by blood or body fluids), should be placed in a leak-proof (or clear plastic) bag before they are placed in the linen hamper.**
R9.1	**Hand hygiene should be performed as per NIPCM after handling used linen.**

Research Question 10: How should ‘used’ linen be sorted?

GPP10.1	**Linen should be segregated at the point of use (e.g. at the bedside) and bagged appropriately for each category after removing extraneous items including service user personal property and any other items or medical devices.**
GPP10.2	**Pre-wash sorting should be avoided wherever possible. However, when required, appropriate PPE should be used following risk assessment such as puncture-resistant gloves and single-use disposable plastic aprons.**

Research Question 11: How should used linen be labelled?

GPP11.1	**The labelling requirements specified in the National Guidance for safe management of linen in NHSScotland should be followed for labelling used linen and should include information such as hospital, ward/department, and date.**

Research Question 12: How should 'used' linen be stored?

GPP12.1	**Used linen should be stored in a designated secure area functionally separate from areas where clean linen is stored and inaccessible to the public.**
GPP12.2	**Bags used to store, or transport used linen should be securely tied and not over three-quarters full.**

Research Question 13: How should 'used' linen be transported?

GPP13.1	**Used linen should not be transported in the same vehicle as clean linen unless separated by a suitable physical barrier.**
GPP13.2	**Transport vehicles including trolleys and carts used to transport used linen must be cleaned daily, whenever they appear soiled and between trips if used to transport 'clean linen'.**
GPP13.3	**Provisions should be made for hand rubs and spill kits for staff involved in the transportation of used linen.**

Research Question 14: Is there any specific evidence on the effective laundering of uniforms/scrubs?

R14.1	**Uniforms should be washed at 60°C or the highest temperature that can be tolerated by the fabric.**
GPP14.1	**Tumble drying and ironing should be carried out according to the uniform care label.**
GPP14.2	**Laundered uniforms should be taken to work in a clean bag.**
GPP14.3	**Used uniforms should be taken home in a clean bag (This bag should not be reused for taking clean uniforms to work unless it can and has been laundered).**
GPP14.4	**Domestic washing machines and tumble driers used for the laundering of uniforms/scrubs should be regularly cleaned and maintained.**
R14.2	**Uniforms or scrubs that meet the definition of infectious linen must not be taken home for laundering. They must be laundered in the hospital/facility laundry.**
R14.3	**Bleach should not be added to the wash process or used to whiten uniforms.**
R14.4	**Detergents suitable for the wearer's skin type should be used in the laundering process.**
R14.5	**Hand hygiene should be performed as per the NIPCM before handling clean uniforms and after handling used or infectious uniforms.**

Research Question 15: Is there any evidence regarding washing used/infectious personal clothing at home?

GPP15.1	**Items of service user clothing laundered at home should be washed at the hottest temperature appropriate to the fabric.**
GPP15.2	**Service users and their carers should be given laundry advice leaflets when taking home used or infectious linen.**
GPP15.3	**If clothing is heavily soiled or infectious, staff may recommend that clothing be washed in the hospital or care home's laundry service if available otherwise the item should be disposed of in the appropriate healthcare waste stream following discussion with the service user or their relative(s).**

Research Question 16: What is the risk of infection transmission associated with linen in health and care settings?

GPP16.1:	**Laundries (including in-house laundering within health and care settings) should adhere to "National Guidance for Safe Management of Linen in NHSScotland Health and Care Environments. For laundry services/distribution. v2.2" to reduce the risk of laundry-related infection incidents.**
GPP16.2	**Linen should be considered as a potential source in outbreak investigation especially when immunocompromised patients or neonates are involved.**

Research Question 17: How should infectious linen be safely handled?

GPP17.1 Infectious linen should be handled as follows:

- **Linen soiled with blood or body fluids: Single-use disposable non-sterile gloves, single-use disposable plastic aprons and following risk assessment, other appropriate PPE as per NIPCM.**
- **Unsoiled infectious linen: Single-use disposable plastic aprons and, following risk assessment, other appropriate PPE as per NIPCM.**

GPP17.2 **Infectious linen should be handled carefully with minimum agitation**

GPP17.3 **Infectious linen should be appropriately bagged (as described in GPP17.2) immediately at the point of generation and held away from the body during carriage.**

GPP17.4 **Infectious linen should be placed in red alginate/water-soluble bags that should then be placed in a leakproof bag and then into the red laundry bag or fabric hampers.**

GPP17.5 **Linen used by patients with confirmed Ebola virus disease or other haemorrhagic fevers should not be returned to the laundry but disposed of as Category A waste and the laundry should be informed.**

GPP17.6 **Linen from patients with suspected VHF should be separated and stored safely pending PCR results. (If this is not practicable, they should be treated as Category A waste.) If the PCR test is negative, the linen should be treated as Category B.**

R17.1 **Hand hygiene should be performed as per NIPCM after handling infectious linen.**

Research Question 18: How should infectious linen be sorted?

GPP18.1	**Sorting of bagged infectious linen should be avoided.**

Research Question 19: How should infectious linen be labelled?

GPP19.1	**Laundry bags or hampers containing infectious linen should be labelled and include information such as hospital, ward/department, and date.**
R19.1	**Infectious linen used for the care of suspected or confirmed VHF patients that is to be disposed of as waste should be marked and labelled as provided in SHTN 03-01.**

Research Question 20: How should infectious linen be stored?

GPP20.1	**Infectious linen should be stored in a secure designated area, inaccessible to the public and separate from clean non-infectious linen.**

Research Question 21: How should infectious linen be transported?

GPP21.1	**Infectious linen should not be transported in the same vehicle as clean linen unless separated by a suitable physical barrier.**
GPP21.2	**Transport vehicles including trolleys and carts used to transport infectious linen must be cleaned daily, whenever they appear soiled and between trips if used to transport 'clean linen'.**
GPP21.3	**Provisions should be made for hand rubs and spill kits for those involved in transporting infectious linen.**

GPP21.4	**Bags used to store or transport infectious linen should be leak-proof, be securely tied and not be over three-quarters full.**

Research Question 22: What is the available evidence for the effectiveness of antimicrobial impregnated linen in reducing the risk of microorganism transmission?

No recommendations or good practice points.

Research Question 23: What is the available evidence on post-laundry disinfection for linen in healthcare?

No recommendations or good practice points.

Research Question 24: When is linen deemed unfit for reuse?

GPP24.1	**Linen should be deemed unfit for reuse if it contains unremovable staining, is discoloured or shows signs of thermal or physical damage.**
R24.1	**Laundries should consider deeming linen unfit for reuse after laundering if it is heavily contaminated with blood and/or body fluids**

Research Question 25: How should linen deemed unfit for reuse be safely disposed?

GPP25.1	**Damaged linen should be returned via the appropriate stream to the laundry for disposal.**

Research Question 26: How should curtains be put up and taken down to minimise transmission of infection?

GPP26.1	**When privacy curtains are taken down, they should be unloaded directly into a container at the end of the bed furthest from the patient's head.**
GPP26.2	**In addition to GPP26.1 the standard operating procedure for curtain changing within the NHSScotland National Cleaning Services Specification should be followed (including provisions on PPE use).**
GPP26.3	**Hand hygiene should be performed as per NIPCM prior to hanging curtains and after curtains are taken down.**

Research Question 1: What is the definition of linen in health and care settings?

Part 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
Four pieces of evidence were identified to answer this research question. Three of these were added for this update[1-3] and one document was carried over from the previous version of this review.[4] All four were SIGN 50 Level 4 expert opinion guidance documents.[1-4] Expert opinion is considered adequate to answer this question as it focuses on the definition of linen. No primary studies were included.	4 x SIGN50 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
All included pieces of evidence were consistent in their definitions of linen and the examples they provided. Linen was generally and consistently defined as reusable textile items that require cleaning or disinfection between uses.

Comments
No recommendations are intended from this question.

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
Of the four pieces of evidence identified for this review, two were from the United Kingdom[2, 4] and two from the United States.[1, 3] As this question concerns the definition of linen, they were considered applicable to Scottish health and care 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/group of interest? Generalisability is only relevant to primary research studies.

Comments
As no primary studies were identified for this research question, factors relating to generalisability do not apply.

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
Publication bias was not considered a concern for the evidence identified for this research question.

Part B: Evidence to Decision

1.6 Recommendation(s)

What Recommendation(s) or Good Practice Point(s) 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
This research question outlined how healthcare linen is currently described within the literature. It therefore does not have any associated recommendation(s) or good practice point(s).	Not applicable

1.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation/Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond IPC.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation/Good Practice Point were followed correctly. Be explicit, clear about pros.

Benefits
Not applicable.

Risks and Harms

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

Risks/Harms
Not applicable.

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/ visitor perspective, the societal perspective, or both. Recommendations/ Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
Not applicable.

1.8 Feasibility

Is the Recommendation/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 etc., that may be associated with following a Recommendation/Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
Not applicable.

1.9 Expert Opinion

Summarise the expert opinion used in creating the Recommendation/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
Not applicable.

1.10 Value judgements

Summarise value judgements used in creating the Recommendation/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
Not applicable.

1.11 Intentional vagueness

State reasons for any intentional vagueness in the Recommendation/Good Practice Point; if none was intended, state “none”. Recommendations/ 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/harms, or interpretation of evidence; legal considerations; economic reasons; ethical/ religious reasons.

Intentional vagueness
Not applicable.

1.12 Exceptions

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

Exceptions
Not applicable.

1.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
Not applicable.

Research Question 2: Are there any legislative/mandatory requirements or standards for the safe handling and processing of linen?

Part 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
Twelve pieces of evidence were included for this research question, all added for this update of the review. [5-16]	4 SIGN 50 Mandatory 8 x SIGN50 Level 4

Comments	Evidence level
Four documents were graded SIGN50 Mandatory including three pieces of legislation,[13-15] and one Director's Letter (DL) from the Scottish Government.[16] Eight British standards were included and were graded SIGN50 Level 4.[5-12] No primary studies were included.	

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
Consistency amongst the legislations or mandatory documents could not be evaluated because of the nature of the evidence. Relevant legislation identified for the safe management of linen include: • The Control of Substances Hazardous to Health (Amendment) Regulations 2004 (COSHH), describes general regulations for prevention and control of exposure to substances hazardous to health including the provision of appropriate disinfection procedures and personal protective equipment (PPE). It also provides regulations for training of employees, procedures for dealing with accidents and emergencies and health surveillance for employees. Substances hazardous to health can be applied to micro-organisms which may be contained in infectious linen.[13] • The Personal Protective Equipment at Work (Amendment) Regulations 2022 which provides regulations for the provision of appropriate and suitable PPE to staff who are exposed to health or safety risks while at work. The legislation also provides regulations on assessment, maintenance, storage of and training on the use of PPE.[14]

Comments
• The Carriage of Dangerous goods and use of transportable pressure equipment regulations 2009 (also called the Carriage regulations) although not specific for linen is applicable when heavily soiled infectious linen that contains infectious agents thought to pose a significant risk of disease transmission has to be transported to offsite laundries.[15] • The Director's Letter from the Scottish Government sets out the policy on uniform laundering for health and care staff. It categorises uniforms into two groups for laundry purposes – used uniforms and contaminated uniforms. It also provides guidance on how both categories should be laundered.[16] **Standards** Only three of the standards identified are specific for linen.[5, 7, 12] BS EN 14065:2016[5] provides specifications on risk and process management for linen while BS EN ISO 20743:2021[7] is focused on evaluating the antibacterial activity of antimicrobial impregnated/treated linen products. BS EN 16616:2022 provides specifications for evaluating the microbicidal activity of contaminated linen disinfection processes.[12] The other standards provide specifications for the evaluation of disinfectants including those used in healthcare laundries.[6, 8-11]

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 legislation and standards identified apply to Scotland, however none identified were specific to health and social care settings. The Director's Letter is specific to Scottish health and care settings and guides some areas of linen management, particularly uniforms.

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/group of interest? Generalisability is only relevant to primary research studies.

Comments
Generalisability does not apply as no primary research studies were identified.

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
Does not apply due to the type of evidence identified for this research question.

Part B: Evidence to Decision

2.6 Recommendation(s)

What Recommendation(s) or Good Practice Point(s) 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
R2.1 The following legislation must be adhered to in the management of linen in Scottish health and social care settings: • The Control of Substances Hazardous to Health (Amendment) Regulations 2004 • The Personal Protective Equipment at Work (Amendment) Regulations 2022 (PPER 2022) • The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (also called the Carriage Regulations)	Recommendation
GPP2.1 Linen, linen products and processes used to manage linen should meet the relevant standards detailed in Appendix 3 of the literature review.	Good Practice Point

2.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation/Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond IPC.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation/Good Practice Point were followed correctly. Be explicit, clear about pros.

Benefits
R2.1 Adhering to current legislation and regulations allows compliance with associated corporate and social governance responsibilities, including the legal requirements of the applicable health and safety management policy.

Benefits
GPP2.1 Ensuring linen, linen products and management processes meet industry standards will allow for standardisation.

Risks and Harms

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

Risks/Harms
R2.1, GPP2.1: No harm 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/ visitor perspective, the societal perspective, or both. Recommendations/ Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
R2.1, GPP2.1: Only benefits identified.

2.8 Feasibility

Is the Recommendation/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 etc., that may be associated with following a Recommendation/Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
R2.1 and GPP2.1 No additional resources or feasibility issues are expected because of adherence to relevant legislation and standards.

2.9 Expert Opinion

Summarise the expert opinion used in creating the Recommendation/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
R2.1 The evidence is sufficient to support this recommendation as it is based solely on legislation. There is no additional expert opinion to note. GPP2.1 It is the expert opinion of ARHAI Scotland and its stakeholders that linen, products and processes used in the management of linen should meet the provisions of the relevant standards to ensure consistency and reliability.

2.10 Value judgements

Summarise value judgements used in creating the Recommendation/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

2.11 Intentional vagueness

State reasons for any intentional vagueness in the Recommendation/Good Practice Point; if none was intended, state “none”. Recommendations/ 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/harms, or interpretation of evidence; legal considerations; economic reasons; ethical/ religious reasons.

Intentional vagueness
None

2.12 Exceptions

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

Exceptions
None.

2.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
None.

Research Question 3: How should linen be categorised?

Part 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
In total, ten pieces of evidence were included to answer this research question. Nine of these were added for this update,[2-4, 16-21] with one carried over from the last version of this review.[22] One guidance document graded AGREE: 'Recommend with modifications' was included.[20] Although this guideline was based on a systematic review, the link between evidence and recommendation was not always clear. One mandatory document from the Scottish Government was also included.[16] The remaining evidence (n=8) was graded SIGN50 Level 4.[2-4, 17-21] There is a potential risk of bias as there is often a lack of supporting evidence and the methodology with which these guidance documents are formulated is also unclear. No primary studies were included for this question.	1 x AGREE Recommend with modifications. 1 x SIGN50 Mandatory 8 x SIGN50 Level 4

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
Linen was generally classified into four main categories – 'clean', 'used', 'infectious' and 'heat labile' **Clean linen:** Although only three pieces of evidence provide any information on this category of linen, there was consistency in the definition albeit from two perspectives. Two pieces of evidence, including one specific for social care, define it from a process perspective – as linen washed and ready for use.[21, 22] The third piece of evidence defines it from an outcome perspective as hygienically clean – that is, a clean state, without infectious agents in sufficient numbers to increase the risk of infection.[3] **Used linen:** This category was identified in seven pieces of evidence.[2, 4, 16-18, 21, 22] Within healthcare settings, the definitions of this category were generally consistent. Used linen was broadly defined as linen that has been used but without visible soiling or contamination by blood or body fluids.[16-18, 21, 22] However, in one guidance document (HTM 01-04), soiled and fouled linen was included in this category as long as it had not been used for the care of a patient known or suspected to be infectious.[4] In HTM 01-04, volume specific to social care settings categorised used linen as requiring a 'standard process' – a category that includes used linen regardless of the level of soiling as long as there is no suspicion of infection.[2] **Infectious linen:** There was variation in how this category was defined within the evidence base. Linen was generally described as infectious if it met either or both of two criteria, namely: • soiling with blood or body fluids or • use in the care of infectious patients.

Comments
Two documents describe infectious linen only in terms of soiling and did not consider the latter criteria.[3, 17] One of these is a World Health Organization (WHO) expert opinion guidance which describes two categories of linen that have been used: linen soiled with blood, body fluids or other excretions which it calls 'soiled or contaminated'; and 'used linen' which is linen that has not been soiled.[17] HTM 01-04, in contrast, classifies soiled linen as part of 'used linen' and only considers it infectious if used in the care of an infectious patient or a patient with diarrhoea.[2, 4] An expert opinion guidance document published by the International Federation of Infection Control (IFIC) which was graded SIGN50 Level 4, places soiled linen in a separate category from used linen (which it defines as linen not visibly soiled) and infectious linen (which it describes as linen used in the care of infectious patients, even if not visibly soiled).[18] This document also adds an extra category called 'infested linen', which is linen used to care for patients infested with parasites such as lice, fleas, scabies and bedbugs.[18] Some documents, however, define infectious linen as those that meet either or both criteria.[16, 20-22] These include two Scottish documents – one graded SIGN50 mandatory[16] and the other graded SIGN50 Level 4.[22] Within these documents, infectious linen was broadly described as linen used in the care of patients or residents confirmed or suspected to be infectious, or linen soiled with blood or other body fluids, for example, faeces. Heat labile linen: There was a clear consensus amongst the two pieces of evidence that provide for this category. Heat labile linen was broadly defined as linen – whether used or infectious, that will be damaged by thermal disinfection.[4, 22]

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 applies are as follows: • UK (n=5)[2, 4, 16, 21, 22] • International (n=2)[17, 18] • Ireland (n=2)[19, 20] • United States of America[3] All five documents published in the UK were graded SIGN50 Level 4 and are specific for health and social care settings. [2, 4, 16, 21, 22] Two expert opinion guidance documents – one by the World Health Organization[17] and the other by the International Federation of Infection Control – were published for health and social care settings and apply internationally.[18] All other pieces of evidence including one Irish document[20] graded AGREE 'Recommend with modifications' have provisions that are directly applicable to health and social care settings.[19, 20] The American document, although specific for laundry settings in the United States also has provisions applicable to Scottish health and social care settings.[3]

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/group of interest? Generalisability is only relevant to primary research studies.

Comments
There were no primary studies found for this research question therefore issues such as sample size and methods of sample selection are not relevant.

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 primary evidence was identified for this research question; therefore, this section is not applicable.

Part B: Evidence to Decision

3.6 Recommendation(s)

What Recommendation(s) or Good Practice Point(s) 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 Linen which has been processed and is ready for use should be categorised as **clean linen**.	Good practice point
GPP3.2 Linen that has been used for non-infectious service users, with no visible soiling or contamination by blood or body fluids should be categorised as **used linen**.	Good practice point
GPP3.3 Linen categorised as used linen should be stored and transported to the laundry in white bags or hampers.	Good practice point

Recommendation	Grading
R3.1 Linen used for service users with confirmed or suspected infections, or linen soiled with blood or body fluids (for example, faeces) should be categorised as **infectious linen**.	Recommendation
GPP3.4 Linen categorised as infectious linen should be stored and transported to the laundry in red bags or hampers.	Good practice point
R3.2 Uniforms visibly contaminated with blood or body fluids should be categorised as **infectious linen**.	Recommendation
GPP3.5 Linen that will be damaged by thermal disinfection should be categorised as **heat-labile linen** (including used and infectious).	Good practice point
GPP3.6 Shared heat-labile linen should not be used in health and care settings.	Good practice point
GPP3.7 Linen categorised as heat-labile linen should be stored and transported to the laundry in blue bags or hampers. If infectious, the heat-labile linen should be placed in an alginate/water-soluble bag before putting them in the blue bags or hampers.	Good practice point

3.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation/Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond IPC.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation/Good Practice Point were followed correctly. Be explicit, clear about pros.

Benefits
GPP3,1, GPP3.2, GPP3.3, GPP3.4, GPP3.5, GPP3.6, GPP3.7, R3.1 and R3.2 provide clear guidance on how linen should be categorised for safe handling at the point of use and throughout the linen management pathway. GPP3.3 Categorising heat-labile linen appropriately will improve sustainability by reducing waste due to linen damages caused by inappropriate linen processing.

Risks and Harms

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

Risks/Harms
GPP3,1, GPP3.2, GPP3.3, GPP3.4, GPP3.5, GPP3.6, GPP3.7, R3.1 and R3.2: No harm 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/ visitor perspective, the societal perspective, or both. Recommendations/ 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, GPP3.2, GPP3.3, GPP3.4, GPP3.5, GPP3.6, GPP3.7, R3.1 and R3.2: Only benefits identified.

3.8 Feasibility

Is the Recommendation/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 etc., that may be associated with following a Recommendation/Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
None

3.9 Expert Opinion

Summarise the expert opinion used in creating the Recommendation/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 Based on two expert opinion documents[21, 22] including one from Scotland published by the (then) Health Protection Scotland (HPS) in collaboration with HFS.[22] The expert opinion of ARHAI Scotland and its stakeholders supports the definition of clean linen noted in both documents. GPP3.2 Based on five expert opinion documents including one from Scotland. [16-18, 21, 22] The expert opinion of ARHAI Scotland and its stakeholders supports the definition of used linen noted in these documents. GPP3.3, GPP3.4 and GPP3.7 are based on the current Scottish national guidance on linen management published by the (then) HPS in collaboration with HFS.[22] R3.1 The expert opinion of ARHAI Scotland and its stakeholders supports the definition of infectious linen provided by two expert opinion guidance documents[21, 22] including one from Scotland published by the (then) HPS in collaboration with

Expert opinion
HFS. The second part of this recommendation (that concerns soiling by blood and body fluids) is based on an Irish document graded AGREE II 'Recommend with modifications' which advised that linen soiled with body fluids be treated as 'contaminated' and treated as infectious linen.[20] This definition is preferred over the one provided by HTM 01-04 because of its consistency with the current Scottish guidance[22] and the benefit-harm assessment as it simplifies practice. R3.2 This recommendation is based on a Scottish Government document graded as 'mandatory'. Hence, this document is deemed sufficient to form a recommendation, and no additional expert input is required.[16] GPP3.5 The expert opinion of ARHAI Scotland and its stakeholders supports the definition of heat-labile linen provided by two expert opinion guidance documents. [4, 22] GPP3.6 It is the expert opinion of ARHAI Scotland and its stakeholders that shared heat-labile linen should not be used in health and social care settings. This is based on their inability to withstand standard thermal decontamination procedures

3.10 Value judgements

Summarise value judgements used in creating the Recommendation/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/Good Practice Point; if none was intended, state "none". Recommendations/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/harms, or interpretation of evidence; legal considerations; economic reasons; ethical/ religious reasons.

Intentional vagueness
None.

3.12 Exceptions

List situations or circumstances in which the Recommendation/ 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
None.

Research Question 4: What is the available evidence on products or methods for effective laundering of linen?

Part 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
In total, 17 pieces of evidence were identified for this research question. Fourteen (14) of these were added for this update[1, 2, 17, 18, 21, 23-31] while three were carried over from the previous version of this review.[4, 22, 32] One guidance document graded AGREE: 'Recommend with modifications' was included. Although this guideline was based on a systematic review, the link between evidence and recommendation was not always clear.[29] There were three experimental studies graded SIGN50 Level 3, included for this question.[23, 24, 32] The differences in experimental parameters make it difficult to assess the degree of consistency within the primary studies. Such differences include the organisms (or indicator organisms) involved, machine type, and disinfecting agent(s) used. Thirteen guidance documents were graded SIGN50 Level 4 expert opinion. [1, 2, 4, 17, 18, 21, 22, 25-28, 30, 31] A potential risk of bias exists with this class of evidence because of a	13 x SIGN50 Level 4 3 x SIGN50 Level 3 1 x SIGN50 AGREE Recommend with modifications.

Comments	Evidence level
lack of supporting evidence and the unclear methodology with which these documents are formulated.	

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
The differences in experimental parameters make it difficult to assess the degree of consistency within the primary studies. Such differences include the organisms (or indicator organisms) involved, machine type, disinfecting agent(s) used etc. **Product** Two primary studies (SIGN50 Level 3) investigated the effectiveness of disinfecting agents for linen decontamination. The agents were, ECE non-phosphate reference A detergent,[24] sodium hypochlorite (NaOCl).[32] Both studies are consistent in their conclusions that including these agents in the wash process provides better decontamination than when they are not, however, only one study demonstrated statistically significant results.[32] **Temperature** Generally, most guidance documents recommend wash cycles that include a disinfection phase with temperatures at or above 71°C for laundering linen.[1, 4, 18, 22, 25, 26, 28] However, there is no consistency for the minimum duration for which this temperature is to be maintained or the need for detergent (chemical or chemo-thermal disinfection). Guidance documents from the UK[22, 26, 28] prescribe maintaining at 71°C for not less than three minutes (without detergent), or a chemical disinfection process with equal or higher disinfection efficacy while guidance from the US and elsewhere recommends 25 minutes or more with detergent.[1, 18, 25]

Comments
Guidance documents from the UK[4, 26] and Ireland[28, 29] also recommend an alternative disinfection phase temperature of 65°C for 10 minutes or more without detergent, while a guidance document from the WHO recommends washing temperatures between 60-90°C with detergent for COVID-19 or 70-80°C in healthcare facilities.[17] A UK guidance published by the Department of Health notes that low levels of contamination of linen by *C. difficile* spores may still be present regardless of the process or machine used. It, therefore, advises that single-use linen products may be considered in cases where highly immunocompromised or patients are involved.[5] The guidance documents were generally consistent on the need for proper concentrations of disinfecting agents to be added when linen is laundered at low temperatures.[1, 4, 18, 25, 29, 30] Agents recommended include sodium hypochlorite,[18] hydrogen peroxide,[18] and chlorine solution.[29, 30] Four SIGN50 level 4 expert opinion guidance documents were consistent in advising that infectious or heavily soiled items can be washed in the same way as used linen but with an extra pre-wash or sluice cycle.[2, 4, 21, 29]

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/research were conducted or applies are listed below: • UK (n=8)[2, 4, 21, 22, 24, 26, 31, 32] • International (n=3)[17, 18, 30] • European Union[27] • Ireland (n=2) [28, 29] • USA (n=3)[1, 23, 25]

Comments
Guidance published by the European Centre for Disease Prevention and Control (ECDC) is directly applicable to Scottish health and care settings as they apply to the European Union (EU)/European Economic Area (EEA). Three expert opinion documents, including two published by the WHO,[17, 30] and one by the International Federation of Infection Control (IFIC)[18] apply globally. These apply to a lesser degree to Scottish health and care settings and can therefore be adapted. Guidance documents published in Ireland[28, 29] and the USA[1, 25] are specific to health and social care settings within these countries. However, their recommendations are generally applicable to Scottish health and social care settings. Three experimental studies were published in the UK,[24, 32] and the USA.[23] All three of these studies were carried out using artificial inoculation of organisms and are generally applicable to Scottish health and care 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/group of interest? Generalisability is only relevant to primary research studies.

Comments
As all the primary research studies were experimental, there is limited generalisability outside the controlled settings within which they were conducted. [23, 24, 32] Artificial inoculation limits the number of organisms tested and hence does not represent the many clinically significant organisms which can be encountered in the healthcare environment. Artificial inoculation may also overestimate or underestimate the amount of contamination that occurs in real-life settings. 5x5cm swatches in the experiments may also not be generalisable to what is obtained when whole linen items with seams are laundered.

Comments
Another important consideration with these experimental studies is how 'clean' is defined or what constitutes adequate decontamination. This is important because linen items are generally not expected to be sterile except in certain specialist situations. As a result, whilst an experimental process may show a significant reduction in post-wash cfu/cm^3 compared to prewash, such reduction may be clinically insignificant and vice versa. There were also general issues concerning the limited number of experiments conducted (generally between 2-3 times) which may make these studies less reliable.

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
There is a risk of publication bias with the primary studies as studies that show no significant difference with different laundering processes may not have been published.

Part B: Evidence to Decision

4.6 Recommendation(s)

What Recommendation(s) or Good Practice Point(s) 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
GPP4.1 The washing process should have a disinfection phase in which the load temperature is maintained at 65ºC for at least 10 minutes or at 71ºC for 3 minutes or more (thermal disinfection).	Good practice point
R4.1 Heavily soiled items should be processed with an extra pre-wash or sluice cycle.	Recommendation
R4.2 Adequate concentrations of disinfecting agents (according to manufacturer's instructions) should be added when linen is laundered at low temperatures (chemothermal/chemical disinfection).	Recommendation

4.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation/Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond IPC.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation/Good Practice Point were followed correctly. Be explicit, clear about pros.

Benefits
GPP4.1 Using a wash process with these specific disinfection phases assures disinfection of linen and reduces the risk of suboptimal disinfection.

Benefits
R4.1 An extra pre-wash or sluice cycle reduces the risk of suboptimal disinfection due to heavy soiling. R4.2 Using an adequate concentration of disinfecting agent ensures that linen disinfection is achieved despite lower disinfection temperature and is especially important for heat-labile linen.

Risks and Harms

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

Risks/Harms
GPP4.1, R4.1, R4.2 There is a risk that some infectious agents may survive these processes, especially spore-forming organisms.

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/visitor perspective, the societal perspective, or both. Recommendations/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, R4.1, R4.2 It is anticipated that the benefits will outweigh the harms if implemented appropriately.

4.8 Feasibility

Is the Recommendation/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 etc., that

may be associated with following a Recommendation/Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
GPP4.1 Monitoring whether machines can reach and maintain the needed temperatures will require significant financial and human resources. R4.2 There may be a requirement to source suitable disinfectants which work at low temperatures without damaging the heat-labile items.

4.9 Expert Opinion

Summarise the expert opinion used in creating the Recommendation/ 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
GPP4.1 The expert opinion of ARHAI Scotland and its stakeholders supports three expert opinion guidance documents including HTM 01-04, [22, 26, 28] that linen wash cycles should have a disinfection phase of 71°C maintained for at least three minutes or 65°C maintained for at least 10 minutes. R4.1 The expert opinion of ARHAI Scotland and its stakeholders supports four pieces of evidence including HTM 01-04 and a document graded AGREE II ‘Recommend with modifications’ on the need for an extra pre-wash or sluice cycle for heavily soiled linen items. [2, 4, 21, 29] Although the AGREE II document[29] is specific for managing patients with *C. difficile*, this provision has been graded as a recommendation because of the consistency with five accompanying Level 4 documents and the clear benefits associated with this recommendation. R4.2 The expert opinion of ARHAI Scotland and its stakeholders supports six pieces of evidence including HTM 01-04 and a document graded AGREE II ‘Recommend with modifications’ on the need for the use of adequate concentration

of disinfectants for low-temperature wash.[1, 4, 18, 25, 29, 30] Although the AGREE II document is specific for management of patients with *C. difficile*, this provision has been graded as a recommendation because of the consistency with the five accompanying level 4 documents and the benefits associated with this recommendation.

4.10 Value judgements

Summarise value judgements used in creating the Recommendation/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/Good Practice Point; if none was intended, state “none”. Recommendations/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/harms, or interpretation of evidence; legal considerations; economic reasons; ethical/religious reasons.

Intentional vagueness
R4.1 The appropriate concentration of the disinfecting agents has not been specified as this will depend on the agent used and the instructions provided by that manufacturer.

4.12 Exceptions

List situations or circumstances in which the Recommendation/ 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
GPP4.1 Further research is needed to understand the effect of the amount of freshwater used in the wash process on the disinfection effectiveness. GPP4.1 Higher quality research is needed to understand the effectiveness of temperature and time in thermal disinfection.

Research Question 5: How should beds be stripped/made to minimise risk of infection?

Part 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
Seven pieces of evidence were identified for this question, all of which have been added for this update.[4, 19, 26, 33-36] One guidance document graded AGREE: 'Recommend with modifications' published by the World Health Organization was included. Although this guideline was based on a systematic review, no inclusion or exclusion criteria were provided and the criteria for selecting the evidence was generally unclear.[35] There were six SIGN50 Level 4 expert opinion guidance documents. [4, 19, 26, 33, 34, 36] There is a potential risk of bias as there is often a lack of supporting evidence and the methodology with which these guidance documents are formulated is also unclear. No primary studies were included for this research question.	1 x SIGN50 AGREE Recommend 6 x SIGN50 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
Personal protective equipment Three of the seven SIGN50 Level 4 documents were specific to care homes.[19, 26, 36] Four documents recommend some use of PPE.[19, 26, 33, 36] One published in the UK provides general infection prevention and control guidance. It recommends the use of disposable aprons when making a bed.[26] An Irish guidance document focused on COVID-19 noted that gloves are not required when making a bed with clean linen.[19] **Process of bedmaking** No evidence was found for the process of making beds. **Process of bed-stripping** Two UK guidance documents, [4, 26] two from the Republic of Ireland,[19, 34] and one from Canada[33] touch on this point and provide consistent recommendations. All five documents recommend careful removal of linen from the service user's bed and placed in a container appropriate for the segregation category (not the floor) without unnecessary shaking which may lead to an increased dispersal of particles that may contain infectious agents.[4, 19, 26, 33, 34] One of the documents recommended that heavily soiled linen be rolled or folded such that the heaviest soil is contained in the centre of the bundle. [33] **Hand hygiene** Four pieces of evidence including a WHO guidance document graded 'AGREE Recommend with modifications' recommend hand hygiene after completion of the bedmaking process. [19, 26, 35, 36]

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 documents apply are as follows: • UK (n=2)[4, 26] • International[35] • Republic of Ireland (n=2)[19, 34] • Canada[33] • United States of America[36] One of the documents[26] published in the UK was graded SIGN50 Level 4 and specific for care settings while the other[4] applies to both health and care settings. One document published by the World Health Organization applies internationally and is specific to health and care settings.[35] The other documents, all SIGN50 Level 4 expert opinions are specific to care settings in the countries where they were published but their provisions generally apply to Scottish health and care settings.[19, 33, 36]

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/group of interest? Generalisability is only relevant to primary research studies.

Comments
No primary studies were found concerning this research question therefore issues such as sample size are not relevant.

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
No concern about publication bias as no primary studies were included.

Part B: Evidence to Decision

5.6 Recommendation(s)

What Recommendation(s) or Good Practice Point(s) 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 Appropriate PPE should be worn when removing bed linen: • Infectious linen (soiled with blood or body fluids): single-use disposable non-sterile gloves and	Good practice point

Recommendation	Grading
single-use disposable aprons (and masks when there is a risk of splashing or spraying) • Unsoiled infectious linen: single-use disposable aprons (other items of PPE may be used depending on risk assessment) • Used linen: single-use disposable aprons (other items of PPE may be used depending on risk assessment)	
GPP5.2 Gross soiling (e.g. lump of faeces) should be removed before bed linen removal.	Good practice point
GPP5.3 Bed linen should be removed carefully from beds so that the heaviest soil is contained in the centre of the bundle, and unnecessary shaking is avoided to prevent the dispersal of particles.	Good Practice Point
R5.1 Hand hygiene should be performed as per NIPCM after changing bed linen.	Recommendation
There was no evidence on the process of bed making hence no recommendation or good practice point can be made.	No recommendation

5.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation/Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond IPC.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation/Good Practice Point were followed correctly. Be explicit, clear about pros.

Benefits
GPP5.1 The use of appropriate PPE when changing bed linen offers protection to staff. GPP5.2 Removal of gross soiling will reduce the likelihood of environmental contamination in the process of bagging contaminated bed linen, and also during laundering. GPP5.3 Careful removal of bed linen reduces the risk of environmental contamination by preventing dispersal of particles and preventing soiling from falling off the bundle. R5.1 Hand hygiene after changing bed linen reduces the risk of infection for staff and is considered an important practice in reducing transmission of infectious agents which cause diseases.

Risks and Harms

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

Risks/Harms
None

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/ visitor perspective, the societal perspective, or both. Recommendations/ Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
R1, GPP5.1, 5.2, 5.3: Only benefits identified.

5.8 Feasibility

Is the Recommendation/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 etc., that may be associated with following a Recommendation/Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
GPP5.3 The careful removal of bed linen may require increased time resource.

5.9 Expert Opinion

Summarise the expert opinion used in creating the Recommendation/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 The expert opinion of ARHAI Scotland and its stakeholders supports four expert opinion guidance documents on the need for PPE when changing bed linen.[19, 26, 33, 36] GPP5.2 The expert opinion of ARHAI Scotland and its stakeholders supports an expert opinion guidance document which recommends that large amounts of solid soil be removed with a gloved hand using toilet tissue into a bedpan or toilet before beds are stripped.[33] GPP5.3 The expert opinion of ARHAI Scotland and its stakeholders supports five expert opinion guidance documents including HTM 01-04[4, 19, 26, 33, 34] on the need for careful removal of bed linen and that efforts be made to prevent the dispersal of infectious agents during bed stripping. The provision on folding or rolling bed linen comes from three expert opinion guidance documents[18, 33, 37] including one from Canada which specifies that the area of greatest soil be in the middle.[33] However,

the terms ‘fold’ or ‘rolled’ have not been included in the good practice point because anecdotal evidence suggests that when linen is folded or rolled tightly, they are not properly unfurled in the wash process and can result in inadequate decontamination.

R5.1 The requirement for hand hygiene is based on four pieces of evidence[19, 26, 35, 36] including a WHO document graded AGREE II ‘Recommend with modifications’ [35] and is supported by the expert opinion of ARHAI Scotland and its stakeholders. Changing bed linen is also an example of moment 5 of the WHO 5 Moments, and as recommended within the NIPCM Hand Hygiene Indication literature review, “Hand hygiene should be carried out using liquid soap and water or an alcohol-based hand rub (if hands are not visibly soiled) following contact with the patient’s immediate surroundings.”

5.10 Value judgements

Summarise value judgements used in creating the Recommendation/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/Good Practice Point; if none was intended, state “none”. Recommendations/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/harms, or interpretation of evidence; legal considerations; economic reasons; ethical/ religious reasons.

Intentional vagueness
None.

5.12 Exceptions

List situations or circumstances in which the Recommendation/ 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.

Research Question 6: How should clean linen be handled?

Part A: Quality of evidence

6.1 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
Three pieces of evidence were included for this research question, [3, 4, 22] one of which was carried over from the previous version of this review.[22] All three were graded SIGN 50 Level 4.[3, 4, 22] There is a potential risk of bias as there is often a lack of supporting evidence and the methodology with which these guidance documents are formulated is also unclear. No primary studies were included.	3 x SIGN50 Level 4

6.2 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
Two documents agree on the need for hand hygiene before handling clean linen. [4, 22] Another document also noted that gloves used to handle used linen should never be brought in contact with clean linen.[3]

6.3 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
Two of the three documents were published in the UK, including one in Scotland.[22] The third, although specific to healthcare laundry settings in the United States, has recommendations generally applicable to Scottish health and care settings.[3]

6.4 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/group of interest? Generalisability is only relevant to primary research studies.

Comments
No primary studies were found concerning this research question therefore issues such as sample size or methods of sample selection are irrelevant.

6.5 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 concern about publication bias as no primary studies were included.

Part B: Evidence to Decision

6.6 Recommendation(s)

What Recommendation(s) or Good Practice Point(s) 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
GPP6.1 Hand hygiene should be performed as per NIPCM before handling clean linen.	Good practice point

6.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation/Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond IPC.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation/Good Practice Point were followed correctly. Be explicit, clear about pros.

Benefits
GPP6.1 Performing hand hygiene before handling clean linen will reduce the risk of the linen becoming contaminated during handling.

Risks and Harms

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

Risks/Harms
None 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/visitor perspective, the societal perspective, or both. Recommendations/ Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
GPP6.1 Only benefits identified.

6.8 Feasibility

Is the Recommendation/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 etc., that may be associated with following a Recommendation/Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
None.

6.9 Expert Opinion

Summarise the expert opinion used in creating the Recommendation/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
GPP6.1 The expert opinion of ARHAI Scotland and its stakeholders supports two expert opinion guidance documents which recommend hand hygiene before handling clean linen.[4, 22]

6.10 Value judgements

Summarise value judgements used in creating the Recommendation/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.

6.11 Intentional vagueness

State reasons for any intentional vagueness in the Recommendation/Good Practice Point; if none was intended, state “none”. Recommendations/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/harms, or interpretation of evidence; legal considerations; economic reasons; ethical/religious reasons.

Intentional vagueness
None.

6.12 Exceptions

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

Exceptions
None.

6.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
None.

Research Question 7: How should clean linen be stored?

Part A: Quality of evidence

7.1 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 sixteen pieces of evidence were included for this research question. Thirteen of these were added in this update[2, 3, 18, 20, 21, 26, 37-43] while three were carried over from the last version of this review.[1, 4, 22]	2 x AGREE 'Recommend with modifications'. 1 x SIGN50 Level 3

Comments	Evidence level
Two guidance documents were graded AGREE 'Recommend with modifications'.[20, 42] One was an Irish guidance document on Methicillin-Resistant *Staphylococcus aureus* (MRSA).[20, 42] Although based on a systematic review, the link between evidence and recommendations was not always clear. The other was a guideline on preventing and controlling norovirus gastroenteritis outbreaks in healthcare settings by the Centres for Disease Control and Prevention.[42] A key limitation of this document was that the method used for formulating recommendations was not clearly stated. An outbreak study graded SIGN50 Level 3 was also included.[40] There were 13 SIGN50 Level 4 expert opinion guidance documents [1-4, 18, 21, 22, 26, 37-39, 41, 43] There is a potential risk of bias as there is often a lack of supporting evidence and the methodology with which these guidance documents are formulated are also unclear.	13 x SIGN50 Level 4

7.2 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
Storage location Fourteen pieces of evidence provide recommendations on where clean linen should be stored. There is consistency across this evidence base that clean linen should be stored in a dedicated clean and dry area/space or bay.[2-4, 20, 21, 26, 37-39, 41] Three documents recommend that this area be separated from areas where other

Comments

categories of linen are stored and away from patient rooms.[22, 37, 38] Two documents recommend that linen be stored in cupboards with doors that can be closed or rooms with shelves that can be cleaned.[18, 21]

There is consistency within the evidence base that clean linen should be stored above floor level.[2, 4, 26, 43] Two documents also specify that clean linen be stored away from water, and sunlight, and in places that allow free air movement.[4] One document recommends an alcohol-based hand rub dispenser near the bay or space where clean linen is stored.[39]

Temperature and air changes

While many guidance documents used vague terms such as 'cool' or 'allows free air movement', only one guidance document – an American guideline on laundering scrub attire published by the Association of Surgical Technologists – specifies a temperature at which clean linen should be held (20–25°C).[43]

Another American guidance document was also the only one to provide a specification for air changes in linen storage rooms in 'nursing facilities' – a minimum of two per hour.[1] However, the evidence for this specification is unclear.

Bagging or covering

Three SIGN50 Level 4 documents recommend protecting linen items from environmental contamination by covering them with impervious protective materials, especially when they are not stored in cupboards.[22, 37, 39] Two of these also provide guidance for wrapping linen in protective dust covers before storing it on clean shelves at the facility.[37, 39] However, a SIGN50 Level 3 outbreak study found that storing linen in airtight plastic bags promoted the growth of *Bacillus cereus* spores in an outbreak in Singapore. [40]

Return after excursion

Two guidance documents provide recommendations on returning unused clean linen from patient rooms back to the linen store.[37, 42] An American document on the prevention and control of norovirus graded AGREE 'recommend with modifications', recommends laundering all unused linens from the rooms of patients in isolation after they are discharged or transferred.[42] An Australian

Comments
SIGN50 Level 4 document goes even further to state that clean linen taken out for bedmaking rounds, should not be returned to clean linen storage even if unused.[37] **Stock rotation** Three SIGN50 Level 4 documents[4, 37, 39] including one from the UK,[4] recommend that linen be stored in a manner that allows rotation of stock. **Cleaning** Two guidance documents were consistent on the need for clean linen storage areas to be easily cleanable with agreed cleaning schedules.[4, 43]

7.3 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 as follows: • UK (n=6)[2, 4, 21, 22, 26, 41] • International[18] • Australia (n=3)[37-39] • Ireland[20] • United States of America (n=4)[1, 3, 42, 43] All the documents published in the UK were graded SIGN50 Level 4. Four of these apply to care settings only,[2, 21, 26] while the others[4, 22, 41] including one published in Scotland[22] apply more generally to health and care settings. One document published by the International Federation of Infection Control applies internationally to health and care settings.[18] The other documents apply to the settings in which they are published but their provisions generally apply to Scottish health and care settings. [1, 3, 20, 37-39, 42, 43]

7.4 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/group of interest? Generalisability is only relevant to primary research studies.

Comments
Key limitations of the SIGN50 Level 3 outbreak study[40] include the following: • The temperature and relative humidity inside the bags were not measured – making it difficult to apply to settings in Scotland with a colder climate than Singapore. • The findings might not apply to bed linen as only towels were included in this investigation.

7.5 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 are no concerns about publication bias as no primary studies were included.

Part B: Evidence to Decision

7.6 Recommendation(s)

What Recommendation(s) or Good Practice Point(s) 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
GPP7.1 Clean linen should be stored in a dedicated clean, dry area or a dedicated bay, separate from used or infectious linen.	Good practice point
GPP7.2 The clean linen storage facility (including cupboards, trolleys, pods or similar systems) should be such that linen is protected from dust, vermin, moisture, and unintended or unnecessary handling.	Good practice point
GPP7.3 Clean linen should be stored above floor level, away from water and direct sunlight and in a way that allows free air movement.	Good practice point
GPP7.4 Clean linen should be stored in a way that allows rotation of stock.	Good practice point
GPP7.5 Clean linen storage areas and/or systems should be easily cleanable and have a regular cleaning schedule.	Good practice point
GPP7.6 Hand hygiene facilities should be provided near the bay or space where clean linen is stored.	Good practice point
GPP7.7 Only the appropriate quantity of clean linen required should be taken out for bedmaking rounds. Once taken out on such rounds, they should not be returned to clean linen storage (including sleep-knit storage trolleys or similar systems).	Good practice point

7.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation/Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond IPC.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation/Good Practice Point were followed correctly. Be explicit, clear about pros.

Benefits
GPP7.1 Storing linen in a clean separate area, will ensure that opportunities for cross-contamination are minimised. GPP7.2 Providing a clean storage area and/or system protected from dust and other elements will help to ensure that linen remains clean until deployed for use. GPP7.3 Storing linen above floor level ensures that it is protected from spills on the floor and allows the area to be properly cleaned. GPP7.4 Storing linen in a way that allows stock rotation ensures that no linen is held in storage for too long – a situation which could compromise the quality of linen. Stock rotation also helps to ensure that linen items have an extended life span by preventing a situation where a set of linen is repeatedly used, processed, and hence undergoes wear and tear whilst another set is left unused in storage. GPP7.5 Regular cleaning of storage areas or systems reduces the risk of linen contamination during storage. GPP7.6 Hand hygiene facilities near the linen storage area will function as both a reminder for hand hygiene and a means to achieve it. GPP7.7 Not returning linen taken out on rounds, will ensure that linen items contaminated by handling or exposure to infectious agents in wards or service user rooms are not brought back into contact with other clean linen. Note that

Benefits
sleep-knit trolleys and similar systems are considered intermediate clean linen storage. Hence linen taken out of trolleys should not be put back in.

Risks and Harms

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

Risks/Harms
GPP7.1 In some settings some items of linen may pose a ligature risk, this should be considered when allocating linen storage and access.

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/visitor perspective, the societal perspective, or both. Recommendations/Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
GPP7.1 If properly implemented, with a designated bay/facility inaccessible to unauthorised persons, the benefits will outweigh the harms. Only benefits were identified for all good practice points.

7.8 Feasibility

Is the Recommendation/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 etc., that may be associated with following a Recommendation/Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
GPP7.2 Implementing a system that protects linen from dust, vermin, moisture and unnecessary/unintended handling may require significant resources. GPP7.2 There will be human resource requirements to clean linen storage areas regularly. GPP7.6 The provision of hand hygiene facilities near linen storage areas may require financial and material resources, where they do not already exist. GPP7.7 Some staff training is needed to ensure that only the required amount of linen is taken out for rounds. Note that sleep-knit trolleys and similar systems are considered intermediate clean linen storage. Hence linen taken out of trolleys should not be put back in.

7.9 Expert Opinion

Summarise the expert opinion used in creating the Recommendation/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
GPP7.1 The expert opinion of ARHAI Scotland and its stakeholders supports ten pieces of evidence.[2-4, 20, 21, 26, 37-39, 41] including an Irish MRSA-specific document[20] graded AGREE II ‘Recommend with modifications’. The document graded AGREE II ‘Recommend with modifications’ recommends that clean linen items be stored separately in a clean area. However, this was rendered as a good practice point because the document was considered too narrow in scope to make a recommendation. GPP7.2 The expert opinion of ARHAI Scotland and its stakeholders supports three expert opinion guidance documents which recommend covering linen items with protective materials to protect them from environmental contamination.[22, 37, 39]

Expert opinion

GPP7.3 The expert opinion of ARHAI Scotland and its stakeholders supports four expert opinion guidance documents[2, 4, 26, 43] including HTM 01-04[4] which indicates that clean linen be stored above floor level, away from water, and sunlight, and in areas that allow free air movement.

GPP7.4 The expert opinion of ARHAI Scotland and its stakeholders supports three expert opinion guidance documents[4, 37, 39] including HTM 01-04[4] which recommends that linen storage be done in a manner that allows stock rotation.

GPP7.5 The expert opinion of ARHAI Scotland and its stakeholders supports two expert opinion guidance documents[4, 43] including HTM-01-04[4] on the need for linen storage areas to be on a regular cleaning schedule and be easily cleanable.

GPP7.7 This GPP is based on two pieces of evidence, [37, 42] including a guideline graded AGREE II 'Recommend with modifications', which was specific for norovirus.[42] This evidence was considered insufficient to support the development of a recommendation. The language used in the good practice point leaves the final decision on how this should be implemented locally depending on the health and care setting. This is because one of the two documents is specific for patients infected with norovirus.[42] This is supported by the expert opinion of ARHAI Scotland and its stakeholders.

GPP7.6 The expert opinion of ARHAI Scotland and its stakeholders supports the expert opinion guidance document from the Australasian Health Infrastructure Alliance on the need for hand hygiene facilities near the linen storage area.[39]

7.10 Value judgements

Summarise value judgements used in creating the Recommendation/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.

7.11 Intentional vagueness

State reasons for any intentional vagueness in the Recommendation/Good Practice Point; if none was intended, state “none”. Recommendations/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/harms, or interpretation of evidence; legal considerations; economic reasons; ethical/ religious reasons.

Intentional vagueness
GPP7.2 It has not been stated what type of storage system clean linen is stored as there are different types of linen storage for example closed or covered trolley storage and cupboard storage. The choice will depend on a variety of factors within individual facilities. GPP7.3 It has not been specified how high from the ground linen storage shelves are expected to be. This is because of a lack of clear evidence on how much height is sufficient. GPP7.7 This has been advised for operationalising at local level.

7.12 Exceptions

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

Exceptions
None.

7.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
The relationship between linen storage in porous (or airtight bags) and microbial growth (particularly spores) would be a useful research consideration.

Research Question 8: How should clean linen be transported?

Part A: Quality of evidence

8.1 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
Overall, seven pieces of evidence were included for this research question,[3, 4, 18, 22, 37, 43, 44] including one which was carried over from the last version of this review.[22] All seven were graded SIGN50 Level 4. There is a potential risk of bias as there is often a lack of supporting evidence and the methodology with which these guidance documents are formulated is also unclear. No primary studies were included.	7 x SIGN50 Level 4

8.2 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
Covering or bagging All included guidance documents are consistent in their recommendations that clean linen be protected from environmental contamination during transport. [3, 4, 18, 22, 37, 43, 44] Several methods were advised to achieve this protection including the use of trolleys or carts covered with an impervious or fluid-resistant protective covering,[4, 22, 37, 43] sealed containers with lockable doors,[4] linen bags,[18] or simply wrapping the linen.[3] **Separation from used linen** There is clear consistency within the included evidence base that clean linen should not be transported together with used linen or waste in the same lift or vehicle unless they are adequately separated by a suitable physical barrier or sufficient space.[3, 4, 22, 37, 43] **Decontamination of transport vehicles** Four documents recommend daily decontamination, between uses if used to transport used linen and whenever they appear soiled.[3, 4, 22, 43] **Spill kits and hand hygiene** Three guidance documents recommend that drivers have access to alcohol-based or waterless hand hygiene products and spill kits.[3, 22, 43] **PPE** No evidence was found for the use of PPE in the transport of clean linen. However, one document stated that gloves used to handle soiled linen must never be brought into contact with clean linen during the transport process.[3]

8.3 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 as follows: • UK (n=2) [4, 22] • International[18] • Australia[37] • United States of America (n=3) [3, 43, 44] Two guidance documents published in the UK were graded SIGN50 Level 4 and apply to health and care settings.[4, 22] One international document published by the International Federation of Infection Control applies internationally to health and care settings.[18] The other documents, both Level 4 expert opinion are specific to healthcare settings in the countries where they were published but their provisions are generally applicable to Scottish health and care settings.[3, 37, 43, 44]

8.4 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/group of interest? Generalisability is only relevant to primary research studies.

Comments
No primary studies were found for this research question therefore issues such as sample size and sample selection are not relevant.

8.5 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 concern about publication bias as no primary studies were included.

Part B: Evidence to Decision

8.6 Recommendation(s)

What Recommendation(s) or Good Practice Point(s) 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
GPP8.1 Clean linen should be protected from contamination during transportation.	Good practice point
GPP8.2 Clean linen should not be transported together with used or infectious linen unless separated by a suitable physical barrier.	Good practice point

Recommendation	Grading
GPP8.3 Transport vehicles including trolleys and carts used to transport clean linen must be cleaned daily, whenever they appear soiled and between trips if used to transport used or infectious linen.	Good practice point
GPP8.4 Drivers transporting clean linen should have access to hand rubs and spill kits.	Good practice point

8.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation/Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond IPC.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation/Good Practice Point were followed correctly. Be explicit, clear about pros.

Benefits
GPP8.1 Protecting clean linen from environmental contamination during transport assures microbiological quality and cleanliness throughout the transport process. GPP8.2 Separating clean linen from used or infectious, during transportation prevents cross-contamination. GPP8.3 Regular cleaning of transport vehicles reduces the risk of linen contamination during transport. GPP8.4 Providing drivers access to hand rubs and spill kits ensures that drivers can safely handle clean linen during the transport process.

Risks and Harms

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

Risks/Harms
GPP8.1, GPP8.2, GPP8.3, GPP8.4 No harm 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/visitor perspective, the societal perspective, or both. Recommendations/Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
GPP8.1, GPP8.2, GPP8.3, GPP8.4 Only benefits identified.

8.8 Feasibility

Is the Recommendation/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 etc., that may be associated with following a Recommendation/Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
GPP8.3 Considerable human and time resources are required for the decontamination of vehicles between uses. GPP8.4 The provision of hand rubs and spill kits may have financial implications.

8.9 Expert Opinion

Summarise the expert opinion used in creating the Recommendation/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
GPP8.1 The expert opinion of ARHAI Scotland and its stakeholders agree with seven expert opinion guidance documents[3, 4, 18, 22, 37, 43, 44] including HTM 01-04[4] on the need for clean linen to be protected from environmental contamination during transport. Several methods to achieve this were advocated in the evidence including the use of trolleys or carts covered with an impervious or fluid-resistant protective covering,[4, 22, 37, 43] sealed containers with lockable doors,[4] linen bags,[18] or simply wrapping the linen.[3] GPP8.2 In agreement with five expert opinion guidance documents[3, 4, 22, 37, 43] including HTM 01-04[4], it is the expert opinion of ARHAI Scotland and its stakeholders that clean linen should not be transported in the same vehicle as used or infectious linen unless separated by a suitable physical barrier. Although some documents use the term ‘sufficient space’, this GPP uses only the term ‘suitable physical barrier’ because it is unclear how much space is sufficient. GPP8.3 In agreement with four expert opinion guidance documents[3, 4, 22, 43] including HTM 01-04[4], it is the expert opinion of ARHAI Scotland and its stakeholders that vehicles and other items used for clean linen transportation should be decontaminated daily, whenever they appear soiled and between uses if they are used to transport used linen. GPP8.4 The expert opinion of ARHAI Scotland and its stakeholders agrees with three expert opinion guidance documents on the need for drivers of vehicles transporting clean linen to have access to hand-rubs or waterless hand hygiene products and spill kits. [3, 22, 43]

8.10 Value judgements

Summarise value judgements used in creating the Recommendation/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.

8.11 Intentional vagueness

State reasons for any intentional vagueness in the Recommendation/Good Practice Point; if none was intended, state “none”. Recommendations/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/harms, or interpretation of evidence; legal considerations; economic reasons; ethical/ religious reasons.

Intentional vagueness
GPP8.1 No specific method is provided as several ways to protect clean linen from environmental contamination during transport were identified in the evidence base. Hence it has been left to local decisions based on risk assessment and practicability.

8.12 Exceptions

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

Exceptions
None.

8.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
None.

Research Question 9: How should 'used' linen be safely handled?

Part A: Quality of evidence

9.1 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 thirteen pieces of evidence were included for this research question, [2-4, 18, 21, 22, 26, 28, 33, 35, 37, 41, 45] one of which was carried over from the previous version of this review.[22] One guidance document graded AGREE: 'Recommend with modifications' was included. Although this guideline was based on a systematic review, no inclusion or exclusion criteria were provided and the criteria for selecting the evidence was generally unclear.[35] There were 12 SIGN50 Level 4 expert opinion guidance documents included.[2-4, 18, 21, 22, 26, 28, 33, 37, 41, 45] There is a potential risk of bias as there is often a lack of supporting	1 x AGREE 'Recommend with modifications' 12 x SIGN50 Level 4

Comments	Evidence level
evidence and the methodology with which these guidance documents are formulated is also unclear. No primary studies were included.	

9.2 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
Handling There was consistency in the evidence base that used linen should be handled carefully without shaking unnecessarily to prevent the aerosolization of particles that may contain infectious agents.[2, 3, 18, 21, 26, 37, 41] Two UK documents specific to care settings and an Australian document also state that used linen should be held away from the chest to prevent contamination of uniforms and possible injuries from sharps.[2, 26, 37] **Bagging** There is consistency within the evidence identified that used linen be placed directly in the appropriate bags at the points where they are generated (for example patient or resident rooms) and that they should not be placed on the floor or other surfaces.[2, 18, 21, 22, 26, 37, 41] Four documents also state that bags should never be emptied onto the floor for sorting as this presents an avoidable and unnecessary risk.[2, 21, 22, 26] Two documents specify that leak-proof plastic bags must be used for soiled or wet linen.[18, 37]

Comments

Hand Hygiene

There is consistency on the need for hand hygiene after handling used linen.[4, 26, 35, 37] A Scottish guidance document recommends providing hand washing facilities at all entry and exit points of all linen reprocessing areas.[22]

Personal Protective Equipment

Seven documents recommend the use of PPE for handling used linen, particularly plastic aprons and suitable gloves.[3, 4, 21, 22, 26, 28, 45] One Scottish guidance document recommends the use of puncture-resistant gloves by laundry staff to prevent injuries from sharps when decanting and sorting linen but noted that these are not required to be single-use as they should not be used to handle clean linen. It however recommended that the gloves should be washed between use and dried.[22]

Two guidance documents published in the UK also recommend using waterproof plasters to cover cuts and grazes when handling linen.[22]

9.3 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 as follows:

- UK (n=7)[2, 4, 21, 22, 26, 41, 45]
- International (n=2)[18, 35]
- Australia[37]
- Ireland[28]
- Canada[33]
- United States of America[3]

Comments
All the included UK documents apply to either healthcare or care settings or both. [2, 4, 21, 22, 26, 41, 45] Two documents published by the World Health Organization[35] and the International Federation for Infection Control (IFIC) apply internationally and are specific to health and care settings. Four SIGN50 Level 4 expert opinion documents are specific to care settings in the countries where they were published but their provisions are generally applicable to social care settings in Scotland.[3, 28, 33, 37]

9.4 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/group of interest? Generalisability is only relevant to primary research studies.

Comments
There were no primary studies found for this research question therefore issues such as sample size and methods of sample selection are not relevant.

9.5 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 concern about publication bias as no primary studies were included for this research question.

Part B: Evidence to Decision

9.6 Recommendation(s)

What Recommendation(s) or Good Practice Point(s) 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
GPP9.1 Used linen should be handled carefully with minimum agitation.	Good practice point
GPP9.2 Used linen should be placed directly into appropriate bags at the point of use with care taken to check for and remove extraneous items including personal property, loss of which could be distressing for service users and other objects which may cause contamination or injury.	Good practice point
GPP9.3 Used linen should not be placed on the floor or other surfaces within the healthcare environment.	Good practice point
GPP9.4 Single-use disposable plastic aprons should be used when handling used linen (other items of PPE may be used depending on risk assessment).	Good practice point

Recommendation	Grading
GPP9.5 Wet linen, not assessed as not being infectious (not contaminated by blood or body fluids), should be placed in a leak-proof (or clear plastic) bag before they are placed in the linen hamper.	Good practice point
R9.1 Hand hygiene should be performed as per NIPCM after handling used linen.	Recommendation

9.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation/Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond IPC.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation/Good Practice Point were followed correctly. Be explicit, clear about pros.

Benefits
GPP9.1 Careful handling of used linen would prevent the dispersal of particles containing infectious agents which could contaminate the environment. GPP9.2 Bagging linen where it is generated will prevent contamination of the environment. GPP9.2 Ensuring there are no extraneous items within the linen prior to bagging ensures that service user properties (e.g. spectacles) are not lost, preventing considerable distress. Checking linen also ensures that medical devices such as sharps are removed, reducing the risk of injury to staff handling linen. Miscellaneous items can also damage the machines. GPP9.3 Ensuring that linen is not placed on floors and other surfaces will prevent environmental contamination.

Benefits
GPP9.4 PPE use will protect the healthcare worker from contamination. GPP9.5 Placing wet linen in leak-proof or clear plastic bags will prevent moisture from the linen from getting onto other surfaces reducing the risk of environmental contamination. R9.1 Hand hygiene is considered an important practice in reducing the transmission of infectious agents which cause infections.

Risks and Harms

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

Risks/Harms
GPP9.2 Linen bags may be a ligature risk in settings with service users at risk of self-harm if left unattended.

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/visitor perspective, the societal perspective, or both. Recommendations/Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
GPP9.1, GPP9.3, GPP9.4, GPP9.5 and R9.1 Only benefits identified. GPP9.2 The harms may outweigh the benefits, in certain situations involving service users at increased risk of ligature harm.

9.8 Feasibility

Is the Recommendation/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 etc., that may be associated with following a Recommendation/Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
GPP9.5 Provision of leak-proof bags may require financial resources and sustainability considerations. GPP9.5 Training may be required to ensure confidence in distinguishing contaminated from uncontaminated wet linen.

9.9 Expert Opinion

Summarise the expert opinion used in creating the Recommendation/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
GPP9.1 The expert opinion of ARHAI Scotland and its stakeholders supports seven expert opinion guidance documents, [2, 3, 18, 21, 26, 37, 41] including HTM 01-04[2] on the need for used linen to be carefully handled to prevent the dispersal of particles that may contain infectious agents. GPP9.2 The expert opinion of ARHAI Scotland and its stakeholders supports seven expert opinion guidance documents[2, 18, 21, 22, 26, 37, 41] including HTM 01-04,[2] that used linen should be directly and appropriately bagged at the point where it is generated. GPP9.3 The expert opinion of ARHAI Scotland and its stakeholders supports four expert opinion guidance documents[2, 21, 22, 26] including HTM 01-04,[4] that used linen

Expert opinion

should not be placed on the floor or other surfaces as this presents unnecessary and avoidable risks.

GPP9.4 The expert opinion of ARHAI Scotland and its stakeholders supports seven expert opinion guidance documents[3, 4, 21, 22, 26, 28, 45] including HTM 01-04,[4] that recommend the use of plastic aprons and suitable gloves for the handling of used linen.

GPP9.5 The expert opinion of ARHAI Scotland and its stakeholders supports an Australian expert opinion guidance document that wet linen assessed not to be infectious be placed in leak-proof or clear plastic bags.[37]

R9.1 This recommendation is based on four pieces of evidence [4, 26, 35, 37] including a WHO document graded AGREE II 'Recommend with modifications'. [35] The expert opinion of ARHAI Scotland and its stakeholders agrees with their recommendations for hand hygiene after handling used linen. Handling patient linen is also an example of moment 5 of the WHO 5 Moments, and as recommended within the NIPCM Hand Hygiene Indication literature review, "Hand hygiene should be carried out using liquid soap and water or an alcohol-based hand rub (if hands are not visibly soiled) following contact with the patient's immediate surroundings."

9.10 Value judgements

Summarise value judgements used in creating the Recommendation/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.

9.11 Intentional vagueness

State reasons for any intentional vagueness in the Recommendation/Good Practice Point; if none was intended, state “none”. Recommendations/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/harms, or interpretation of evidence; legal considerations; economic reasons; ethical/ religious reasons.

Intentional vagueness
None.

9.12 Exceptions

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

Exceptions
None.

9.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
None.

Research Question 10: How should ‘used’ linen be sorted?

Part A: Quality of evidence

10.1 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 five pieces of evidence were included for this research question,[2-4, 22, 26] one of which was carried over from the previous version of the review.[22] All six were graded SIGN50 Level 4. There is a potential risk of bias as there is often a lack of supporting evidence and the methodology with which these guidance documents are formulated is also unclear. No primary studies were included.	5 x SIGN50 Level 4

10.2 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
Sorting process There is consistency within the evidence identified for this research question, that used linen should be segregated at the point of use and bagged appropriately for

Comments
each category.[2, 4, 22, 26] HTM 01-04 noted that pre-wash sorting of used linen is not considered best practice and presents extra risks.[4] However, there is a recognition that it may be necessary for different reasons including operational or performance purposes.[4] **Personal Protective Equipment** Three guidance documents provide recommendations on PPE to be used when pre-wash sorting of linen is done.[3, 4, 22] They include puncture-resistant gloves and plastic aprons.[4, 22] One guidance document also recommends waterproof coverage of forearms, and use of visors, face -masks or hats, depending on the task.[4]

10.3 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 as follows: • UK (n=4)[2, 4, 22, 26] • United States of America[3] Two of the documents[2, 26] published in the UK were graded SIGN50 Level 4 and specific for care settings while two[4, 22] apply to both health and care settings. The other document, also a SIGN50 Level 4 expert opinion applies to laundry facilities in the USA but some of its provisions apply to health and care settings in Scotland.[3]

10.4 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/group of interest? Generalisability is only relevant to primary research studies.

Comments
There were no primary studies found for this research question therefore issues such as sample size and methods of sample selection are not relevant.

10.5 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 are no concerns about publication bias as no primary studies were included for this question.

Part B: Evidence to Decision

10.6 Recommendation(s)

What Recommendation(s) or Good Practice Point(s) 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
GPP10.1 Linen should be segregated at the point of use (for example at the bedside) and bagged appropriately for each category after removing items including service user personal property and any other items or medical devices.	Good practice point
GPP10.2 Pre-wash sorting should be avoided wherever possible. However, when required, appropriate PPE should be used following risk assessment such as puncture-resistant gloves and single-use disposable plastic aprons.	Good practice point

10.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation/Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond IPC.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation/Good Practice Point were followed correctly. Be explicit, clear about pros.

Benefits
GPP10.1 Segregating and bagging linen appropriately at the point of generation reduces the risk of environmental contamination and enhances the safety of laundry staff by preventing the reopening and sorting at the laundry. GPP10.1 The removal of extraneous items before bagging prevents distress and inconvenience to service users when personal property is inadvertently sent to the laundry amongst bed linen. Checking linen for other items like medical devices also reduces the risk of injury to HCWs, damage to washing machines and loss of equipment.

Benefits
GPP10.2 PPE use protects laundry staff from infection and other hazards in situations where sorting is considered necessary.

Risks and Harms

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

Risks/Harms
None.

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/visitor perspective, the societal perspective, or both. Recommendations/ Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
GPP10.1, GPP10.2, only benefits identified.

10.8 Feasibility

Is the Recommendation/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 etc., that may be associated with following a Recommendation/Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
GPP10.1 There will be resource implications related to staff education and training on correct categorisation and bagging linen at the point of use.

10.9 Expert Opinion

Summarise the expert opinion used in creating the Recommendation/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
GPP10.1 The expert opinion of ARHAI Scotland and its stakeholders supports four expert opinion guidance documents[2, 4, 22, 26] including HTM 01-04,[2, 4] that used linen should be segregated and appropriately bagged at the point where it is generated. GPP10.2 The expert opinion of ARHAI Scotland and its stakeholders agrees with HTM 01-04 that pre-wash sorting should be avoided whenever possible.[4]

10.10 Value judgements

Summarise value judgements used in creating the Recommendation/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.

10.11 Intentional vagueness

State reasons for any intentional vagueness in the Recommendation/Good Practice Point; if none was intended, state “none”. Recommendations/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/harms, or interpretation of evidence; legal considerations; economic reasons; ethical/ religious reasons.

Intentional vagueness
None.

10.12 Exceptions

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

Exceptions
None.

10.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
None.

Research Question 11: How should used linen be labelled?

Part A: Quality of evidence

11.1 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
Only one piece of evidence was identified for this question and was carried over from the last version of this review. A Scottish guidance document which was graded SIGN50 Level 4.[22] As with most Level 4 guidance documents, there is potentially a risk of bias as there is often a lack of supporting evidence and the methodology with which these guidance documents are formulated is also unclear. No primary studies were included.	1 x SIGN50 Level 4

11.2 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
As there was only a single piece of evidence, it is not appropriate to discuss consistency. However, the included guidance document insists that proper

Comments
bagging and labelling are criteria for acceptance of used linen at the laundry. The label must contain the hospital, care area/ward/department and date.[22]

11.3 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 included evidence was published in Scotland and applies to health and care settings.[22]

11.4 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/group of interest? Generalisability is only relevant to primary research studies.

Comments
There were no primary studies found for this research question therefore issues such as sample size and methods of sample selection are not relevant.

11.5 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 are no concerns about publication bias as no primary studies were included for this question.

Part B: Evidence to Decision

11.6 Recommendation(s)

What Recommendation(s) or Good Practice Point(s) 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
GPP11.1 The labelling requirements specified in the National Guidance for safe management of linen in NHSScotland should be followed for labelling used linen and should include information such as hospital, ward/department, and date.	Good Practice Point

11.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation/Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond IPC.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation/Good Practice Point were followed correctly. Be explicit, clear about pros.

Benefits
GPP11.1 Adhering to the labelling requirements specified in the national guidance will align practice to governance requirements and ensure consistency in practice. GPP11.1 Adhering to labelling guidance also allows for investigation in cases or incidents where losses have been reported.

Risks and Harms

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

Risks/Harms
None.

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/visitor perspective, the societal perspective, or both. Recommendations/Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
GPP11.1 Only benefits identified.

11.8 Feasibility

Is the Recommendation/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 etc., that may be associated with following a Recommendation/Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
None.

11.9 Expert Opinion

Summarise the expert opinion used in creating the Recommendation/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
GPP11.1 It is the expert opinion of ARHAI Scotland and its stakeholders that used linen should be labelled according to the specifications provided in national guidance for the safe management of linen in NHSScotland.[22]

11.10 Value judgements

Summarise value judgements used in creating the Recommendation/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.

11.11 Intentional vagueness

State reasons for any intentional vagueness in the Recommendation/Good Practice Point; if none was intended, state “none”. Recommendations/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/harms, or interpretation of evidence; legal considerations; economic reasons; ethical/ religious reasons.

Intentional vagueness
None.

11.12 Exceptions

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

Exceptions
None.

11.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
None.

Research Question 12: How should ‘used’ linen be stored?

Part A: Quality of evidence

12.1 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 eight pieces of evidence were included for this research question, [4, 18, 21, 22, 37, 41, 46, 47] including one from the previous version of this review.[22] One experimental study graded SIGN50 Level 3 was included.[47] A key limitation of this study was the selective reporting of p-values. Seven were guidance documents, all graded SIGN50 Level 4.[4, 18, 21, 22, 37, 41, 46]	7 x SIGN50 Level 4 1 x SIGN50 Level 3

12.2 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
Storage location Five pieces of evidence provide recommendations on the location at which used linen should be stored, including one experimental study. There is consistency on

Comments

the need for a designated area for storing appropriately bagged and labelled 'used' linen awaiting collection or laundering – which may be called a dirty linen room, dirty linen store or dirty area.[4, 18, 22, 41, 47]

Two guidance documents recommend that the dirty linen storage areas have doors that must be kept locked and that access to the area must be restricted.[18, 41]

One UK document stated that in conformity with BS EN 14065, soiled linen areas should be functionally separated from clean linen areas – through the use of a physical barrier, or negative air pressure in the soiled linen area and/or positive airflow from clean through the soiled area with venting directly to the outside environment.[4]

Storage temperature

One experimental study published in Italy demonstrated that the temperatures at which used linen is stored can significantly impact microbial contamination levels after 72 hours.[47]

Storage bags/containers

One Australian guidance document recommends that containers including carts, bins and bags used for the storage of soiled linen should be 'waterproof, leak-proof, non-porous', in good condition and should be able to withstand decontamination.[37]

There was consistency within three documents that storage bags should be securely tied and not be over-filled.[21, 37, 41]

12.3 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 as follows:

- UK (n=4)[4, 21, 22, 41]

Comments
• International[18] • Australia[37] • United States of America[46] One[21] of the documents published in the UK was graded SIGN50 Level 4 and was specific for care settings while the other three applied to either healthcare settings or both[4, 41] including one specific to Scottish health and care settings.[22] One document published by the International Federation for infection control (IFIC) applies internationally and is specific to health and care settings.[18] The other documents, both Level 4 expert opinion are specific to care settings in the countries where they were published but some of their provisions apply to Scottish health and care settings.[37, 46] The experimental study published in Italy may not apply to Scottish settings especially the experiments done at 37°C.[47]

12.4 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/group of interest? Generalisability is only relevant to primary research studies.

Comments
The experimental study did not include any human participants hence factors such as sample size and selection are not relevant. [47]

12.5 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 are no concerns about publication bias for this question.

Part B: Evidence to Decision

12.6 Recommendation(s)

What Recommendation(s) or Good Practice Point(s) 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
GPP12.1 Used linen should be stored in a designated secure area functionally separate from areas where clean linen is stored and inaccessible to the public.	Good practice point
GPP12.2 Bags used to store, or transport used linen should be securely tied and not over three-quarters full.	Good practice point

12.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation/Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond IPC.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation/Good Practice Point were followed correctly. Be explicit, clear about pros.

Benefits
GPP12.1 Storing used linen in an area separate from the clean linen storage area ensures that the latter is not contaminated by used or infectious linen. GPP12.2 Not overfilling bags reduces the risk of the bags breaking and subsequent environmental contamination. It also reduces the risk of injury to staff involved in lifting and transporting bags.

Risks and Harms

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

Risks/Harms
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/visitor perspective, the societal perspective, or both. Recommendations/Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
GP12.1, GP12.2 Only benefits identified.

12.8 Feasibility

Is the Recommendation/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 etc., that may be associated with following a Recommendation/Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
None.

12.9 Expert Opinion

Summarise the expert opinion used in creating the Recommendation/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
GPP12.1 The expert opinion of ARHAI Scotland and its stakeholders supports four expert opinion guidance documents[4, 18, 22, 41] including HTM 01-04,[4] that used linen should be stored in a designated area separate from clean linen. GPP12.2 The expert opinion of ARHAI Scotland and its stakeholders supports three expert opinion guidance documents[21, 37, 41] that storage bags containing used linen should be securely tied and not over-filled. The fill volume of the bags was not specified in any evidence. GPP12.1 It is the expert opinion of ARHAI Scotland and its stakeholders that bags containing used linen should be no more than three-quarters full.

12.10 Value judgements

Summarise value judgements used in creating the Recommendation/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.

12.11 Intentional vagueness

State reasons for any intentional vagueness in the Recommendation/Good Practice Point; if none was intended, state “none”. Recommendations/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/harms, or interpretation of evidence; legal considerations; economic reasons; ethical/ religious reasons.

Intentional vagueness
None.

12.12 Exceptions

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

Exceptions
None.

12.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
None.

Research Question 13: How should ‘used’ linen be transported?

Part A: Quality of evidence

13.1 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 six pieces of evidence were included for this research question,[3, 4, 18, 22, 37, 47] including one carried over from the last version of this review.[22] One experimental study graded SIGN50 Level 3 was included.[47] A key limitation of this study was the selective reporting of P-values. Five were SIGN50 Level 4 guidance documents.[3, 4, 18, 22, 37] As with most Level 4 guidance documents, there is a potential risk of bias as there is often a lack of supporting evidence and the methodology with which these guidance documents are formulated are also unclear.	5 x SIGN50 Level 4 1 x SIGN50 Level 3

13.2 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
Separation from clean linen There is consistency within the identified body of evidence that used linen should not be transported in the same vehicle as clean linen unless they are appropriately separated.[3, 4, 22, 37] **Transport process and conditions** One experimental study published in Italy showed that when artificially contaminated linen was stored at 22°C or 37°C, there were significant increases in contamination levels after eight hours, compared to refrigerated storage at 4°C where no such increases were observed.[47] A key limitation of this study, however, is the selective use of P-values and the lack of direct statistical comparison of the outcomes between the groups. **Hand hygiene** Two guidance documents, including one specific to Scottish health and care settings, noted that linen transport vehicles (or drivers) should have alcohol-based hand rubs for hand hygiene and spill kits for managing fluid spillages.[3, 22] **Vehicle/container cleanliness and decontamination** Four documents were consistent on the need for vehicles and other containers used in the transportation of linen to be routinely decontaminated.[3, 4, 22, 37]

13.3 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 as follows: • UK (n=2) [4, 22] • International[18] • Australia[37] • Italy[47] • United States of America[3] Both documents were published in the UK,[4, 22] were graded SIGN50 Level 4 and apply to health and care settings including one specific to Scottish health and care settings.[22] One document published by the International Federation for Infection Control (IFIC) applies internationally and is specific to health and care settings.[18] The other documents, both Level 4 expert opinion are specific to healthcare settings in the countries where they were published but some of their provisions apply to Scottish health and care settings.[3, 37] The experimental study published in Italy may not apply to Scottish settings, especially the experiments done at 37°C.[47]

13.4 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/group of interest? Generalisability is only relevant to primary research studies.

Comments
The experimental study did not include any human participants hence factors such as sample size and selection are irrelevant.

13.5 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
Publication bias not considered a concern for this research question.

Part B: Evidence to Decision

13.6 Recommendation(s)

What Recommendation(s) or Good Practice Point(s) 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
GPP13.1 Used linen should not be transported in the same vehicle as clean linen unless separated by a suitable physical barrier.	Good practice point
GPP13.2 Transport vehicles including trolleys and carts used to transport used linen must be cleaned daily,	Good practice point

Recommendation	Grading
whenever they appear soiled and between trips if used to transport ‘clean linen’.	
GPP13.3 Provisions should be made for hand rubs and spill kits for staff involved in the transportation of used linen.	Good practice point

13.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation/Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond IPC.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation/Good Practice Point were followed correctly. Be explicit, clear about pros.

Benefits
GPP13.1 Transporting used linen separately will prevent contamination of clean linen. GPP13.2 Routine decontamination of vehicles will prevent cross-contamination of linen subsequently transported. GPP13.3 Providing those involved in linen transportation access to hand rubs and spill kits will help in managing spills during transports and provide access to hand hygiene.

Risks and Harms

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

Risks/Harms
No harm was 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/ visitor perspective, the societal perspective, or both. Recommendations/ Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
GPP13.1, GPP13.2, GPP13.3 Only benefits identified.

13.8 Feasibility

Is the Recommendation/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 etc., that may be associated with following a Recommendation/Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
GPP13.2 Regular cleaning of vehicles may require significant human resources. GPP13.3 The provision of spill kits and hand rubs will have financial implications.

13.9 Expert Opinion

Summarise the expert opinion used in creating the Recommendation/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
GPP13.1 The expert opinion of ARHAI Scotland and its stakeholders agrees with four expert opinion guidance documents[3, 4, 22, 37] including HTM 01-04[4] that clean linen should not be transported in the same vehicle as used linen unless separated by a suitable physical barrier. Although some documents use the term 'sufficient space', this GPP uses only the term 'suitable physical barrier' because it is unclear how much space is sufficient. GPP13.2 The expert opinion of ARHAI Scotland and its stakeholders agrees with four expert opinion guidance documents[3, 4, 22, 37] including HTM 01-04[4] that vehicles and other items used for transporting clean linen should be decontaminated daily, whenever they appear soiled, and between uses when transporting used linen. GPP13.3 The expert opinion of ARHAI Scotland and its stakeholders agrees with two expert opinion guidance documents on the need for drivers of vehicles transporting used linen to have access to hand rubs or waterless hand hygiene products and spill kits.[3, 22]

13.10 Value judgements

Summarise value judgements used in creating the Recommendation/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.

13.11 Intentional vagueness

State reasons for any intentional vagueness in the Recommendation/Good Practice Point; if none was intended, state "none". Recommendations/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/harms, or interpretation of evidence; legal considerations; economic reasons; ethical/ religious reasons.

Intentional vagueness
None.

13.12 Exceptions

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

Exceptions
None.

13.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
None.

Research Question 14: Is there any specific evidence on the effective laundering of uniforms/scrubs?

Part A: Quality of evidence

14.1 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
Five pieces of evidence were included for this research question, [16, 21, 43, 48, 49] including one carried over from the previous edition of this review.[16] Four pieces of evidence graded SIGN50 Level 4 expert opinion guidance documents were included.[21, 43, 48, 49] As with most Level 4 guidance documents, there is a potential risk of bias as there is often a lack of evidence to underpin their recommendations and the methodology with which these guidance documents are formulated is also unclear. One SIGN50 Mandatory document was also included.[16] No primary studies were included.	4 x SIGN50 Level 4 1 x Mandatory

14.2 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 within the identified evidence published in the UK that uniforms can be laundered at home.[16, 21, 49] However, the two documents identified from the US were either ambivalent[48] or against it.[43] It must be noted that the document against home laundering was specific to surgical settings, however, some of the reasons provided for this position also apply to scrubs or uniforms used in non-surgical settings.[43] **Domestic laundering** Two documents published in the UK recommend that uniforms should be washed at 60°C for 10 minutes or the highest temperature that the fabric can tolerate.[21, 49]

Comments
An American document recommended a hot water wash cycle (ideally with bleach) followed by a drying cycle in a dryer.[48] But, a mandatory Scottish Government document, while endorsing the use of detergent suitable for the wearers' skin type, recommends that bleaches are not added to the wash process or used to make uniforms whiter.[16] **Care for domestic washing machines** One UK guidance document recommends regular cleaning and maintenance of domestic washers and tumble driers to ensure that the efficiency of the machines is protected and that dirty machines do not contaminate subsequent wash loads.[49]

14.3 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 as follows: • UK (n=3) [16, 21, 49] • United States of America (n=2)[43, 48] One of the three documents from the UK is specific to social care settings.[21] One document was mandatory for Scottish healthcare settings.[16] Two expert opinion guidance documents are specific to healthcare settings in the United States but contain provisions applicable to Scottish health and care settings. [43, 48]

14.4 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/group of interest? Generalisability is only relevant to primary research studies.

Comments
Not applicable as no primary studies were included.

14.5 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 are no concerns about publication bias as no primary studies were included for this research question.

Part B: Evidence to Decision

14.6 Recommendation(s)

What Recommendation(s) or Good Practice Point(s) 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
R14.1 Uniforms should be washed at 60°C or the highest temperature that can be tolerated by the fabric.	Recommendation
GPP14.1 Tumble drying and ironing should be carried out according to the uniform care label.	Good practice point
GPP14.2 Laundered uniforms should be taken to work in a clean bag.	Good practice point
GPP14.3 Used uniforms should be taken home in a clean bag (This bag should not be reused for taking clean uniforms to work unless it can and has been laundered).	Good practice point
GPP14.4 Domestic washing machines and tumble driers used for the laundering of uniforms/scrubs should be regularly cleaned and maintained.	Good practice point
R14.2 Uniforms or scrubs that meet the definition of infectious linen must not be taken home for laundering. They must be laundered in the hospital/facility laundry.	Recommendation
R14.3 Bleach should not be added to the wash process or used to whiten uniforms.	Recommendation
R14.4 Detergents suitable for the wearer's skin type should be used in the laundering process.	Recommendation
R14.5 Hand hygiene should be performed as per the NIPCM before handling clean uniforms and after handling used or infectious uniforms.	Recommendation

14.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation/Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond IPC.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation/Good Practice Point were followed correctly. Be explicit, clear about pros.

Benefits
R14.1 Washing at 60°C or higher provides some assurance on decontamination (thermal disinfection). GPP14.1 Tumble drying and ironing can further remove the small number of organisms that may remain after laundering. GPP14.2 Taking clean uniforms to work in a clean bag can reduce the risk of contamination. GPP14.3 Taking used uniforms home in a clean bag can reduce the risk of contamination of the environment. GPP14.4 Regular cleaning and maintenance of laundering machines will ensure optimal efficiency and reduce the risk of uniforms becoming contaminated by unclean machines. R14.2 Laundering infectious uniforms within the hospital/facility reduces the risk of contamination of personnel, household members and the environment. R14.3 Not using bleach in the wash will comply with the mandatory requirements of the Scottish Government's National uniform policy, dress code and laundering policy (DL (2018) 4) as well as reduce risk of degradation of the garment.

Benefits
R14.4 Using suitable detergent will improve uniform cleanliness and appearance while reducing the risk of skin-related adverse events. R14.5 Hand hygiene reduces the risk of clean uniform contamination and reduces the risk of personnel contamination from soiled uniforms.

Risks and Harms

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

Risks/Harms
GPP14.1, GPP14.2, GPP14.3, GPP14.4, GPP14.4, R14.1, R14.2, R14.3, R14.4, R14.5. No harm was 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/ visitor perspective, the societal perspective, or both. Recommendations/ Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
GPP14.1, GPP14.2, GPP14.3, GPP14.4, GPP14.4, R14.1, R14.2, R14.3, R14.4, R14.5. Only benefits were identified.

14.8 Feasibility

Is the Recommendation/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 etc., that

may be associated with following a Recommendation/Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
GPP14.1: Compliance may be an issue due to individual responsibility, as will the ability to monitor it. Implementing GPP14.2 and 14.3 will be resource intensive as it will require a lot of bags within a short time if the bags are not launderable and reusable. This also has implications for sustainability. Compliance may also be an issue. GPP14.4 Regular maintenance of domestic machines may require financial resources. Compliance may also be an issue and a failure to comply may be associated with the risk of inadequate decontamination of uniforms/scrubs. R14.1 Some domestic washing machines may not be able to reach the set temperature. There may also be issues related to higher energy use and operational costs. Compliance may be an issue and a failure to comply may be associated with the risk of inadequate decontamination of uniforms/scrubs. R14.2 To ensure compliance, boards will need to ensure that adequate quantities of replacement uniforms are available so that staff can replace their uniforms in good time if they have to dispose them because they have no access to a healthcare laundry. R14.2 Boards will need to ensure a system in place for staff to send their uniforms to the laundry and have them returned in good time. R14.3 There may be issues with compliance with this recommendation in which case it will also be difficult to enforce.

14.9 Expert Opinion

Summarise the expert opinion used in creating the Recommendation/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
R14.1 This recommendation is based on a Scottish Government Mandatory document (DL (2018)4 [16] hence no further expert input is necessary. It must, however, be stated that the provision of the Scottish Government document was that uniforms be washed at the highest temperature suitable for the fabric as per the care label.[16] GPP14.1 The expert opinion of ARHAI Scotland and its stakeholders supports the provision of an expert opinion guidance document[48] on tumble drying and ironing. It is also supported by a mandatory Scottish Government document which recommended that these be done according to the care label.[16] GPP14.2 and GPP14.3 are based exclusively on the expert opinion of ARHAI Scotland and its stakeholders and is based on the need to avoid contamination of the clean uniforms and prevent contamination of the environment or other surfaces by used uniforms. GPP14.4 The expert opinion of ARHAI Scotland and its stakeholders supports an expert opinion guidance document[49] on the need for regular maintenance of domestic machines and dryers to ensure optimal efficiency and prevent contamination of uniforms during the laundry process. R14.2, R14.3, R14.4, R14.5 These recommendations are informed by a Scottish Government DL (2018) 4 that was graded ‘mandatory. There is no further expert opinion to note.

14.10 Value judgements

Summarise value judgements used in creating the Recommendation/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.

14.11 Intentional vagueness

State reasons for any intentional vagueness in the Recommendation/Good Practice Point; if none was intended, state “none”. Recommendations/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/harms, or interpretation of evidence; legal considerations; economic reasons; ethical/ religious reasons.

Intentional vagueness
GPP14.2 and 14.3 No type of bag has been specified as this is left to individual preferences and practicability.

14.12 Exceptions

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

Exceptions
R14.2 Some healthcare workers may not have access to a hospital/facility laundry for the laundering of infectious uniforms, in which case uniforms may require disposal.

14.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
None.

Research Question 15: Is there any evidence regarding washing used/infectious personal clothing at home?

No applicable evidence was found for this research question.

Part B: Evidence to Decision

15.6 Recommendation(s)

What Recommendation(s) or Good Practice Point(s) 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
GPP15.1 Items of service user clothing laundered at home should be washed at the hottest temperature appropriate to the fabric.	Good practice point
GPP15.2 Service users and their carers should be given laundry advice leaflets when taking home used or infectious linen.	Good practice point

Recommendation	Grading
GPP15.3 If clothing is heavily soiled or infectious, staff may recommend that clothing be washed in the hospital or care home's laundry service if available otherwise the item should be disposed of in the appropriate healthcare waste stream following discussion with the service user or their relative(s).	Good practice point

15.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation/Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond IPC.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation/Good Practice Point were followed correctly. Be explicit, clear about pros.

Benefits
GPP15.1 Laundering service user clothing items at the highest temperature appropriate to the fabric reduces the likelihood of inadequate decontamination. GPP15.2 Giving service user and carers laundry advice leaflets provides some assurance that they will know how to handle and launder the linen items that they have taken home. GPP15.3 Washing (or disposing of) very soiled or infectious service user clothing items in the hospital laundry reduces the risk of contamination of other members of the service user's household and the environment that may occur in handling and transporting the infectious or soiled item.

Risks and Harms

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

Risks/Harms
None 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/ visitor perspective, the societal perspective, or both. Recommendations/ Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
Only benefits identified.

15.8 Feasibility

Is the Recommendation/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 etc., that may be associated with following a Recommendation/Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
GPP15.1 Compliance may be an issue due to individual responsibility and there is a risk of inadequate decontamination if the GPP is not correctly followed. GPP15.2 There may be resource implications to ensure copies of the leaflets are available in other languages when necessary.

15.9 Expert Opinion

Summarise the expert opinion used in creating the Recommendation/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
GPP15.1, GPP15.2 and GPP15.3 are based solely on the expert opinion of ARHAI Scotland and its stakeholders and aim to reduce the risk of contamination of other residents of the service users’ household and the household environment.

15.10 Value judgements

Summarise value judgements used in creating the Recommendation/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.

15.11 Intentional vagueness

State reasons for any intentional vagueness in the Recommendation/Good Practice Point; if none was intended, state “none”. Recommendations/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/harms, or interpretation of evidence; legal considerations; economic reasons; ethical/religious reasons.

Intentional vagueness
None.

15.12 Exceptions

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

Exceptions
None.

15.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
None.

Research Question 16: What is the risk of infection transmission associated with linen in health and care settings?

Part A: Quality of evidence

16.1 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
This research question was added as part of this update to the review. A total of fifteen pieces of evidence were included.[40, 50-63] Fourteen were graded SIGN50 Level 3 – one of these was experimental.[62] Thirteen were outbreak reports.[40, 50-61] Two of these included an extra research dimension in the form of an experiment or a case-control study.[52, 55] A key limitation of this type of evidence is publication bias as not all outbreaks are reported. OneSIGN50 Level 4 expert opinion guidance document was included.[63] As with documents of this kind, there is a potential risk of bias as there is often a lack of supporting evidence and the methodology with which they are formulated is also unclear.	14 x SIGN50 Level 3 1 x SIGN50 Level 4

16.2 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
Associated organisms Several organisms were found to be associated with outbreaks or infections in which linen were implicated. *Bacillus cereus* was the most reported organism within the identified evidence (n=6).[40, 56-60]. Gram-negative organisms reported include *Klebsiella oxytoca*[54] and *Klebsiella pneumoniae*.[55] Fungal organisms were implicated in four reports, including *Candida auris*,[51] *Lichtheimia corymbifera*,[50] and Rhizopus spp. (*R. microsporus, R. arrhizus*).[50, 52, 53] One case of the Mpox virus was also identified where one health worker was infected, the only link with the infected patient being changing bed linen without proper protection. The healthcare assistant had aprons and gloves on as the only PPE items while changing potentially contaminated bedding used by the index case who had developed skin lesions, but before a mpox diagnosis had been considered.[61] **Sources of contamination** In six of the fifteen included studies, the laundry facility was implicated as the cause of the outbreak. Two of these studies (one each from the United States and China) reported poor conditions in the laundry facility on inspection during outbreaks of Mucorales which resulted in recontamination of linen after laundering.[50, 52] A UK study reported that a cloth lanyard attached to a controlled drug locker key was identified as reservoir for *Candida auris* in two adult ICUs and that the outbreak ended when the lanyard and other lanyards were removed.[51] In four studies, all involving *Bacillus cereus*, although processed linen was found to be contaminated, the link between the contamination and the washing machine was not demonstrated. [40, 56, 57, 60] An experimental study published in Japan demonstrated that wiping forearms with bath towels contaminated with *Bacillus cereus* can lead to a transfer of the

Comments

organism onto the forearms which could increase the risk of catheter-related bloodstream infections.[62]

In two studies, one from a rehabilitation facility in the Netherlands[55] and another from a paediatric hospital ward in Germany,[54] domestic washing machines were found to be reservoirs for extended-spectrum beta-lactamase (ESBL)-producing *Klebsiella* spp. leading to contamination of processed laundry.

In an outbreak of Mpox in a UK hospital, bedmaking was noted as the possible transmission link between the index case who had a travel history and the second case – a healthcare assistant.[61]

Interventions for outbreak management

Several linen–specific interventions were implemented for the outbreaks identified for this review with varying degrees of success. However, as the interventions were often bundled, it is impossible to estimate their impact. Generally, most outbreaks reported some form of cleaning or deep cleaning as part of their interventions.[40, 51, 58, 60]

Sterilisation of linen was used in three studies that reported outbreaks caused by *Bacillus cereus*.[40, 58, 60] The stated methods included autoclaving,[40, 60] and gamma irradiation which was also used in a Mucorales outbreak.[50]

The identified evidence for this research question demonstrates that removing *Bacillus cereus* from linen is difficult and that contamination with the organism is positively associated with seasons with higher than average temperatures.[56, 57, 59, 60] Two studies reported success with the use of NaOCl but do not provide sufficient information for meaningful conclusions to be drawn.[40, 57] Another study noted the association between using an increased amount of fresh water in the continuous tunnel washer (CTW) wash process (or switching to a washer extractor) and a reduction in the level of *B. cereus* contamination. However, no sufficient information was provided.[56] This is corroborated by the recommendation of a UK guidance document to increase the dilution during the wash process as a control measure when high *Bacillus cereus* levels are observed.[63]

Comments
In cases where domestic machines were implicated, the outbreak abated when the offending machine was removed from use.[54, 55] An American study reported the successful remediation of an offsite linen processing facility.[50]

16.3 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 evidence apply are as follows: • United Kingdom (n=4)[51, 56, 61, 63] • Japan (n=3)[57, 60, 62] • China (n=2)[52, 59] • United States of America (n=2)[50, 53] • Germany[54] • The Netherlands[55] • Singapore[40] • Taiwan[58] One guidance document published in the UK and applies to Scottish health and care settings was included.

16.4 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/group of interest? Generalisability is only relevant to primary research studies.

Comments
Not relevant as no primary research studies were included.

16.5 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
Some (13 out of the 15) studies included are outbreak investigations so there is a possibility of publication bias as not all outbreaks/infection incidents are published in scientific journals.

Part B: Evidence to Decision

16.6 Recommendation(s)

What Recommendation(s) or Good Practice Point(s) 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
There is some evidence that linen sterilisation may be used as a short-term measure to ensure safe linen provision during infection incidents where linen is identified as a potential source. However, it is	No recommendation

Recommendation	Grading
considered that this measure may not be feasible at this stage in NHSScotland because of the significant financial, human, and logistical resources required.	
GPP16.1: Laundries (including in-house laundering within health and care settings) should adhere to "National Guidance for Safe Management of Linen in NHSScotland Health and Care Environments. For laundry services/distribution. v2.2" to reduce the risk of laundry-related infection incidents.	Good practice point
GPP16.2 Linen should be considered as a potential source in outbreak investigation especially when immunocompromised patients or neonates are involved.	Good practice point

16.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation/Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond IPC.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation/Good Practice Point were followed correctly. Be explicit, clear about pros.

Benefits
GPP16.1 Following the National Guidance for Safe Management of Linen in NHSScotland Health and Care Environments will help laundries to reduce the risk of linen-related infection incidents.

Benefits
GPP16.2 Consideration (and ruling out where necessary) will ensure that linen involvement is not overlooked, and linen-related incidents are identified early and controlled.

Risks and Harms

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

Risks/Harms
None.

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/visitor perspective, the societal perspective, or both. Recommendations/ Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
GPP16.1, GPP16.2: Only benefits identified.

16.8 Feasibility

Is the Recommendation/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 etc., that may be associated with following a Recommendation/Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
None.

16.9 Expert Opinion

Summarise the expert opinion used in creating the Recommendation/ 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
GPP16.1: It is the expert opinion of ARHAI Scotland and its stakeholders that following the provisions of the National Guidance for Safe Management of Linen in NHSScotland Health and Care Environments will help reduce the risk of linen-related incidents. GPP16.2: This good practice point was informed by 13 outbreak studies[40, 50-61] graded SIGN50 Level 3 which showed linen involvement in infection incidents. This is corroborated in HTM 01-04.[63]

16.10 Value judgements

Summarise value judgements used in creating the Recommendation/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.

16.11 Intentional vagueness

State reasons for any intentional vagueness in the Recommendation/Good Practice Point; if none was intended, state “none”. Recommendations/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/harms, or interpretation of evidence; legal considerations; economic reasons; ethical/ religious reasons.

Intentional vagueness
None.

16.12 Exceptions

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

Exceptions
None.

16.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
None.

Research Question 17: How should infectious linen be safely handled?

Part A: Quality of evidence

17.1 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-nine pieces of evidence were identified for this research question,[1, 4, 16, 17, 19-22, 25, 28, 33-35, 42, 44, 64-77] three of which were carried over from the last edition of this review.[1, 22, 44] Four pieces of evidence were graded AGREE 'recommend with modifications'.[20, 35, 42, 76] A document from The Scottish Government was graded 'Mandatory'.[16] There were twenty-four SIGN50 Level 4 expert opinion guidance documents included.[1, 4, 17, 19, 21, 22, 25, 28, 33, 34, 44, 64-75, 77] No primary studies were included.	4 x AGREE 'Recommend with modifications'. 1 x SIGN50 Mandatory 24 x SIGN50 Level 4

17.2 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

Overview of evidence

Of the twenty-nine pieces of evidence included, thirteen provided general IPC recommendations,[1, 4, 16, 17, 21, 22, 25, 28, 33-35, 44, 68] Seven were specific for particular infectious agents namely Methicillin-resistant *Staphylococcus aureus* (MRSA),[20] SARS-CoV-2,[19, 65] *C. difficile* infection,[64] healthcare-associated pneumonia,[66] and norovirus infections.[42, 67] Nine pieces of evidence were focused on high-consequence infectious diseases: severe acute respiratory syndrome (SARS), mpox,[69, 75] Middle Eastern Respiratory Syndrome Coronavirus (MERS-CoV)[70, 71] and viral haemorrhagic fevers including Ebola virus disease.[72-74, 76, 77]

Safe Handling

There is consistency within 11 documents (1 AGREE 'recommend with modifications', 10 SIGN50 level 4) that infectious linen be handled carefully with minimum agitation to prevent contamination of the environment including air and other surfaces.[17, 19, 21, 25, 33, 34, 42, 44, 64, 67, 77] Three documents (one graded 'mandatory, 2 SIGN50 Level 4) advised that infectious linen be bagged as soon as possible and held away from the body during carriage.[16, 44, 71]

PPE

Three documents (SIGN50 Level 4) provide general IPC guidance recommending PPE use for handling infected linen including gloves and aprons.[21, 25, 28]

Hand Hygiene

Five documents (one AGREE 'Recommend with modifications, 5 SIGN50 Level 4) that provide general IPC guidance were consistent in advising hand hygiene after handling infectious linen.[20, 21, 25, 33, 35]

Special Precautions

There is consistency among three guidance documents (all graded SIGN50 Level 4) from the UK, the USA and Canada, that linen used by patients with confirmed EVD, or other VHFs be disposed of as Category A waste instead of being laundered.[72, 74, 77] A UK document on viral haemorrhagic fevers recommended that all reusable linen from patients with confirmed VHF be treated and disposed of as Category A waste. Linen from patients with a high probability of VHF may be

Comments
separated and stored safely pending PCR results. If this is not practicable, they should be treated as Category A waste. If the PCR test is negative, the linen can be treated as Category B.[72]

17.3 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 as follows: • UK (n=7)[4, 16, 21, 22, 68, 71, 72] • Canada (n=6)[33, 64-66, 70, 77] • EU[69] • International (n=4)[17, 35, 75, 76] • Ireland (n=5)[19, 20, 28, 34, 67] • USA (n=6)[1, 25, 42, 44, 73, 74] Five of the seven documents published in the UK were specific to healthcare settings including one published in Scotland.[16, 22, 68, 71, 72] Two[21] were specific for social care settings and one[4] applies to both. The guidance documents produced by internationally recognised associations (WHO and ECDC) are generally relevant to Scottish health and care settings. [17, 35, 69, 75, 76] The other documents, both Level 4 expert opinion documents are specific to settings in the countries where they were published, however, some of their provisions apply to Scottish health and care settings.

17.4 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/group of interest? Generalisability is only relevant to primary research studies.

Comments
There were no primary studies found for this research question therefore issues such as sample size and methods of sample selection are not relevant.

17.5 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 are no concerns about publication bias as no primary studies were included for this question.

Part B: Evidence to Decision

17.6 Recommendation(s)

What Recommendation(s) or Good Practice Point(s) 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
GPP17.1 Infectious linen should be handled as follows: • Linen soiled with blood or body fluids: Single-use disposable non-sterile gloves, single-use disposable plastic aprons and following risk assessment, other appropriate PPE as per NIPCM. • Unsoiled infectious linen: Single-use disposable plastic aprons and, following risk assessment, other appropriate PPE as per NIPCM.	Good practice point
GPP17.2 Infectious linen should be handled carefully with minimum agitation.	Good practice point
GPP17.3 Infectious linen should be appropriately bagged (as described in GPP17.2) immediately at the point of generation and held away from the body during carriage.	Good practice point
GPP17.4 Infectious linen should be placed in red alginate/water-soluble bags that should then be placed in a leakproof bag and then into the red laundry bag or fabric hampers.	Good practice point
GPP17.5 Linen used by patients with confirmed Ebola virus disease or other haemorrhagic fevers should not be returned to the laundry but disposed of as Category A waste and the laundry should be informed.	Good practice point
GPP17.6 Linen from patients with suspected VHF should be separated and stored safely pending PCR results. (If this is not practicable, they should be treated	Good practice point

Recommendation	Grading
as Category A waste.) If the PCR test is negative, the linen should be treated as Category B.	
R17.1 Hand hygiene should be performed as per NIPCM after handling infectious linen.	Recommendation

17.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation/Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond IPC.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation/Good Practice Point were followed correctly. Be explicit, clear about pros.

Benefits
GPP17.1 PPE use protects the healthcare worker from exposure to infectious agents. Risk assessment ensures the correct PPE is used which improves safety and reduces waste. GPP17.2 Handling infectious linen carefully reduces the risk of contamination of the healthcare environment, and healthcare workers and reduces the risk of subsequent transmission to service users. GPP17.3 Holding infectious linen away from the body reduces the risk of contamination of clothes and potential infection of the healthcare worker or potential transmission to others. GPP17.3 Bagging linen at the point of generation reduces the risk of environmental contamination, encourages proper segregation, and reduces the risk of transmission of potentially infectious agents.

Benefits
GPP17.4 Placing linen in red water-soluble bags and red laundry bags alerts the handler that the linen is infectious and allows for the linen to be laundered without sorting. GPP17.5 Disposing of linen used by confirmed EVD patients as waste for incineration reduces the risk of transmission of this very infectious disease of high consequence to staff and other service users. GPP17.6 Segregating linen from suspected VHF patients pending their PCR test and treating them as Category B waste if negative will ensure that safety is maintained whilst reducing the burden of Category A waste disposal. R17.1 Hand hygiene protects against infection and transmission of infectious agents.

Risks and Harms

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

Risks/Harms
GPP17.1, GPP17.2, GPP17.3, GPP17.4, GPP17.5, GPP17.6 R17.1. No harms or risks 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/visitor perspective, the societal perspective, or both. Recommendations/Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
Only benefits identified.

17.8 Feasibility

Is the Recommendation/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 etc., that may be associated with following a Recommendation/Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
GPP17.1 Resources will be required for the provision of PPE and for training staff on how to use them. GPP17.4 There will be financial implications and sustainability issues associated with the use of water-soluble bags. GPP17.5 Disposing of linen used by patients with VHFs will also require significant resources to store and transport these linen items as Category A waste. GPP17.5 Considerable facility space will also be required to safely and securely hold linen from suspected VHF patients (away from those from confirmed cases) pending a confirmatory PCR test.

17.9 Expert Opinion

Summarise the expert opinion used in creating the Recommendation/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
GPP17.1 The expert opinion of ARHAI Scotland and its stakeholders supports the recommendation of three SIGN50 Level 4 expert opinion guidance documents[21, 25, 28] that appropriate PPE be worn for the handling of infectious linen.

Expert opinion

GPP17.2 This good practice point on the need for careful handling of infectious linen is based on 10 pieces of evidence graded SIGN50 Level 4[17, 19, 21, 25, 33, 34, 44, 64, 67, 77] and a norovirus-specific American guideline graded AGREE II 'Recommend with modifications'.[42] The expert opinion of ARHAI Scotland and its stakeholders supports these documents on this provision but this has been rendered as a good practice point because the document graded AGREE II 'Recommend with modifications' was considered too narrow in scope to support a recommendation.

GPP17.3 The expert opinion of ARHAI Scotland and its stakeholders supports two SIGN50 Level 4 expert opinion guidance documents[44, 71] on the need for appropriate bagging of infectious linen at the point of generation and the need for linen to be held away from the body during carriage.

GPP17.4 The expert opinion of ARHAI Scotland and its stakeholders supports three pieces of SIGN50 Level 4 evidence[2, 4, 22] including HTM 01-04, that infectious linen should be placed in alginate or water-soluble bags, which should then be placed in a leakproof bag and then in a red laundry bag or hamper.

GPP17.5 The expert opinion of ARHAI Scotland and its stakeholders supports three SIGN50 Level 4 expert opinion guidance documents[72, 74, 77] in their provision that linen items used by patients with confirmed Ebola virus disease or other viral haemorrhagic fevers should be disposed of as waste instead of laundered for reuse.

GPP17.6 The expert opinion of ARHAI Scotland and its stakeholders supports a SIGN50 Level 4 expert opinion document published in the UK by the Advisory Committee on Dangerous Pathogens on their recommendation that Linen from patients with a high probability of VHF may be separated and stored safely pending PCR results. They also note that the linen can be treated as Category B if the PCR test is negative.[72]

R17.1 This recommendation is based on five pieces of evidence[20, 21, 25, 33, 35] including three SIGN50 Level 4 expert opinion documents and two documents graded AGREE II 'Recommend with modifications'. The expert opinion of ARHAI

Expert opinion
Scotland and its stakeholders agrees with their recommendation on the requirement for hand hygiene after handling infectious linen. Handling patient linen is also an example of moment 5 of the WHO 5 Moments, and as recommended within the NIPCM Hand Hygiene Indication literature review, “Hand hygiene should be carried out using liquid soap and water, or hand rub (if hands are not visibly soiled) following contact with the patient’s immediate surroundings.”

17.10 Value judgements

Summarise value judgements used in creating the Recommendation/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.

17.11 Intentional vagueness

State reasons for any intentional vagueness in the Recommendation/Good Practice Point; if none was intended, state “none”. Recommendations/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/harms, or interpretation of evidence; legal considerations; economic reasons; ethical/ religious reasons.

Intentional vagueness
GPP17.1 The type of PPE required has not been specified as this will depend on the type of infectious agents and local risk assessment. For example, in cases of VHFs, an HCID PPE ensemble will be required.

17.12 Exceptions

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

Exceptions
None.

17.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
None.

Research Question 18: How should infectious linen be sorted?

Part A: Quality of evidence

18.1 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 three pieces of evidence were included for this question, all added for this update. [2, 4, 26] All three were SIGN50 Level 4 expert opinion guidance documents.[2, 4, 26] As with documents of this type, there is a potential risk of bias as there is often a lack of supporting evidence and the methodology with which these guidance documents are formulated is also unclear. No primary studies were included.	3 x SIGN50 Level 4

18.2 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
Pre-wash sorting All three documents are consistent in recommending that pre-wash sorting of infectious linen should be avoided.[2, 4, 26]

18.3 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 three included documents were published in the UK. One of these applies to health and social care settings[4] while the other two are specific to social care settings.[2, 26]

18.4 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/group of interest? Generalisability is only relevant to primary research studies.

Comments
There were no primary studies found for this research question therefore issues such as sample size and methods of sample selection are not relevant.

18.5 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 are no concerns about publication bias as no primary studies were included for this question.

Part B: Evidence to Decision

18.6 Recommendation(s)

What Recommendation(s) or Good Practice Point(s) 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
GPP18.1 Sorting of bagged infectious linen should be avoided.	Good practice point

18.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation/Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond IPC.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation/Good Practice Point were followed correctly. Be explicit, clear about pros.

Benefits
GPP17.1 Avoiding pre-wash sorting of infectious reduces the risk of infection for staff (including laundry staff) and contamination of the environment.

Risks and Harms

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

Risks/Harms
None.

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/visitor perspective, the societal perspective, or both. Recommendations/Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
GPP17.1 Only benefits identified.

18.8 Feasibility

Is the Recommendation/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 etc., that may be associated with following a Recommendation/Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
None.

18.9 Expert Opinion

Summarise the expert opinion used in creating the Recommendation/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
GPP18.1 The expert opinion of ARHAI Scotland and its stakeholders supports three expert opinion guidance documents[2, 4, 26] including HTM 01-04 on avoiding pre-wash sorting of infectious linen.

18.10 Value judgements

Summarise value judgements used in creating the Recommendation/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.

18.11 Intentional vagueness

State reasons for any intentional vagueness in the Recommendation/Good Practice Point; if none was intended, state “none”. Recommendations/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/harms, or interpretation of evidence; legal considerations; economic reasons; ethical/religious reasons.

Intentional vagueness
None.

18.12 Exceptions

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

Exceptions
None.

18.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
None.

Research Question 19: How should infectious linen be labelled?

Part A: Quality of evidence

19.1 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 six pieces of evidence were included for this research question, [1, 2, 4, 20, 76, 77] –all added for this update of the review.	2 x AGREE 'Recommend with modifications'.
Two guidance documents graded AGREE 'Recommend with modifications' were included.[20, 76] Key issues identified were the lack of clarity of the link between the evidence and recommendations,[20] and an unclear methodology section for systematic and rapid reviews conducted.[76]	4 x SIGN50 Level 4
Four expert opinion guidance documents graded SIGN50 Level 4 were also included. As with most expert opinion guidance documents, there is a potential risk of bias as there is often a lack of supporting evidence and the methodology with which these guidance documents are formulated is also unclear.[1, 2, 4, 77]	
No primary studies were included.	

19.2 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
Colour coding Two pieces of evidence published in the UK (SIGN50 Level 4) recommended that infectious linen should be placed in red water-soluble bags which should then be placed in white impermeable bags.[2, 4] Documents from Ireland (AGREE 'Recommend with modifications')[20] and the US (SIGN50 level 4)[1] recommend bags identified by label or colour; however, they did not advise a specific colour. **Labelling** Four SIGN50 Level 4 documents identified for this question provide for some form of labelling for the bags in which infectious linen is to be stored. [1, 2, 4, 77] Two documents specific for viral haemorrhagic fevers including a WHO document graded AGREE 'Recommend with modifications' are consistent in their advice that soiled linen to be disposed of should be marked properly.[73, 79]

19.3 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 as follows: • UK (n=2)[2, 4] • International [76] • Canada[77] • Ireland[20]

Comments
• USA[1] The two documents from the UK apply to healthcare[4] and care[2] settings. The document published by the WHO applies internationally to healthcare settings.[76] The other documents are applicable in the countries where they were published (USA, Canada, Ireland) and are generally applicable to Scottish settings as all advocate for labelling and/or colour coding.[1, 20, 77]

19.4 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/group of interest? Generalisability is only relevant to primary research studies.

Comments
There were no primary studies found for this research question therefore issues such as sample size and methods of sample selection are not relevant.

19.5 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 are no concerns about publication bias as no primary studies were included for this question.

Part B: Evidence to Decision

19.6 Recommendation(s)

What Recommendation(s) or Good Practice Point(s) 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
GPP19.1 Laundry bags or hampers containing infectious linen should be labelled and include information such as hospital, ward/department, and date.	Good practice point
R19.1 Infectious linen used for the care of suspected or confirmed VHF patients that is to be disposed of as waste should be marked and labelled as provided in SHTN 03-01.	Recommendation

19.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation/Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond IPC.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation/Good Practice Point were followed correctly. Be explicit, clear about pros.

Benefits
GPP19.1 Labelling allows for easy movement of linen through the laundry system and return to the areas where it was generated. R19.1 Labelling allows for easy identification and prevents mix-up of linen to be disposed of with those to be laundered This prevents linen used in the care of VHF patients from being returned to the laundry which will pose a significant risk to laundry staff and those who handle linen

Risks and Harms

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

Risks/Harms
GPP19.1, R19.1 No harm 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/visitor perspective, the societal perspective, or both. Recommendations/Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
GPP19.1, R19.1 Only benefits identified.

19.8 Feasibility

Is the Recommendation/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 etc., that may be associated with following a Recommendation/Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
GPP19.1, R19.1 Labelling of linen bags may have financial and human resource implications including the provision of labels and the time it will take healthcare workers to apply them.

19.9 Expert Opinion

Summarise the expert opinion used in creating the Recommendation/ 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
GPP19.1 The expert opinion of ARHAI Scotland and its stakeholders supports three pieces of SIGN50 level 4 evidence[2, 4, 22] including HTM 01-04, that laundry bags or hampers containing infectious linen should be properly labelled. R19.1 This recommendation is based on two pieces of evidence graded AGREE ‘Recommend with modifications’. [76, 77] The expert opinion of ARHAI Scotland and its stakeholders agrees with both documents on the need for clear labelling of infectious linen to be disposed of.

19.10 Value judgements

Summarise value judgements used in creating the Recommendation/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.

19.11 Intentional vagueness

State reasons for any intentional vagueness in the Recommendation/Good Practice Point; if none was intended, state “none”. Recommendations/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/harms, or interpretation of evidence; legal considerations; economic reasons; ethical/ religious reasons.

Intentional vagueness
R19.1 The exact wording for the label is not provided and is expected to be done as per local policy.

19.12 Exceptions

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

Exceptions
None.

19.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
None.

Research Question 20: How should infectious linen be stored?

Part A: Quality of evidence

20.1 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
Three pieces of evidence were included for this research question, [22, 41, 77] including one carried over from the previous edition of this review.[22] All of these were expert opinion guidance documents graded SIGN50 Level 4. [22, 41, 77] There is a potential risk of bias with documents of this kind as there is often a lack of supporting evidence and the methodology with which these guidance documents are formulated is also unclear. No primary studies were included.	3 x SIGN50 Level

20.2 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
Designated area There is consistency within the body of evidence identified for this question, that linen should be stored in a designated area or dirty linen store.[22, 41, 77]

20.3 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 as follows: • UK (n=2)[22, 41] • Canada[77] The two documents from the UK, including one from Scotland,[22] apply to healthcare[41] and health and care settings.[22] The other document applies to Ebola prevention in acute healthcare settings in Canada so may be less applicable to other settings and infection scenarios.[77]

20.4 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/group of interest? Generalisability is only relevant to primary research studies.

Comments
There were no primary studies found for this research question therefore issues such as sample size and methods of sample selection are not relevant.

20.5 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 are no concerns about publication bias as no primary studies were included for this research question.

Part B: Evidence to Decision

20.6 Recommendation(s)

What Recommendation(s) or Good Practice Point(s) 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
GPP20.1 Infectious linen should be stored in a secure designated area, inaccessible to the public and separate from clean non-infectious linen.	Good practice point

20.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation/Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond IPC.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation/Good Practice Point were followed correctly. Be explicit, clear about pros.

Benefits
GPP20.1 Storing infectious linen items in a designated area ensures they do not contaminate other linen or the environment.

Risks and Harms

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

Risks/Harms
None.

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/visitor perspective, the societal perspective, or both. Recommendations/Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
GPP20.1 Only benefits identified.

20.8 Feasibility

Is the Recommendation/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 etc., that may be associated with following a Recommendation/Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
GPP20.1 Providing a designated secure area for infectious linen may have financial implications.

20.9 Expert Opinion

Summarise the expert opinion used in creating the Recommendation/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
GPP20.1 In agreement with the provisions of three SIGN50 Level 4 expert opinion guidance documents, [22, 41, 77] it is the expert opinion of ARHAI Scotland and its stakeholders that infectious linen should be stored in a designated secure area separate from clean linen.

20.10 Value judgements

Summarise value judgements used in creating the Recommendation/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.

20.11 Intentional vagueness

State reasons for any intentional vagueness in the Recommendation/Good Practice Point; if none was intended, state “none”. Recommendations/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/harms, or interpretation of evidence; legal considerations; economic reasons; ethical/religious reasons.

Intentional vagueness
None.

20.12 Exceptions

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

Exceptions
None.

20.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
None.

Research Question 21: How should infectious linen be transported?

Part A: Quality of evidence

21.1 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 four pieces of evidence were identified for this research question[4, 17, 25, 78] including one carried over from the last version of this review.[4] All the included documents were expert opinion guidance graded SIGN50 Level 4. As with evidence of this kind, there is a potential for bias owing to the lack of supporting evidence and the unclear methodology with which these guidance documents are formulated. [4, 17, 25, 78] No primary studies were included.	4 x SIGN50 Level 4

21.2 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
The following are additional provisions to the transportation of used linen already discussed in Research Question 13.

Comments
Bagging There is consistency within the evidence base identified on the need to ensure that there is no leakage or spills from infectious linen during transport. [4, 17, 25] As discussed in Research Question 17: 'How should infectious linen be safely handled?', reusable linen from patients with EVD or other VHFs are to be treated as category A waste. Details on how these should be handled before transport are covered in SHTN 03-01.[78]

21.3 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 as follows: • UK (n=2) [4, 78] • USA[25] • International[17] The documents published in the UK apply to health and social care settings.[4, 78] One document published by the WHO applies internationally and is specific to healthcare settings. [17] The American document is specific to outpatient oncology settings. [25]

21.4 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/group of interest? Generalisability is only relevant to primary research studies.

Comments
There were no primary studies found for this research question therefore issues such as sample size and methods of sample selection are not relevant.

21.5 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 are no concerns about publication bias as no primary studies were included.

Part B: Evidence to Decision

21.6 Recommendation(s)

What Recommendation(s) or Good Practice Point(s) 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
GPP21.1 Infectious linen should not be transported in the same vehicle as clean linen unless separated by a suitable physical barrier.	Good practice point
GPP21.2 Transport vehicles including trolleys and carts used to transport infectious linen must be cleaned daily, whenever they appear soiled and between trips if used to transport 'clean linen'.	Good practice point
GPP21.3 Provisions should be made for hand rubs and spill kits for those involved in transporting infectious linen.	Good practice point
GPP21.4 Bags used to store or transport infectious linen should be leak-proof, be securely tied and not be over three-quarters full.	Good practice point

21.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation/Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond IPC.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation/Good Practice Point were followed correctly. Be explicit, clear about pros.

Benefits
GPP21.1 Transporting infectious linen separately will prevent contamination of clean linen.

Benefits
GPP21.2 Routine decontamination of vehicles will prevent cross-contamination of linen subsequently transported. GPP21.3 Providing those involved in linen transportation access to hand rubs and spill kits will help to manage spills during transports and provide access to hand hygiene. GPP21.4 Ensuring linen bags are not overfilled will prevent the bags from spilling.

Risks and Harms

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

Risks/Harms
No harm was 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/visitor perspective, the societal perspective, or both. Recommendations/Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
GPP21.1, GPP21.2, GPP21.3, GPP21.4 Only benefits identified.

21.8 Feasibility

Is the Recommendation/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 etc., that may be associated with following a Recommendation/Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
GPP21.2 Regular cleaning of vehicles may require significant human resources. GPP21.3 The provision of spill kits and hand rubs will have financial implications.

21.9 Expert Opinion

Summarise the expert opinion used in creating the Recommendation/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
GPP21.1 The expert opinion of ARHAI Scotland and its stakeholders agrees with four expert opinion guidance documents[3, 4, 22, 37] including HTM 01-04[4] that clean linen should not be transported in the same vehicle as infectious linen unless separated by a suitable physical barrier. Although some documents use the term ‘sufficient space’, this GPP uses only the term ‘suitable physical barrier’ because it is unclear how much space is sufficient. GPP21.2 The expert opinion of ARHAI Scotland and its stakeholders agrees with four expert opinion guidance documents[3, 4, 22, 37] including HTM 01-04[4] that vehicle and other items used for clean linen transportation should be decontaminated daily, whenever they appear soiled and between uses when transporting infectious linen. GPP21.3 The expert opinion of ARHAI Scotland and its stakeholders agrees with two expert opinion guidance documents on the need for drivers of vehicles transporting infectious linen to have access to hand rubs or waterless hand hygiene products and spill kits.[3, 22] GPP21.4 The expert opinion of ARHAI Scotland and its stakeholders supports two expert opinion guidance documents[4, 22] including HTM 01-04,[4] that storage bags containing infectious linen are securely tied and not over-filled. The fill volume was

Expert opinion
not specified in any evidence. It is the expert opinion of ARHAI Scotland and its stakeholders that bags should be no more than three-quarters full.

21.10 Value judgements

Summarise value judgements used in creating the Recommendation/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.

21.11 Intentional vagueness

State reasons for any intentional vagueness in the Recommendation/Good Practice Point; if none was intended, state “none”. Recommendations/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/harms, or interpretation of evidence; legal considerations; economic reasons; ethical/ religious reasons.

Intentional vagueness
None.

21.12 Exceptions

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

Exceptions
None.

21.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
None.

Research Question 22: What is the available evidence for the effectiveness of antimicrobial impregnated linen in reducing the risk of microorganism transmission?

Part A: Quality of evidence

22.1 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
This research question was added as part of this update to the review. Seven studies were included for this research question.[79-85] Two systematic reviews and meta-analyses, graded SIGN50 1++ were included. Both meta-analyses are based on the same studies already included in this review.[84, 85] One of them also includes a study that was	2 x SIGN50 Level 1++ 2 x SIGN50 Level 1+ 3 x SIGN50 Level 3

Comments	Evidence level
excluded because the interventions reported included antimicrobial surfaces and antimicrobial-impregnated linen (AIL).[84] Two studies graded SIGN50 1+ were also included.[82, 83] One was a crossover, double-blind controlled trial[82] and the other was a cluster cross-over trial.[83] Three studies were graded SIGN50 Level 3 and include two before-and-after studies and one time-interrupted-series. For one of these studies, only one part was included – the cluster randomised control trial. The other part was excluded because of significant limitations relating to uncontrolled confounding variables.[79-81]	

22.2 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
Overview All primary studies identified for this question used copper oxide-impregnated linen from the same manufacturer. The same company provided funding for three of the five studies[80, 82, 83] and supplied the linen free of charge in another study.[81] The Chief Medical Scientist of the company was a co-author in two of the funded studies.[80, 82] **Effect on all HAIs** Four studies reported on the effect of antimicrobial-impregnated linen (AIL) on all HAIs. These include one each of prospective cluster randomised cross over trial (SIGN50 Level 1+),[83] before-and-after study (SIGN50 Level 3)[80] and two

Comments
systematic reviews and meta-analyses (SIGN50 Level 1++).[84, 85] Both meta-analyses[84, 85] and the before-and-after study[80] reported a statistically significant reduction in HAI rates associated with AIL use. The cluster randomised cross-over trial also reported a reduction which was not statistically significant. [83] **Organism-specific HAIs** Three primary studies reported on the effect of AILs on HAIs caused by *Clostridioides difficile.* They include a before-and-after study (SIGN50 Level 3)[79] a time-interrupted series (SIGN50 level 3),[81] and a cluster cross-over trial (SIGN50 Level 1+).[83] Two studies[79, 83] reported a reduction in *C. difficile* HAI rates, but only one was statistically significant.[79] One study showed a significant increase in *C. difficile* HAI rates.[81] Another study showed an insignificant decrease in MDRO HAI rates.[79] **Other Indicators** An Israeli crossover double-blind controlled trial, graded SIGN50 Level 1+ evaluated the effect of using copper AILs on four HAI indicators in chronic ventilator-dependent patients in a long-term care facility: antibiotic treatment initiation events (ATIEs), fever days, days of antibiotic treatment (dAB), and antibiotic defined daily dose (DDD).[82] Use of AIL was associated with a significant reduction in all four indicators.[82] Another Israeli study (graded SIGN50 Level 3), observed a statistically significant 47% reduction in fever days per 1000 hospitalisation days (7.1 vs 13.4; p=0.0085),) and total days of antibiotics per 1000 hospitalisation days (257.1 vs 382.7; p<0.0001). [80]

22.3 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 evidence base includes two systematic reviews and meta-analyses published in Australia[84] and China.[85] The primary evidence was published in Israel (n=2)[80, 82] and the USA (n=3).[79, 81, 83] Although no studies published in the UK were identified, the included studies apply to Scottish health and care settings.

22.4 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/group of interest? Generalisability is only relevant to primary research studies.

Comments
The studies are generally applicable to Scottish health and care populations.

22.5 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 a risk of publication bias as studies with negative results may not have been published.

Part B: Evidence to Decision

22.6 Recommendation(s)

What Recommendation(s) or Good Practice Point(s) 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
N/A	No Recommendation

22.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation/Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond IPC.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation/Good Practice Point were followed correctly. Be explicit, clear about pros.

Benefits
None.

Risks and Harms

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

Risks/Harms
None.

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/visitor perspective, the societal perspective, or both. Recommendations/ Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
None.

22.8 Feasibility

Is the Recommendation/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 etc., that may be associated with following a Recommendation/Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
None.

22.9 Expert Opinion

Summarise the expert opinion used in creating the Recommendation/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
Although the evidence indicates that copper-oxide-impregnated linen may be effective in reducing HAI, no recommendations have been made because of the stated limitations of the evidence base. ARHAI Scotland and its stakeholders do not currently support the development of any good practice points for this topic.

22.10 Value judgements

Summarise value judgements used in creating the Recommendation/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.

22.11 Intentional vagueness

State reasons for any intentional vagueness in the Recommendation/Good Practice Point; if none was intended, state “none”. Recommendations/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/harms, or interpretation of evidence; legal considerations; economic reasons; ethical/religious reasons.

Intentional vagueness
None.

22.12 Exceptions

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

Exceptions
None.

22.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
None.

Research Question 23: What is the available evidence on post-laundry disinfection for linen in healthcare?

Part A: Quality of evidence

23.1 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 six pieces of evidence were identified for this research question.[1, 4, 17, 40, 50, 72] This research question was added as part of this update. Two outbreak studies graded SIGN50 Level 3 were included.[40, 50] Four expert opinion guidance documents graded SIGN50 Level 4 were also included. [1, 4, 17, 72]	2 x SIGN50 Level 3 4 x SIGN50 Level 4

23.2 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
Operating theatres and other special units Three SIGN50 Level 4 guidance documents were consistent in advising that certain situations may require sterility or very high microbiological quality, especially in operating theatres.[1, 4, 17] A WHO document recommended that linen supplied to high-risk areas such as burns and transplant units, should be autoclaved.[17] An American document recommended that laundered but not sterilised linen should be used for neonatal ICUs.[1] **Outbreak management** Two outbreak studies (SIGN50 Level 3) reported post-laundry treatment of linen as part of outbreak management measures.[40, 50] One study of a *Bacillus cereus* outbreak reported post-laundry autoclaving,[40] while another on a Mucorales outbreak reported gamma irradiation of linen following laundering.[50] **HCID** Only one piece of evidence provided any information on this, advising that clothing items belonging to Hazard Group 4 viral haemorrhagic fever deceased patients be autoclaved before the items are returned to their relatives. The document specifies that this can only be done if the items are not visibly contaminated, in which case they should be safely disposed of.[72]

23.3 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 as follows: • UK (n=2) [4, 72] • International[17] • Singapore[40] • United States of America (n=2)[1, 50] All the documents included apply to healthcare settings. Two of these were published in the UK and apply to UK settings. [4, 72] One document published by the World Health Organization applies internationally and is specific to health and social care settings.[17] The use of post-laundry treatment in the two outbreak studies may apply to Scottish settings despite the difference in Climate with the outbreak in Singapore. [40, 50] The other document, a Level 4 expert opinion published in the United States applies to Scottish healthcare settings.[1]

23.4 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/group of interest? Generalisability is only relevant to primary research studies.

Comments
Not applicable as no primary studies were included for this research question.

23.5 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
Two out of the six studies included are outbreak investigations and so there is a possibility of publication bias as not all outbreaks/infection incidents are published in scientific journals.

Part B: Evidence to Decision

23.6 Recommendation(s)

What Recommendation(s) or Good Practice Point(s) 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
No recommendations can be made as the evidence is unclear.	No recommendations

23.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation/Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond IPC.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation/Good Practice Point were followed correctly. Be explicit, clear about pros.

Benefits
None

Risks and Harms

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

Risks/Harms
None.

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/visitor perspective, the societal perspective, or both. Recommendations/Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
None

23.8 Feasibility

Is the Recommendation/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 etc., that may be associated with following a Recommendation/Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
None

23.9 Expert Opinion

Summarise the expert opinion used in creating the Recommendation/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
Although a UK SIGN50 Level 4 expert opinion document recommends that clothing items that are not visibly contaminated, belonging to deceased patients with Hazard Group 4 viral haemorrhagic fevers may be sterilised before they are returned to their relatives. The document is unclear about whether they should be laundered in the hospital or returned to the patients to take home for laundering. As a result, (and because the sterilisation is pre-laundering) no recommendation or good practice point could be made. No recommendation can be made on sterilisation in specific high-risk areas such as burns and transplant units because while there is some consistency in the need for linen with high microbiological quality, there is no consensus on the need for sterilisation. Although one WHO document recommends it for burns and transplant units, it was published 20 years ago.[17]

23.10 Value judgements

Summarise value judgements used in creating the Recommendation/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.

23.11 Intentional vagueness

State reasons for any intentional vagueness in the Recommendation/Good Practice Point; if none was intended, state “none”. Recommendations/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/harms, or interpretation of evidence; legal considerations; economic reasons; ethical/ religious reasons.

Intentional vagueness
None.

23.12 Exceptions

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

Exceptions
None.

23.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
None.

Research Question 24: When is linen deemed unfit for reuse?

Part A: Quality of evidence

24.1 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
Eight pieces of evidence were identified for this research question.[3, 16, 22, 41, 72, 74, 76, 77] This research question was added as part of this update. One guidance document was graded AGREE 'Recommend with modifications'.[76] One document published by the Scottish government was graded 'mandatory'.[16] Six expert opinion guidance documents were graded SIGN50 Level 4.[3, 22, 41, 72, 74, 77] No primary studies were included.	1 x SIGN50 AGREE Recommend with modifications. 1 x SIGN50 Mandatory 6 x SIGN50 Level 4

24.2 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

Within the evidence base identified for this question, linen was generally considered unfit for reuse when heavily contaminated or used in the care of patients with confirmed HCID and when physically damaged.

Heavy contamination

Two documents (one graded 'mandatory' and one SIGN50 Level 3) advise that linen should be considered unfit for reuse if heavily contaminated.[16, 41]

HCID

Six documents (one AGREE 'recommend with modifications', five SIGN50 Level 4) were consistent regarding the discarding of linen used in the care of patients with HCID.[22, 41, 72, 74, 76, 77] A Scottish document (SIGN50 Level 4) includes linen from patients with suspected Category 4 infections in this provision.[22]

Damage

There is also consistency in the extant SIGN50 Level 3 guidance that linen items should be deemed unfit for reuse if they contain unremovable stains, are discoloured, or show signs of thermal or physical damage such as stiffening or bad tearing.[3, 22, 41]

24.3 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 as follows:

- UK (n=4)[16, 22, 41, 72]
- International[76]
- Canada[77]
- United States of America (n=2)[3, 74]

Comments
Of the four documents published in the UK, two[22] are specific to Scotland including a mandatory document from the Scottish government which applies only to healthcare settings[16] and a national linen guidance which applies to health and care settings.[22] One document was published by the WHO and applies internationally in healthcare settings.[76] All other documents although specific to healthcare settings in the countries where they were published are generalisable to Scottish health and care settings.[74, 77] The American guidance document which applies only to healthcare laundries also contains provisions which apply to Scottish healthcare settings.[3]

24.4 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/group of interest? Generalisability is only relevant to primary research studies.

Comments
There were no primary studies found for this research question therefore issues such as sample size and methods of sample selection are not relevant.

24.5 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 are no concerns about publication bias as no primary studies were included for this research question.

Part B: Evidence to Decision

24.6 Recommendation(s)

What Recommendation(s) or Good Practice Point(s) 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
GPP24.1 Linen should be deemed unfit for reuse if it contains unremovable staining, is discoloured or shows signs of thermal or physical damage.	Good practice point
R24.1 Laundries should consider deeming linen unfit for reuse after laundering if it is heavily contaminated with blood and/or body fluids.	Recommendation

24.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation/Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond IPC.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation/Good Practice Point were followed correctly. Be explicit, clear about pros.

Benefits
GPP24.1 Linen with thermal or physical damage may be unsightly, uncomfortable for patients and damaging to public confidence. R24.1 Heavily contaminated linen might pose a risk for laundry staff and others who handle them. Not reprocessing and not reusing such linen will prevent this risk.

Risks and Harms

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

Risks/Harms
None.

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/ visitor perspective, the societal perspective, or both. Recommendations/ Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
GPP24.1 Only benefits identified. R24.1 Only benefits identified.

24.8 Feasibility

Is the Recommendation/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 etc., that may be associated with following a Recommendation/Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
R24.1 There may be considerable financial implications for replacing linen deemed unfit for reuse.

24.9 Expert Opinion

Summarise the expert opinion used in creating the Recommendation/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
GPP24.1 The expert opinion of ARHAI Scotland and its stakeholders supports three SIGN50 Level 4 expert opinion guidance documents that linen should be deemed unfit for reuse if they are physically damaged. [40, 50] R24.1 This recommendation is based on two pieces of evidence, a Scottish Government document[16] graded ‘Mandatory’ and a WHO document that was graded AGREE ‘recommend with modifications’. [76] The Scottish government document is specific to uniforms.[16] No additional expert opinion to note.

24.10 Value judgements

Summarise value judgements used in creating the Recommendation/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.

24.11 Intentional vagueness

State reasons for any intentional vagueness in the Recommendation/Good Practice Point; if none was intended, state “none”. Recommendations/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/harms, or interpretation of evidence; legal considerations; economic reasons; ethical/ religious reasons.

Intentional vagueness
None.

24.12 Exceptions

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

Exceptions
None.

24.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
None.

Research Question 25: How should linen deemed unfit for reuse be safely disposed?

Part A: Quality of evidence

25.1 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
Eight pieces of evidence were identified for this research question.[3, 16, 22, 41, 72, 74, 76, 77] This research question was added as part of this update. One guidance document was graded AGREE 'Recommend with modifications'.[76] One document published by the Scottish Government was graded 'mandatory'.[16] Six expert opinion guidance documents were graded SIGN50 Level 4.[3, 22, 41, 72, 74, 77] No primary studies were included.	1 x AGREE Recommend with modifications. 1 x SIGN50 Mandatory 6 x SIGN50 Level 4

25.2 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

This research question was added as part of this update to the review and is closely linked to the previous question.

Within the evidence identified, there is consistency that the way unfit linen is disposed of depends on the reason why it has been deemed unfit.

Use in HCID.

Extant guidance is consistent that linen used for the care of patients with Ebola or other Category 4 VHFs be treated and disposed of as Category A infectious waste and incinerated.[16, 22, 72, 76, 77]

Heavily contaminated linen

A mandatory document from the Scottish Government states that uniforms heavily contaminated with blood or body fluids may be condemned by the laundry after laundering as unfit for use. The document notes that such uniforms should be placed in a healthcare waste sack and disposed of as healthcare waste. The document does not specify this heavy contamination to be due to VHFs (in which case it would be disposed of as waste rather than laundered) and notes that such condemnation will occur post-laundering. [16] A SIGN50 Level 4 document specific to autopsies recommends disposing of heavily soiled linen deemed unfit for reuse as clinical waste.[41]

Damaged linen

A Scottish expert opinion guidance document (SIGN50 Level 4) recommends that damaged linen be disposed of by the laundry services via the domestic waste stream. The document also provides that notifications be sent to the ward/department of origin if required.[22] An American guidance document specific to healthcare laundries, recommends that reusable surgical linen that fails to meet the minimum performance criteria for that category may be used in an alternative less stringent category (downgrading).[3]

25.3 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 as follows: • UK (n=4)[16, 22, 41, 72] • International[76] • Canada[77] • United States of America (n=2)[3, 74] Of the four documents published in the UK, two[22] are specific to Scotland including a mandatory document from the Scottish Government which applies only to healthcare settings[16] and national linen guidance which applies to health and care settings.[22] One document published by the WHO applies internationally in healthcare settings.[76] All other documents although specific to healthcare settings in the countries where they were published are generalisable to Scottish health and care settings.[74, 77] The American guidance document which applies to healthcare laundries also contains provisions which apply to Scottish health and care settings.[3]

25.4 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/group of interest? Generalisability is only relevant to primary research studies.

Comments
There were no primary studies found concerning this research question therefore issues such as sample size and methods of sample selection are not relevant.

25.5 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 are no concerns about publication bias as no primary studies were included.

Part B: Evidence to Decision

25.6 Recommendation(s)

What Recommendation(s) or Good Practice Point(s) 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
GPP25.1 Damaged linen should be returned via the appropriate stream to the laundry for disposal.	Good practice point

25.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation/Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond IPC.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation/Good Practice Point were followed correctly. Be explicit, clear about pros.

Benefits
GPP25.1 Sending back damaged linen to the laundry ensures that they are properly disposed of and not added to other forms of waste where they may damage processing machines.

Risks and Harms

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

Risks/Harms
R25.1, GPP25.1 No risk 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/ visitor perspective, the societal perspective, or both. Recommendations/ Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
GPP25.1 Only benefits identified.

25.8 Feasibility

Is the Recommendation/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 etc., that may be associated with following a Recommendation/Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
None.

25.9 Expert Opinion

Summarise the expert opinion used in creating the Recommendation/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
GPP25.1 This GPP is based on the expert opinion of ARHAI Scotland and its stakeholders, as well as extant guidance.[22] It is judged that returning physically damaged linen to the laundry for disposal will ensure that such items go into the right waste stream (or repaired if possible) and are properly accounted for.

25.10 Value judgements

Summarise value judgements used in creating the Recommendation/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.

25.11 Intentional vagueness

State reasons for any intentional vagueness in the Recommendation/Good Practice Point; if none was intended, state “none”. Recommendations/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/harms, or interpretation of evidence; legal considerations; economic reasons; ethical/ religious reasons.

Intentional vagueness
None.

25.12 Exceptions

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

Exceptions
None.

25.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
None.

Research Question 26: How should curtains be put up and taken down to minimise transmission of infection?

Part A: Quality of evidence

26.1 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
Four pieces of evidence were included for this research question. [45, 86-88] This research question was added as part of this update. All four documents were graded SIGN50 Level 4. [45, 86-88] As with Level 4 expert opinion guidance documents, there is a risk of bias owing to the lack of supporting evidence and the unclear methodology with which these guidance documents are formulated. No primary studies were included.	4 x SIGN50 Level 4

26.2 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
Two pieces of evidence recommended that when curtains are taken down, they should be unloaded directly into a container and that they should be changed at the end of the cubicle furthest from the patient's head.[86, 87] There is consistency in the need for the use of PPE and hand hygiene. [45, 86-88] The National Cleaning Services specification published by HFS provides a step-by-step guide on curtain changing. However, the provisions to unload curtains directly into a container and to change curtains at the point furthest from the patient's head, which has been noted earlier, are not mentioned.[88]

26.3 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 four included documents were published in the UK. [45, 86-88] Two of these are specific to Scotland.[87, 88]

26.4 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/group of interest? Generalisability is only relevant to primary research studies.

Comments
There were no primary studies found for this research question therefore issues such as sample size and methods of sample selection are not relevant.

26.5 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 are no concerns about publication bias as no primary studies were included for this research question.

Part B: Evidence to Decision

26.6 Recommendation(s)

What Recommendation(s) or Good Practice Point(s) 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
GPP26.1 When privacy curtains are taken down, they should be unloaded directly into a container at the end of the bed furthest from the patient's head.	Good practice point
GPP26.2 In addition to GPP26.1 the standard operating procedure for curtain changing within the NHSScotland National Cleaning Services Specification should be followed (including provisions on PPE use).	Good practice point
There are no recommendations concerning the hanging of curtains.	No recommendation

Recommendation	Grading
GPP26.3 Hand hygiene should be performed as per NIPCM prior to hanging curtains and after curtains are taken down.	Good practice point

26.7 Balancing benefits and harms

Comment here on the potential impact of the Recommendation/Good Practice Point on service users, visitors and staff. Benefits and harms include considerations beyond IPC.

Benefits

List the favourable changes in outcome that would likely occur if the Recommendation/Good Practice Point were followed correctly. Be explicit, clear about pros.

Benefits
GPP26.1 Unloading curtains directly into containers reduces the risk of environmental contamination. GPP26.2 The SOP provided in the national cleaning services specification will promote consistency of practice and reduce the risk of environmental contamination. GPP26.3 Hand hygiene reduces the risk of cross and self-contamination.

Risks and Harms

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

Risks/Harms
None.

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/visitor perspective, the societal perspective, or both. Recommendations/Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
GPP26.1, GPP26.2, GPP26.3 Only benefits identified.

26.8 Feasibility

Is the Recommendation/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 etc., that may be associated with following a Recommendation/Good Practice Point. State clearly if information on feasibility is lacking.

Feasibility
GPP26.1 Providing containers required for taking down curtains may have resource implications.

26.9 Expert Opinion

Summarise the expert opinion used in creating the Recommendation/ 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
GPP26.1 The expert opinion of ARHAI Scotland and its stakeholders agrees with two SIGN50 Level 4 expert opinion guidance documents[86, 87] that curtains should be unloaded directly into a container and changed at the point furthest from the patient's head. Although these points are not mentioned in the cleaning specification noted in GPP26.2, this GPP has been included because of the benefit-risk assessment (benefits outweigh risks). GPP26.2 The expert opinion of ARHAI Scotland and its stakeholders supports adherence to the NHSScotland National Cleaning Services Specification[88] alongside GPP26.1 and GPP26.3. GPP26.3 The expert opinion of ARHAI Scotland and its stakeholders supports four SIGN50 Level 4 expert opinion guidance documents [45, 86-88] on the need for hand hygiene after changing curtains. No recommendations or good practice point could be made regarding hanging curtains. This is because of the apparent lack of consistency between SHTM66, published in 2006, and the cleaning specification, published in 2016. While the former document, in agreement with HBN 00-10 Part E, recommends a loading device to improve efficiency and reduce the risk of contamination, no such device is mentioned in the cleaning specification.

26.10 Value judgements

Summarise value judgements used in creating the Recommendation/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.

26.11 Intentional vagueness

State reasons for any intentional vagueness in the Recommendation/Good Practice Point; if none was intended, state “none”. Recommendations/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/harms, or interpretation of evidence; legal considerations; economic reasons; ethical/ religious reasons.

Intentional vagueness
None.

26.12 Exceptions

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

Exceptions
None.

26.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
None.

References

1. Sehulster L and Chinn RYW. Guidelines for environmental infection control in health-care facilities: recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC), (2003, accessed 24 January 2024).
2. Department of Health. Health technical memorandum 01-04: decontamination of linen for health and social care. Social Care, (2013, accessed 24 January 2024).
3. Healthcare Laundry Accreditation Council. Accreditation Standards for Processing Reusable Textiles for Use in Healthcare Facilities, (2023, accessed 24 January 2024).
4. Department of Health. Health Technical Memorandum 01-04: Decontamination of linen for health and social care. Management and provision, (2013, accessed 24 January 2024).
5. British Standards Institution (BSI). BS EN 14065:2016 Textiles — Laundry processed textiles — Biocontamination control system. BSI Standards Limited, 2016.
6. British Standards Institution (BSI). BS EN 14885:2022 Chemical disinfectants and antiseptics — Application of European Standards for chemical disinfectants and antiseptics. BSI Standards Limited, 2022.
7. British Standards Institution (BSI). BS EN ISO 20743:2021 Textiles — Determination of antibacterial activity of textile products. BSI Standards Limited, 2021.
8. British Standards Institution (BSI). BS EN 14476:2013+A2:2019 Chemical disinfectants and antiseptics - Quantitative suspension test for the evaluation of virucidal activity in the medical area - Test method and requirements (Phase 2/Step 1). BSI Standards Limited, 2019.
9. British Standards Institution (BSI). BS EN 13624:2021 Chemical disinfectants and antiseptics — Quantitative suspension test for the evaluation of fungicidal

or yeasticidal activity in the medical area — Test method and requirements (phase 2, step 1). BSI Standards Limited, 2021.

10. British Standards Institution (BSI). BS EN 14348:2005 Chemical disinfectants and antiseptics — Quantitative suspension test for the evaluation of mycobactericidal activity of chemical disinfectants in the medical area including instrument disinfectants — Test methods and requirements (phase 2, step 1). London: BSI, 2005.

11. British Standards Institution (BSI). BS EN 17126:2018 Chemical disinfectants and antiseptics – Quantitative suspension test for the evaluation of sporicidal activity of chemical disinfectants in the medical area – Test method and requirements (phase 2, step 1). London: British Standards Institution,, 2018.

12. British Standards Institution (BSI). BS EN 16616:2022 Chemical disinfectants and antiseptics — Chemical-thermal textile disinfection — Test method and requirements (phase 2, step 2). London: British Standards Institution,, 2022.

13. UK Government. The Control of Substances Hazardous to Health Regulations 2002. 2677. 2002.

14. UK Government. Personal Protective Equipment at Work Regulations 1992 (as amended). 1992 No 2966. 1992.

15. UK Government. The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009. 2009.

16. Scottish Government. National Uniform Policy, Dress code and Laundering Policy, (2018, accessed 24 January 2024).

17. World Health Organization. Practical guidelines for infection control in health care facilities, (2003, accessed 25 January 2024).

18. Aucamp M. Housekeeping and Linen Management (Chapter 23). IFIC Basic Concepts of Infection Control 3rd ed.: International Federation of Infection Control, 2016.

19. Health Protection Surveillance Centre. Public Health & Infection Prevention & Control Guidelines on Prevention and Management of Cases and Outbreaks of COVID-19, Influenza & other Respiratory Infections in Residential Care FacilitiesV1.13 13.12.2023, (2023, accessed 24 January 2024).

20. National Clinical Effectiveness Committee. Prevention and control methicillin-resistant Staphylococcus aureus (MRSA) national clinical guideline No. 2, (2013, accessed 24 January 2024).

21. Department of Health and Social Care. Infection prevention and control: resource for adult social care, (2024, accessed 28 June 2024 2024).

22. Health Protection Scotland, Health Facilities Scotland and NHS National Services Scotland. National Guidance for Safe Management of Linen in NHSScotland, (2018, accessed February 02 2024).

23. Hooker EA, Ulrich D and Brooks D. Successful Removal of Clostridioides Difficile Spores and Pathogenic Bacteria From a Launderable Barrier Using a Commercial Laundry Process. Infectious Diseases: Research & Treatment 2020; 13: 1-6.

24. Owen L, Shivkumar M and Laird K. The Stability of Model Human Coronaviruses on Textiles in the Environment and during Health Care Laundering. mSphere 2021; 6: 28.

25. National Center for Emerging and Zoonotic Diseases. Basic Infection Control And Prevention Plan for Outpatient Oncology Settings, (2011, accessed 24 January 2024).

26. Department of Health and Health Protection Agency. Prevention and Control of Infection in Care Homes: An Information Resource, (2013, accessed 24 January 2024 2024).

27. European Centre for Disease Prevention and Control. Public health considerations for mpox in EU/EEA countries, (2023, accessed 24 January 2024).

28. Lemass H, McDonnell N, O'Connor N, et al. Infection prevention and control for primary care in Ireland: a guide for general practice, (2014, accessed 24 January 2024).

29. National Clinical Effectiveness Committee. Surveillance, diagnosis and management of Clostridium Difficile Infection in Ireland update of 2008 guidance, (2014, accessed 24 January 2024).

30. World Health Organization. Interim infection prevention and control guidance for care of patients with suspected or confirmed filovirus haemorrhagic fever in health-care settings, with focus on Ebola, (2014, accessed 25 January 2024).

31. Advisory Committee on Dangerous Pathogens' Transmissible Spongiform Encephalopathy (ACDPTSE) subgroup. Part 4: Infection prevention and control of CJD and variant CJD in Healthcare and Community settings. In: Care DoHaS, (ed.). Minimise transmission risk of CJD and vCJD in healthcare settings. Department of Health and Social Care, 2015.

32. Tarrant J, Jenkins RO and Laird KT. From ward to washer: The survival of Clostridium difficile spores on hospital bed sheets through a commercial UK NHS healthcare laundry process. Infect Control Hosp Epidemiol 2018; 39: 1406-1411.

33. Public Health Agency of Canada. Routine practices and additional precautions for preventing the transmission of infection in health care, (2014, accessed 24 January 2024).

34. Royal College of Physicians of Ireland Clinical Advisory Group on Healthcare Associated Infections. Guidelines for the prevention and control of multi-drug resistant organisms (MDRO) excluding MRSA in the healthcare setting, (2012, accessed 25 January 2024).

35. WHO Patient Safety and World Health Organization. WHO guidelines on hand hygiene in health care, (2009, accessed 25 January 2024).

36. Centers for Disease Control Prevention. Implementation of Personal Protective Equipment (PPE) Use in Nursing Homes to Prevent Spread of Multidrug-Resistant Organisms (MDROs). (2022, accessed 24 January 2024).

37. Clinical Excellence Commission. Infection prevention and control practice handbook. Sydney, Australia: Clinical Excellence Commission, 2016.

38. Ling ML, Apisarnthanarak A, Thu le TA, et al. APSIC Guidelines for environmental cleaning and decontamination. Antimicrob 2015; 4: 58. Review.

39. Australasian Health Infrastructure Alliance. Part D - Infection Prevention and Control, (2015, accessed 24 January 2024).

40. Balm MN, Jureen R, Teo C, et al. Hot and steamy: outbreak of Bacillus cereus in Singapore associated with construction work and laundry practices. Journal of Hospital Infection 2012; 81: 224-230.

41. Health and Safety Executive. Managing infection risks when handling the deceased, (2018, accessed 24 January 2024).

42. MacCannell T, Umscheid CA, Agarwal RK, et al. Guideline for the prevention and control of norovirus gastroenteritis outbreaks in healthcare settings, (2011, accessed 26 June 2024 32).

43. Association of Surgical Technologists. AST Guidelines for Best Practices for Laundering Scrub Attire. 2017.

44. 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: S65-164.

45. National Patient Safety Agency and National Reporting and Learning Service. The Revised NHS Cleaning Manual, (2009, accessed 24 January 2024).

46. Rathore MH and Jackson MA. Infection Prevention and Control in Pediatric Ambulatory Settings. Pediatrics 2017; 140: 1-23.

47. Carraro V, Sanna A, Pinna A, et al. Evaluation of Microbial Growth in Hospital Textiles Through Challenge Test. Adv Exp Med Biol 2021; 1323: 19-34.

48. Bearman G, Bryant K, Leekha S, et al. Healthcare personnel attire in non-operating-room settings. Infect Control Hosp Epidemiol 2014; 35: 107-121. Research Support, Non-U.S. Gov't.

49. NHS England and NHS Improvement. Uniforms and workwear: guidance for NHS employers, (2020, accessed 24 January 2024).

50. Sundermann AJ, Clancy CJ, Pasculle AW, et al. Remediation of Mucorales-contaminated Healthcare Linens at a Laundry Facility Following an Investigation of a Case Cluster of Hospital-acquired Mucormycosis. Clinical Infectious Diseases 2022; 74: 1401-1407.

51. Patterson CA, Wyncoll D, Patel A, et al. Cloth Lanyards as a Source of Intermittent Transmission of Candida auris on an ICU. Critical Care Medicine 2021; 49: 697-701.

52. Cheng VCC, Chen JHK, Wong SCY, et al. Hospital Outbreak of Pulmonary and Cutaneous Zygomycosis due to Contaminated Linen Items From Substandard Laundry. Clinical Infectious Diseases 2016; 62: 714-721. Research Support, Non-U.S. Gov't.

53. Duffy J, Harris J, Gade L, et al. Mucormycosis outbreak associated with hospital linens. Pediatr Infect Dis J 2014; 33: 472-476.

54. Schmithausen RM, Sib E, Exner M, et al. The Washing Machine as a Reservoir for Transmission of Extended-Spectrum-Beta-Lactamase (CTX-M-15)-Producing Klebsiella oxytoca ST201 to Newborns. Appl Environ Microbiol 2019; 85: 15.

55. Boonstra MB, Spijkerman DCM, Voor In 't Holt AF, et al. An outbreak of ST307 extended-spectrum beta-lactamase (ESBL)-producing Klebsiella pneumoniae in a rehabilitation center: An unusual source and route of transmission. Infect Control Hosp Epidemiol 2020; 41: 31-36.

56. Hosein IK, Hoffman PN, Ellam S, et al. Summertime Bacillus cereus colonization of hospital newborns traced to contaminated, laundered linen. Journal of Hospital Infection 2013; 85: 149-154.

57. Dohmae S, Okubo T, Higuchi W, et al. Bacillus cereus nosocomial infection from reused towels in Japan. Journal of Hospital Infection 2008; 69: 361-367.

58. Tsai AL, Hsieh YC, Chen CJ, et al. Investigation of a cluster of Bacillus cereus bacteremia in neonatal care units. J Microbiol Immunol Infect 2022; 55: 494-502.

59. Cheng VCC, Chen JHK, Leung SSM, et al. Seasonal Outbreak of Bacillus Bacteremia Associated With Contaminated Linen in Hong Kong. Clinical Infectious Diseases 2017; 64: S91-S97.

60. Sasahara T, Hayashi S, Morisawa Y, et al. Bacillus cereus bacteremia outbreak due to contaminated hospital linens. Eur J Clin Microbiol Infect Dis 2011; 30: 219-226. Research Support, Non-U.S. Gov't.

61. Vaughan A, Aarons E, Astbury J, et al. Human-to-human transmission of monkeypox virus, United Kingdom, October 2018. Emerging infectious diseases 2020; 26: 782.

62. Hino C, Ozaki M, Kitahara T, et al. Peripheral Parenteral Nutrition Solutions and Bed Bath Towels as Risk Factors for Nosocomial Peripheral Venous Catheter-related Bloodstream Infection by Bacillus cereus. Int J Med Sci 2023; 20: 566-571.

63. Department of Health. Health technical memorandum 01-04: decontamination of linen for health and social care. Engineering, equipment and validation, (2013, accessed 24 January 2024).

64. Public Health Agency of Canada. Clostridium Difficile Infection: Infection Prevention and Control Guidance for Management in Acute Care Settings, (2013, accessed 24 January 2024).

65. Public Health Agency of Canada. Infection prevention and control for COVID-19: Interim guidance for acute healthcare settings, (2021, accessed 24 January 2024 2024).

66. Public Health Agency of Canada. Infection Prevention and Control Guideline for the Prevention of Healthcare-Associated Pneumonia, (2010, accessed 24 January 2024).

67. National Disease Surveillance Centre Scientific Advisory Committee VGS. National guidelines on the management of outbreaks of norovirus infection in healthcare settings, (2004, accessed 25 January 2024).

68. Department of Health. Uniforms and workwear: guidance on uniform and workwear policies for NHS employers. Department of Health London, 2010.

69. European Centre for Disease Prevention and Control. Factsheet for health professionals on mpox (monkeypox), (2023, accessed 24 January 2024).

70. Public Health Agency of Canada. Infection Prevention and Control Guidance for Middle East Respiratory Syndrome Coronavirus (MERS-CoV) in Acute Care Settings, (2016, accessed 24 January 2024).

71. Public Health England. Middle East Respiratory Syndrome (MERS-CoV) Infection Prevention and Control Guidance, (2016, accessed 24 January 2024).

72. Advisory Committee on dangerous pathogens. Management of Hazard Group 4 viral haemorrhagic fevers and similar human infectious diseases of high consequence, (2015, accessed 13 March 2024).

73. Centers for Disease Control and Prevention. Infection Prevention and Control Recommendations for Patients in U.S. Hospitals who are Suspected or Confirmed to have Selected Viral Hemorrhagic Fevers (VHF), (2023, accessed 13 March 2024).

74. Centers for Disease Control and Prevention. Interim Guidance for Environmental Infection Control in Hospitals, (2022, accessed 13 March 2024).

75. World Health Organization. Clinical management and infection and prevention and control for Monkeypox. Interim rapid response guidance, (2022, accessed 13 March 2024).

76. World Health Organization. Infection prevention and control guideline for Ebola and Marburg disease, (2023, accessed 13 March 2024).

77. Public Health Agency of Canada. Infection prevention and control measures for Ebola disease in acute care settings, (2023, accessed 24 January 2024).

78. Health Facilities Scotland. NHSScotland Waste Management Guidance; Scottish Health Technical Note 03-01, (2023, accessed 21st May 2024 2024).

79. Butler JP. Effect of copper-impregnated composite bed linens and patient gowns on healthcare-associated infection rates in six hospitals. Journal of Hospital Infection 2018; 100: e130-e134.

80. Lazary A, Weinberg I, Vatine JJ, et al. Reduction of healthcare-associated infections in a long-term care brain injury ward by replacing regular linens with biocidal copper oxide impregnated linens. Int J Infect Dis 2014; 24: 23-29. Research Support, Non-U.S. Gov't.

81. Madden GR, Heon BE and Sifri CD. Effect of copper-impregnated linens on multidrug-resistant organism acquisition and Clostridium difficile infection at a

long-term acute-care hospital. Infect Control Hosp Epidemiol 2018; 39: 1384-1386. Research Support, N.I.H., Extramural.

82. Marcus EL, Yosef H, Borkow G, et al. Reduction of health care-associated infection indicators by copper oxide-impregnated textiles: Crossover, double-blind controlled study in chronic ventilator-dependent patients. American Journal of Infection Control 2017; 45: 401-403. Randomized Controlled Trial.

83. Marik PE, Shankaran S and King L. The effect of copper-oxide-treated soft and hard surfaces on the incidence of healthcare-associated infections: a two-phase study. Journal of Hospital Infection 2020; 105: 265-271. Randomized Controlled Trial.

84. Albarqouni L, Byambasuren O, Clark J, et al. Does copper treatment of commonly touched surfaces reduce healthcare-acquired infections? A systematic review and meta-analysis. Journal of Hospital Infection 2020; 106: 765-773.

85. Fan T, Shao L, Wang X, et al. Efficacy of copper-impregnated hospital linen in reducing healthcare-associated infections: A systematic review and meta-analysis. PLoS ONE 2020; 15: e0236184.

86. NHS England. Health Building Note 00-10 Part E: Curtains and tracking, (2023, accessed 24 January 2024).

87. Health Facilities Scotland. Scottish Health Technical Memorandum 66; Cubicle curtain track, (2006, accessed 19 March 2024).

88. Health Facilities Scotland. The NHSScotland National Cleaning Services Specification, https://www.nss.nhs.scot/media/1969/shfn-01-02-v50-jun-2016.pdf (2016, accessed 21 March 2024).

Appendix 1 – Guidance documents

The considered judgement form and recommendation system are adapted from the following three guidance documents.

- 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)

Appendix 2 - 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.