NHS National Services Scotland

Personal Protective Equipment (PPE): Headwear Literature Review

Considered Judgement Forms (CJFs)

Version: 1.0

12 March 2026

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

Version history

This literature review will be updated in real time if any significant changes are found in the professional literature or from national guidance or policy.

Version	Date	Summary of changes
1.0	12 March 2026	New Document

Contents

Research question 1: What type(s) of headwear are available for use in health and care settings?

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
This was a new question for this current review update. Nine pieces of evidence were included for this question.[1-9] • One guideline was graded AGREE 'recommend with modifications.[1] This guideline document did not provide sufficient details on the search strategy, despite conducting a systematic literature search. • Eight guidance documents were graded SIGN 50 level 4 expert opinion.[2-9] SIGN 50 level 4 expert opinion guidance carries a risk of bias, as there is limited detail on how recommendations were formulated, and it is not always clear when expert opinion has taken precedence over scientific evidence. As a result, it is considered low-quality evidence No primary studies were identified relevant to this question.	1x AGREE 'recommend with modifications' 8 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

The evidence identifies different types of headwear used in health and care settings, primarily in surgical and theatre environments.

- Bouffant caps: discussed in four documents (including one AGREE 'recommend with modifications' guideline[1] and three SIGN 50 level 4 expert opinions[2, 3, 5]). Bouffant caps are noted for providing complete coverage of the head and facial hair, including the ears and the nape of the neck. They are frequently recommended for comprehensive coverage in operating theatre environments.
- Skull caps or surgeon or theatre caps: mentioned in five documents (one AGREE 'recommend with modifications' guideline[1] and four SIGN 50 level 4 expert opinions[2, 5, 8, 9]). Skull caps are described as snug-fitting caps that typically leave the ears and nape exposed, offering less coverage than bouffant caps. The AST[5] guidance specifically highlights that skull caps do not fully cover the hair around the ears and neck.
- Hoods: referenced in two SIGN 50 level 4 expert opinion documents.[3, 5] Hoods provide complete coverage of the head and facial hair, and the AST[5] recommends disposable hoods particularly for staff with facial hair to reduce the risk of contamination.
- Headgear (general term): used in two documents (one AGREE 'recommend with modifications' guideline[1] and one SIGN 50 level 4 expert opinion[5]). Here, 'headgear' serves as an umbrella term encompassing various surgical head coverings.
- Cloth caps / hats: mentioned in four SIGN 50 level 4 guidance documents.[3, 5, 7, 8] These are reusable options that require regular laundering, with some guidance specifying they should be freshly laundered and lint-free before use.

The evidence also differentiates headwear by material and reusability:

Comments
• Disposable headwear: discussed in six documents[2-6, 8]; includes single-use bouffant caps, disposable hoods, and other coverings discarded after use. • Reusable headwear: mentioned in six documents[2, 3, 5-7]; includes cloth caps and other launderable coverings, which must be cleaned either in on-site healthcare laundry services or accredited facilities. In summary, the types of headwear identified for use in health and care settings include bouffant caps, skull caps, hood-style coverings, and general headgear, available in either disposable or reusable forms. Bouffant caps and hoods are generally preferred where full coverage is needed, while skull caps provide limited coverage.

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
Evidence originates from the UK[3, 9], the USA[2, 5-7], France[1], Canada[4], and Australia/New Zealand.[8] 2 x UK[3, 9] 4 x USA[2, 5-7] 1 x France[1] 1 x Canada[4] 1 x Australia/NZ[8] While some of the guidance originates from countries with different healthcare systems, the descriptions of headwear are consistent with UK guidance

1.4 Are the studies generalisable to the target population?

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

Comments
No primary studies were identified for this research question, so factors determining generalisability, such as sample size and methods, 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 is not a concern for evidence identified for this research question.

B: Evidence to decision

1.6 Recommendations

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

Note the following terminology:

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

Recommendation	Grading
The question does not necessitate the development of a recommendation or good practice point but rather a description of the types of headwear available for use. The available evidence identifies several types of headwear for use in health and care settings including: • Bouffant caps: provide complete coverage of head, facial hair, ears, and nape of neck. • Skull caps or Surgeon or theatre caps: provide limited coverage of the top of head and crown, leaving ears and nape exposed. • Hood-style coverings: provide complete coverage of head and facial hair. • Cloth caps or hats: require regular laundering.	Not Applicable

Recommendation	Grading
• Both disposable (single-use) and reusable options are available across headwear types.	

1.7 Balancing benefits and harms

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

Benefits

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

Benefits
Not Applicable

Risks and harms

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

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

Benefit-Harm assessment
Not Applicable

1.8 Feasibility

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

Describe (if applicable):

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

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

Feasibility
Not Applicable

1.9 Expert opinion

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

Expert opinion
Not Applicable

1.10 Value judgements

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

Value judgements
Not Applicable

1.11 Intentional vagueness

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

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

Intentional vagueness
Not Applicable

1.12 Exceptions

List situations or circumstances in which the Recommendation or 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 standards or legislative requirements for the use of headwear in health and care settings?

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
Five pieces of evidence were included for this question:[10-14] • Four mandatory legislation documents[10-13] • One British Standard graded SIGN 50 level 4 expert opinion.[14] No primary research was included owing to the nature of the research question Legislation relevant to personal protective equipment (PPE) in the workplace generally sets out broad requirements for ensuring worker safety but does not specifically address the use of headwear in health and care settings.	4 x Mandatory 1 x SIGN50 level 4

2.2 Is the evidence consistent in its conclusions?

(see SIGN 50, section 5.3.2)

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

Comments

While there is no legislation that explicitly mandates the use of headwear in health and care settings, broader personal protective equipment (PPE) regulations and workplace health and safety laws provide a framework that can be interpreted to include headwear when required for infection prevention and control.

- The Health and Safety at Work etc. Act 1974[11] and the COSHH Regulations 2002[12] require employers to protect staff from health risks, which may include providing headwear if other controls are insufficient.
- The Personal Protective Equipment at Work (Amendment) Regulations 2022[10] reinforce employers' duty to provide suitable PPE where risks are identified.
- The Regulation (EU) 2016/425 and UK PPE (Enforcement) Regulations 2018[13] set product standards for PPE, ensuring headwear (if classified as PPE) meets safety requirements and carries CE or UKCA markings.

The British Standard BS EN 13921:2007[14] focuses on ergonomic design of PPE, including headwear, but does not set infection control-specific requirements.

Overall, while headwear as PPE isn't specifically mandated within existing legislation and standards, these may support its use in health and care settings when risk assessments indicate it is necessary.

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
Four legislative documents and one British standard are specific to the UK. These are applicable to Scottish health and care settings 5 x UK [10-14]

2.4 Are the studies generalisable to the target population?

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

Comments
No primary studies were identified for this research question, so factors determining generalisability, such as sample size and methods, do not apply.

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
Publication bias is not a concern for evidence identified for this research question.

B: Evidence to Decision

2.6 Recommendations

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

Note the following terminology:

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

Recommendation	Grading
R2.1 Although no legislation explicitly mandates headwear use for infection prevention and control, health and care organisations must comply with broader PPE and workplace safety laws, including: • The Health and Safety at Work etc. Act (1974) • The Control of Substances Hazardous to Health (COSHH) Regulations (2002, as amended) • The Personal Protective Equipment at Work (Amendment) Regulations (2022) • The UK PPE (Enforcement) Regulations (2018) and Regulation (EU) 2016/425	Recommendation
R 2.2 Any headwear classified as PPE must comply with relevant CE or UKCA product marking requirements.	Recommendation

Recommendation	Grading
GPP 2.1 Where there is a need for headwear to be procured specifically for use as PPE for Infection Prevention Control (IPC) purposes in Scottish health and care settings, it should be ensured that the items comply with the ergonomic principles outlined in BS EN 13921:2007, ensuring that they are: • Comfortable and practical for extended wear • Compatible with other PPE items such as masks and eyewear • Non-restrictive to staff movement or visibility **[New]**	Good Practice Point

2.7 Balancing benefits and harms

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

Benefits

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

Benefits
R2.1 Adherence to current legislation and regulations facilitates compliance with associated corporate and social governance responsibilities, including the legal requirements of the applicable health and safety policies or legislation. R2.2 If headwear with the CE or UKCA marking is procured, it will ensure compliance with The PPE (Enforcement Regulations) 2018 which is a legal requirement.

Benefits
GPP 2.1 Ensuring that headwear procured for IPC purposes complies with BS EN 13921:2007 promotes staff safety, comfort, and performance.

Risks and harms

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

Risks and harms
R2.1 and R2.2 No harms anticipated GPP 2.1 The British Standard BS EN 13921:2007 provides ergonomic principles for PPE, ensuring that items such as headwear are comfortable, well-fitted, and effective for users. However, the standard was not specifically developed for health and care settings and was produced by technical committees whose expertise in healthcare environments is unclear. As the testing methods described are intended for general occupational use, there are concerns that current PPE performance requirements and testing approaches may not fully reflect the unique ergonomic and infection prevention and control needs of healthcare environments.

Benefit-Harm assessment

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

Benefit-Harm assessment
R2.1 and R2.2 Only benefits identified GPP 2.1 While BS EN 13921:2007 was not specifically developed for health and care settings, it remains the only available standard providing ergonomic principles

Benefit-Harm assessment
for PPE, including headwear. Despite this limitation, procuring PPE that complies with this standard ensures a baseline level of safety, comfort, and performance. Using equipment tested against established ergonomic criteria is therefore safer and more reliable than using untested alternatives, and the protective benefits of compliance outweigh the limitations arising from the standard not being healthcare specific.

2.8 Feasibility

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

Describe (if applicable):

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

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

Feasibility
R2.1, R2.2 and GPP2.1 No additional resource or feasibility issues are expected as a result of adhering to relevant legislation and standards.

2.9 Expert opinion

Summarise the expert opinion used in creating the Recommendation or Good Practice Point. If none were involved, state “none”. Translating evidence into action often involves expert opinion where evidence is insufficient. Clearly outlining that

expert opinion helps users understand their influence on interpreting objective evidence. Expert opinion may also be required where there is no evidence available.

Expert opinion
R2.1 The evidence underpinning this recommendation is mandatory legislation; the Health and Safety at Work etc. Act 1974[11], the Control of Substances Hazardous to Health (Amendment) Regulations 2002[12] and the Personal Protective Equipment at Work (Amendment) Regulations 2022.[10] No expert opinion to note. R2.2 The evidence underpinning this recommendation is mandatory legislation; The Regulation (EU) 2016/425 and UK PPE (Enforcement) Regulations 2018.[13]No expert opinion to note. GPP 2.1 Although this British standard is based only on expert opinion (graded SIGN 50 Level 4 evidence), it is considered best practice in Scottish workplaces. For this reason, ARHAI Scotland and its stakeholders recommend following them.

2.10 Value judgements

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

Value judgements
R2.1 None to note R2.2 None to note

2.11 Intentional vagueness

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

acknowledging the reasoning clearly promotes transparency. Reasons for vagueness may include:

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

Intentional vagueness
R2.1 The recommendation does not mandate the use of headwear directly but instead refers to broader legal frameworks such as the Health and Safety at Work Act, COSHH, and PPE Regulations. This phrasing is deliberate, as it acknowledges the absence of a specific legal requirement for headwear in IPC while ensuring that organisations remain aware of their overarching legal duties to protect staff and patients through appropriate risk assessment and adherence to general workplace safety obligations R2.2 There is no specific situation prescribed by legislation where headwear must be used for IPC purposes. However, the recommendation deliberately remains broad to allow for future scenarios where UK Conformity Assessed (UKCA) headwear may be required in Scottish health and care settings

2.12 Exceptions

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

Exceptions
None to note

2.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
Currently, there are no specific standards or legislation regarding headwear worn in health and care settings. As such, expanding existing general legislation and standards to address the appropriate use of headwear as personal protective equipment (PPE) for IPC in these settings would be beneficial.

Research Question 3: When should headwear be worn for infection control purposes in health and care settings?

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
Thirteen pieces of evidence were included for this question.[2, 3, 6-9, 15-21] • Three guidelines graded as AGREE 'recommend with modifications' guidelines.[15, 16, 21] One lacked clarity in explicitly linking the evidence to the recommendations[16], while two did not provide sufficient details on the search strategy, despite conducting a systematic literature search.[15, 21] • Ten guidance documents graded SIGN 50 level 4 expert opinion.[2, 3, 6-9, 17-20] SIGN 50 level 4 guidance carries a risk of bias, as there is limited detail on how recommendations were formulated, and it is not always clear when expert opinion has taken precedence over scientific evidence. As a result, it is considered low-quality evidence. No primary studies were identified.	3 x AGREE 'recommend with modifications' 10 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

The evidence is consistent in supporting headwear use in surgical and theatre or high-risk settings, mainly as source control to protect patients from contamination and reduce the risk of surgical site infections.

- Source control: twelve guidance documents (including three AGREE 'recommend with modifications'[1, 16, 21] and nine SIGN 50 level 4 expert opinion[2, 5-7, 9, 18-20, 22]) recommend headwear for this purpose, often specifying bouffant caps, skull caps, or hoods. They emphasise covering hair, ears, and nape, with the rationale focused on reducing microbial shedding and reducing environmental contamination including potential wound contamination.
- Headwear as PPE: evidence supporting headwear as PPE to protect healthcare workers themselves is very limited. Only the Association for Perioperative Practice (AfPP)[3] notes that headwear helps protect both staff and patients, though it does not directly link this to a specific transmission mode.
- The Australian and New Zealand College of Anaesthetists (ANZCA) advises complete hair coverage but does not clarify whether this is for patient or staff protection.[8]

Overall, while guidance consistently supports headwear for patient protection as a form of source control, the evidence linking headwear to transmission risk is unclear and there is limited evidence on its use as PPE for staff protection.

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
Evidence originates from the UK[3, 9, 19-21], the European region[16], France[15], the USA[2, 6, 7, 17, 18], and Australia & New Zealand.[8] While some of these guidelines originate from countries with different healthcare systems and resource levels than Scotland, they are all from developed healthcare contexts. As a result, their recommendations can be cautiously adapted to Scottish health and care settings, ensuring alignment with local policies and practices. 5 x UK[3, 9, 19-21] 1 x France[15] 1 x EU[16] 5 x USA[2, 6, 7, 17, 18] 1 x Australia and NZ[8]

3.4 Are the studies generalisable to the target population?

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

Comments
No primary studies were identified for this research question, so factors determining generalisability, such as sample size and methods, do not apply

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
Due to the nature of the evidence identified for this research question, it is not possible to ascertain publication bias.

B: Evidence to Decision

3.6 Recommendations

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

Note the following terminology:

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

Recommendation	Grading
GPP 3.1 Headwear should be worn in surgical environments such as theatres, or other high-risk procedural settings where there is a requirement to protect patients from contamination and minimise risk of contamination of the theatre environment or sterile field. **[Slightly Revised]**	Good Practice Point
GPP 3.2 Headwear should be worn as PPE during procedures where splashing or spraying of blood and body fluids is anticipated.	Good Practice Point

3.7 Balancing benefits and harms

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

Benefits

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

Benefits
GPP3.1 Following this good practice point would likely reduce the risk of surgical site infections by minimising the shedding of hair and skin particles into the sterile field during surgical and high-risk procedures and contamination of the theatre environment. GPP3.2 Following this good practice point will help minimise the risk of contamination. When there is a chance of blood or body fluids spraying, headwear provides a barrier that protects the hair and scalp.

Risks and harms

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

Risks and harms
GPP3.1 and 3.2 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 or visitor perspective, the societal perspective, or both. Recommendations or Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
GPP3.1 and 3.2 Only benefits identified

3.8 Feasibility

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

Describe (if applicable):

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

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

Feasibility
GPP3.1 and 3.2 These good practice points are feasible within the Scottish health and care settings, as they align with recommended IPC standards and within existing NHS Scotland guidance frameworks, as the use of headwear in surgical and high-risk procedural areas is already established practice. Financial implications will primarily relate to the routine procurement of single-use or reusable headwear. Opportunity costs are minimal, as headwear is a component of theatre attire and does not require additional staffing or major procedural changes. From a human factors perspective, implementation is straightforward, though minor challenges may include staff comfort, compliance, consistency, and proper disposal practices.

3.9 Expert opinion

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

Expert opinion
GPP 3.1. The evidence used to inform this good practice point includes three AGREE ‘recommend with modifications’[1, 16, 21] and nine SIGN 50 level 4 expert opinion[2, 5-7, 9, 18-20, 22]. Since the relevant recommendations within the AGREE guidelines were based on expert opinion in the absence of evidence, the evidence was deemed insufficient to support development of a recommendation. ARHAI Scotland and its stakeholders supports extant expert opinion that headwear should be worn in surgical environments such as theatres, and other high-risk procedural settings where there is a requirement to protect patients from contamination and minimise the risk of surgical site infections. GPP3.2 Although no guidance document explicitly states that headwear should be worn as PPE during procedures where splashing or spraying of body fluids is anticipated, some guidance refers to this more generally using terms like “where there is a risk of contamination.” Expert opinion from ARHAI and its stakeholders is that this principle applies within Scottish health and care settings.

3.10 Value judgements

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

Value judgements
GPP3.1 and 3.2 None to note

3.11 Intentional vagueness

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

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

Intentional vagueness
GPP3.1 and 3.2 None to note

3.12 Exceptions

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

Exceptions
GPP3.1 and 3.2 None to note

3.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
Further primary research is needed to evaluate the effectiveness of headwear in reducing surgical site infections and environmental contamination in surgical environments such as theatres and other high-risk procedural settings. Specifically, well designed observational or interventional studies to establish a direct causal

Recommendations for research
relationship between headwear use and infection outcomes, as current guidance is largely based on expert opinion rather than empirical data.

Research Question 4: What type(s) of headwear should be used in health and care settings?

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
Eleven pieces of evidence were included for this question.[3, 6-8, 15, 17, 18, 23-26] • One guideline graded AGREE 'recommend with modifications' due to the lack of details on the search strategy, despite a systematic literature search being conducted.[15] • Three studies graded SIGN 50 level 3.[23-25] All three studies provide low to moderate-quality evidence, with the main limitation being their inability to establish a causal relationship. ◦ The first study by Markel et al.[25] used a controlled operating room environment to compare different headwear types, finding that bouffant caps allowed higher particle penetration and microbial shedding than skull caps. However, its simulated setting limits real world applicability.	3 x SIGN 50 level 3 1 x 'recommend with modifications' 7 x SIGN 50 level 4

Comments	Evidence level
• The second study by Rios-Diaz et al,,[24] analysed 760 pre-policy and 1,141 post-policy cases, found no significant difference in SSI rates between headwear types but was limited by its observational design, reliance on self-reported data, and single-centre setting. • Similarly, Haskins et al.,[23] analysing 6,210 ventral hernia repairs, found no association between headwear type and postoperative infections. While benefiting from a large dataset, its focus on a single procedure type and potential response bias limits its generalisability. • Seven guidance documents graded SIGN 50 level 4.[3, 6-8, 17, 18, 26] 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.	

4.2 Is the evidence consistent in its conclusions?

(see SIGN 50, section 5.3.2)

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

Comments
There is no consistency across the evidence with regards to the types of headwear that should be used in health and care settings. **Disposable vs. reusable headwear** The evidence is inconsistent regarding disposable or reusable headwear.

Comments

- Three primary studies[23-25] found no significant difference in SSI rates or contamination risk between disposable and reusable headwear; results were inconclusive and limited by study design (retrospective data, simulation settings, and confounders). Although one study suggested bouffant caps (typically disposable) may be more porous than cloth skull caps, this was not directly linked to higher infection rates.[25]
- One AGREE 'recommend with modifications' guideline[1] and three SIGN 50 level 4 expert opinion[3, 8, 27] acknowledge both disposable and reusable options.
    - The French Society of Anaesthesia and Intensive Care Medicine recommends either single-use disposable or reusable cloth headwear, highlighting environmental sustainability, but does not favour one over the other due to limited evidence.[1]
    - The AfPP[3] and ASA[27] permit reusable cloth caps if they are properly laundered and inspected, while the ANZCA[8] shows preference for disposable theatre caps or freshly laundered lint-free hats.

In summary, primary studies and guidance are inconsistent. Some documents prefer disposable for practicality and coverage; others allow reusable if strict laundering protocols are followed.

Coverage of ears and hair

The evidence consistently identifies full coverage of scalp, hair, and ears as preferable for reducing contamination risk, though there is variation on skull caps.

- Primary experimental data[25] (SIGN 50 level 3) found bouffant caps were more permeable and shed more particles than cloth skull caps, but this was not directly linked to increased SSI risk. While two observational studies[23, 24] graded SIGN 50 level 3 found no significant difference in surgical site infection (SSI) rates between bouffant caps and skull caps.
- Guidelines from the French Society of Anaesthesia and Intensive Care Medicine found no conclusive evidence supporting the requirement for ear coverage and therefore did not recommend a specific headwear

Comments
type.[1]Similarly, a 2018 joint statement from multiple organisations, graded SIGN 50 level 4 guidance, reported insufficient evidence linking headwear type to surgical site infections, suggesting that coverage style may not be critical for infection control. [26] • Five SIGN 50 level 4 documents[2, 3, 5, 8, 27] specifically advise covering the hair, scalp, and ears, with the Association of Surgical Technologists explicitly advising against skull caps due to inadequate coverage. • The ACS permits skull caps, provided they cover the hair adequately.[18] In conclusion, the evidence does not identify one single type of headwear as superior for use in health and care settings. Instead, it consistently supports the principle of wearing headwear in surgical and other high-risk environments to protect patients by reducing contamination and SSIs. Bouffant caps and hood-style caps are generally preferred for full coverage, while skull caps may be accepted if coverage is adequate. The choice between disposable and reusable headwear is left to local policy, reflecting the absence of strong evidence supporting one specific type.

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 included evidence comprises documents from the UK[3], France[15], Australia and New Zealand[8], and the USA.[6, 7, 17, 18, 23-26] Evidence from primary studies was limited by their observational designs, however, the types of headwear examined are applicable to Scottish health and care settings. Nevertheless, the results should be extrapolated with caution as the use of mock surgeries and restricted brand testing limits applicability to actual

Comments
clinical scenarios, where variables like patient movement, diverse surgical teams, and varied headgear brands could influence outcomes. The guidance from various regions may not fully consider the specific healthcare practices, infrastructure, and available resources in Scotland. However, since these guidelines originate from similarly developed contexts, they could be cautiously adapted for use in Scottish health and care settings. 1 x UK[3] 1 x France[15] 1 x Australia/New Zealand[8] 8 x USA[6, 7, 17, 18, 23-26]

4.4 Are the studies generalisable to the target population?

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

Comments
Three primary studies were included.[23-25] The generalisability of these studies is limited by sample size, selection methods, and contextual focus. Markel et al.[25] tested three specific headgear types in a controlled, simulated operating environment rather than real surgical settings. While the experimental design allowed precise measurement of particle and microbial shedding the findings may not extend beyond the tested brands or environments. Rios-Diaz et al.[24] analysed data from 1,901 patients at a single institution, comparing SSI rates before and after a headwear policy mandating bouffant caps.

Comments
Its generalisability is affected by the single-centre design, unequal cohort sizes, exclusion of contaminated surgeries, and inability to verify protocol compliance. Additionally, excluding emergency or contaminated surgeries narrows the scope, making the results less applicable to high-risk procedures. Haskins et al. (2017)[23] drew from a large multi-hospital dataset of 6,210 ventral hernia repairs, but the reliance on surgeon self-reported headwear preferences introduces potential response bias. Surgeons may overreport adherence to protocols or favour certain caps due to personal bias, skewing results. Furthermore, focusing solely on ventral hernia repairs limits relevance to other surgeries with differing infection risks. In summary, while the studies provide valuable insights into headwear's role in infection control, their conclusions are context-specific, and findings should be interpreted with caution.

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
All three primary studies found no significant difference in SSI rates between different types of headwear. [23-25] However, the fact that these studies were published despite their null results might suggest that publication bias is not a concern. A formal assessment of publication bias was not conducted.

B: Evidence to Decision

4.6 Recommendations

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

Note the following terminology:

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

Recommendation	Grading
GPP4.1 Selection of headwear type should be based on its ability to contain and cover all of the wearer's hair. **[Revised]**	Good Practice Point
GPP4.2 Both disposable single-use and reusable (launderable) headwear are permissible options. Selection be informed by a local risk-assessment that balances infection control principles, material integrity, and environmental sustainability **[New]**	Good Practice point

4.7 Balancing benefits and harms

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

Benefits

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

Benefits
GPP 4.1 Fully containing the wearer's hair minimises the risk of contaminating sterile fields and surgical sites, supporting consistent infection prevention practices and enhancing patient safety. GPP 4.2 If this GPP is followed, appropriate selection and use of headwear whether disposable or reusable would promote compliance with IPC practices, minimise contamination risks, and support sustainable, safe, and practical practices in Scottish healthcare settings.

Risks and harms

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

Risks and harms
GPP 4.1 and 4.2 No harms anticipated

Benefit-Harm assessment

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

Benefit-Harm assessment
GPP 4.1 and GPP 4.2 Only benefits identified

4.8 Feasibility

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

Describe (if applicable):

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

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

Feasibility
GPP 4.1 None to note GPP 4.2 There will be a requirement for suitable laundering facilities and quality assurance processes for reusable headwear, and this may vary across sites. Other practical considerations may include: adequate supply to cover multiple PPE changes throughout shifts and staff breaks, product durability and how many washes can be withstood before integrity is compromised, logistical considerations regarding turnaround time for return of laundered items, whether the cost and emissions factor related to laundering offsets the benefits compared to disposable PPE, and additional training and education requirements regarding proper use, handling, and disposal procedures depending on the product selected.

4.9 Expert opinion

Summarise the expert opinion used in creating the Recommendation or Good Practice Point. If none were involved, state “none”. Translating evidence into action often involves expert opinion where evidence is insufficient. Clearly outlining that

expert opinion helps users understand their influence on interpreting objective evidence. Expert opinion may also be required where there is no evidence available.

Expert opinion
GPP 4.1 The evidence underpinning this good practice point includes three primary studies, one AGREE 'recommend with modifications' guideline[1] and five SIGN 50 level 4 documents[2, 3, 5, 8, 27]. Given the limitations of the primary evidence and the bulk of evidence being SIGN50 level 4, it was deemed insufficient to form a recommendation and instead a good practice point was developed. ARHAI Scotland and its stakeholders support the expert opinion that selection of headwear type should be based on its ability to contain all of the wearer's hair as this will minimise the risk of contaminating sterile fields and surgical sites. GPP 4.2 The evidence used to inform this good practice point includes three primary studies[23-25], one AGREE 'recommend with modifications' guideline[1] and three SIGN 50 level 4 expert opinion[3, 8, 27]. However, given the limitations of the primary studies, the reliance on expert opinion within the guidance documents, and the inconsistencies across the evidence base, the available evidence was deemed insufficient to support a formal recommendation and therefore informed the development of a good practice point instead. ARHAI Scotland and its stakeholders supports the extant expert opinion that both disposable single-use and reusable (launderable) headwear are permissible options and selection should be informed by a local risk-assessment.

4.10 Value judgements

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

Value judgements
GPP 4.1 None to note

Value judgements
GPP 4.2 The inclusion of both disposable and reusable options acknowledge NHSScotland's sustainability commitments while assuming that safety can be maintained through suitable laundering and quality assurance processes as agreed by the board or organisation

4.11 Intentional vagueness

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

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

Intentional vagueness
GPP 4.1 None to note GPP 4.2 Vagueness was necessary because of limited and conflicting evidence regarding differences in infection risk between disposable and reusable headwear, and lack of consistency across the evidence base. The statement allows local risk assessment and policy discretion to accommodate variation in resources, laundering capacity, and sustainability priorities within Scottish healthcare settings.

4.12 Exceptions

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

Exceptions
GPP 4.1 and GPP 4.2 None to note

5.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
Further research is required to establish the effectiveness of headwear as Personal Protective Equipment (PPE) for IPC purposes, such as protecting the wearer from exposure to blood, body fluids, and other infectious agents. Well-designed prospective studies in surgical environments such as theatres or other high-risk procedural settings where headwear is required, to compare infection rates and contamination levels associated with different types of headwear such as, disposable bouffant vs. reusable cloth caps, controlling for confounding factors such as laundering processes and staff compliance. Further research would help clarify the potential benefits of reusable headwear from a sustainability perspective.

Research Question 5: What considerations should be given in the situation where headwear is worn for religious and/or cultural purposes?

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
Three pieces of evidence included for this research question: • Three guidance documents graded SIGN 50 level 4.[2, 18, 28] No primary studies were identified relevant to this question. SIGN 50 level 4 guidance carries a risk of bias, as there is limited detail on how recommendations were formulated, and it is not always clear when expert opinion has taken precedence over scientific evidence. As a result, it is considered low-quality evidence	3 x SIGN 50 level 4

5.2 Is the evidence consistent in its conclusions?

(see SIGN 50, section 5.3.2)

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

Comments

There is consistency across guidance documents in acknowledging the need to accommodate religious head coverings, although the scope and purpose differ.

- The AORN[2] provides a conditional recommendation specific to healthcare, allowing religious head coverings such as hijabs, veils, and turbans to be worn in semi-restricted and restricted areas of operating suites, provided they are clean and made of tightly woven, low-linting fabric. This recommendation is focused on ensuring patient safety rather than serving as PPE for the wearer. Similarly, the American College of Surgeons (ACS) [18] supports accommodation of religious headwear on the condition that it does not compromise patient safety.
- In contrast, HSE guidance[28] is situated within the broader context of PPE intended to protect the wearer. Under the Personal Protective Equipment at Work Regulations, the HSE allows an exemption for Sikhs wearing turbans in most workplace settings, except for high-risk emergency response roles where protective headgear is deemed essential based on risk assessment. It also limits employer liability if a turban-wearing Sikh elects not to wear protective headgear and an incident occurs. Importantly, the HSE guidance applies across all industries and is not specific to healthcare or IPC.

In summary, guidance from both healthcare and workplace organisations recognises the importance of accommodating religious head coverings. However, the purpose differs with healthcare-specific recommendations such as those from AORN and ACS centred on maintaining patient safety, whereas the HSE guidance addresses the use of headwear as PPE to protect the wearer, and is not tailored to

Comments
IPC in health and care settings. These differences reflect the distinct regulatory purposes rather than a conflict in values.

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
Documents originate from the UK[28], and the USA. [2, 18] Although the US healthcare system differs in context, structure, and resources, these documents originate from similarly developed settings. As such, this expert opinion guidance can be cautiously adapted for use in Scottish health and care settings. 1 x UK[28] 2 X US[2, 18]

5.4 Are the studies generalisable to the target population?

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

Comments
No primary studies were identified for this research question, so factors determining generalisability, such as sample size and methods, do not apply.

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
Due to the nature of the evidence identified for this research question, which primarily consists of expert opinion guidance pieces, it is not possible to ascertain publication bias.

B: Evidence to Decision

5.6 Recommendations

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

Note the following terminology:

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

Recommendation	Grading
GPP 5.1 Head coverings worn for religious or cultural reasons should not compromise patient safety by impeding the delivery of patient care or compromise source control. Such coverings must be clean, made of	Good Practice Point

Recommendation	Grading
suitable low-linting material, risk assessed locally, and changed in accordance with the local uniform policy. **[Revised slightly]**	

5.7 Balancing benefits and harms

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

Benefits

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

Benefits
GPP 5.1 Following this GPP ensures staff can observe religious or cultural practices without compromising patient safety and meet outlined hygiene standards, while maintaining clean, low-linting coverings that minimise contamination risk.

Risks and harms

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

Risks and harms
GPP 5.1 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 or

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

Benefit-Harm assessment
GPP 5.1 Only benefits identified

5.8 Feasibility

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

Describe (if applicable):

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

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

Feasibility
GPP 5.1 Ensuring safe use of religious or cultural head coverings may require staff training and education, and reinforcement of policies on cleanliness, material suitability, and timely changes to avoid compromising patient care and safety or infection control as well as adherence monitoring to ensure staff compliance.

5.9 Expert opinion

Summarise the expert opinion used in creating the Recommendation or Good Practice Point. If none were involved, state “none”. Translating evidence into action often involves expert opinion where evidence is insufficient. Clearly outlining that

expert opinion helps users understand their influence on interpreting objective evidence. Expert opinion may also be required where there is no evidence available.

Expert opinion
GPP 5.1 This good practice point is informed by evidence from three SIGN 50 level 4 guidance documents.[2, 18, 28] Given the limited availability and quality of evidence, it was not possible to develop a formal recommendation; instead, a Good Practice Point was formed. ARHAI and its stakeholders support the expert opinion generated from the evidence, which states that head coverings worn for religious or cultural reasons must not impede the delivery of patient care, compromise source control, or affect clinical practice. This approach allows accommodation of different beliefs while maintaining patient safety.

5.10 Value judgements

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

Value judgements
GPP 5.1 This good practice point values cultural and religious inclusivity while ensuring patient safety and maintaining outlined hygiene standards.

5.11 Intentional vagueness

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

- inadequate evidence

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

Intentional vagueness
GPP 5.1 None to note

5.12 Exceptions

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

Exceptions
GPP 5.1 Should not be applied if religious or cultural coverings interfere with patient care, compromise source control, or cannot be safely worn in areas requiring strict aseptic technique.

5.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
None

Research Question 6: When should headwear be doffed (taken off) or changed?

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
Four documents graded SIGN 50 level 4 expert opinion were included. [2, 5, 6, 18] No primary studies were identified relevant to this question. SIGN 50 level 4 guidance carries a risk of bias, as there is limited detail on how recommendations were formulated, and it is not always clear when expert opinion has taken precedence over scientific evidence. As a result, it is considered low-quality evidence.	4 x SIGN 50 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
Although limited and largely confined to surgical or operative settings, the evidence is consistent regarding when headwear should be removed or changed. • Three SIGN 50 level 4 documents[5, 6, 18] recommend that head coverings should be removed and replaced immediately if contaminated or soiled. AORN guidance specifically mentions removal when contaminated with potentially infectious materials (e.g., blood or body fluids), advising this should be done as soon as possible while ensuring that this does not delay urgent patient care.[2] The ACS adds that headwear worn during dirty or contaminated procedures must be changed before starting subsequent cases, even if the headwear does not appear visibly soiled. [18] • Overall, guidance is consistent in advising that both disposable and reusable headwear should be changed daily and replaced promptly when contaminated.

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
The identified evidence originates from the USA. [2, 5, 6, 18] While healthcare structures, resources, and practices may differ, the guidance comes from a developed healthcare context and could be cautiously applied to Scottish health and care settings.

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

Comments
No primary studies were identified for this research question, so factors determining generalisability, such as sample size and methods, do not apply.

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
Due to the nature of the evidence identified for this research question, which primarily consists of expert opinion guidance pieces, it is not possible to ascertain publication bias.

B: Evidence to Decision

6.6 Recommendations

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

Note the following terminology:

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

Recommendation	Grading
GPP 6.1 Headwear should be removed or changed: • prior to leaving the dedicated clinical area (i.e. the theatre setting); • at the end of a single clinical procedure or task; • immediately or as soon as possible if visibly soiled/contaminated with blood or body fluids, wet, damaged or compromised • when used sessionally, should be changed either at the end of a single clinical procedure or task, or at the end of a theatre session • in accordance with manufacturer's instructions **[No change]**	Good Practice Point

6.7 Balancing benefits and harms

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

Benefits

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

Benefits
GPP 6.1 Following this GPP ensures that headwear is consistently clean and appropriately replaced, minimising the risk of cross-contamination between procedures and theatre sessions. Prompt removal of visibly soiled headwear limits exposure to blood or body fluids and improves safety for staff and patients.

Risks and harms

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

Risks and harms
GPP 6.1 No harms anticipated

Benefit-Harm assessment

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

Benefit-Harm assessment
GPP 6.1 Only benefits identified

6.8 Feasibility

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

Describe (if applicable):

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

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

Feasibility
GPP 6.1 Staff education and reminder may be needed to ensure consistent compliance with daily and procedural changes

6.9 Expert opinion

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

Expert opinion
GPP 6.1 The evidence underpinning this good practice points is drawn from four SIGN 50 level 4 guidance documents[2, 5, 6, 18] all deemed insufficient to develop a

Expert opinion
formal recommendation. As a result, a good practice point was instead developed, with ARHAI Scotland and its stakeholders supporting the expert opinion that headwear should be removed or changed before leaving the theatre area, at the end of each procedure or task, or at the end of a theatre session when used sessionally , and immediately or as soon as possible if it becomes visibly soiled or contaminated with blood or body fluids to minimise the risk of cross-contamination.

6.10 Value judgements

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

Value judgements
GPP 6.1 None to note

6.11 Intentional vagueness

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

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

Intentional vagueness
GPP 6.1 None to note

6.12 Exceptions

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

Exceptions
GPP 6.1 None to note

6.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
None.

Research Question 7: Where and how should headwear be donned (put on)?

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
Three documents were included for this question, all graded SIGN 50 level 4 expert opinion. [2, 3, 17] No primary studies were identified relevant to this question. SIGN 50 level 4 guidance has limitations that affect its reliability as evidence. Due to insufficient transparency in how recommendations are developed and lack of clarity around when expert opinion takes precedence over scientific evidence, this level of guidance is considered low-quality evidence.	3 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
Where to Don Three SIGN 50 level 4 documents[2, 3, 5] are generally consistent in addressing when to put on surgical headwear, although none specify the exact location. The AORN[2] recommends donning headwear prior to entering the semi-restricted and restricted areas of the surgical suite, while the AfPP[3] and AST[5] similarly indicate it should be put on prior to entering any area requiring sterile attire. **How to Don** Two SIGN 50 level 4 expert opinion pieces offer guidance on how to don headwear, though none provides a specific step-by-step process and do not provide detailed steps on how to correctly don headwear.[3, 5] They are consistent in advising headwear be donned before putting on the scrub suit to prevent contamination of scrub clothing with hair or dandruff.

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
Evidence is from the UK, [3]and the USA.[2, 17] Although the latter documents provide guidance specific to the USA, they originate from similarly developed healthcare contexts and can be cautiously adapted for use in Scottish health and care settings. 1 x UK[3] 2 x USA[2, 17]

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

Comments
No primary studies were identified for this research question, so factors determining generalisability, such as sample size and methods, do not apply.

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
Due to the nature of the evidence identified for this research question, which primarily consists of expert opinion guidance pieces, it is not possible to ascertain publication bias.

B: Evidence to Decision

7.6 Recommendations

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

Note the following terminology:

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

Recommendation	Grading
GPP7.1 Headwear should be donned before entering semi restricted or restricted areas, such as the surgical suite, or immediately before the procedure or activity at the point of donning other PPE. **[New]**	Good Practice Point
GPP7.2 Headwear should be donned before putting on scrub or sterile attire to prevent contamination of sterile clothing with hair or dandruff. **[New]**	Good Practice Point

7.7 Balancing benefits and harms

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

Benefits

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

Benefits
GPP7.1 Minimises the risk of contaminating sterile environments with hair and skin particles, thereby lowering the potential for surgical site infections. GPP7.2 Following this GPP prevents contamination of scrub or sterile clothing with hair or dandruff, helping to maintain aseptic integrity during procedures.

Risks and harms

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

Risks and harms
GPP7.1 and GPP 7.2 No harms anticipated

Benefit-Harm assessment

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

Benefit-Harm assessment
GPP 7.1 and 7.2 Only benefits identified

7.8 Feasibility

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

Describe (if applicable):

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

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

Feasibility
GPP 7.1 and 7.2 There may be a need to provide suitable donning locations and staff education and training to ensure compliance with the GPPs.

7.9 Expert opinion

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

Expert opinion
GPP 7.1 and 7.2 These good practice points are based on evidence from three SIGN 50 level 4 documents. [2, 3, 17] This was deemed insufficient to develop a formal recommendation and instead good practice points. ARHAI Scotland and its stakeholders support the expert opinion that headwear should be donned before entering semi-restricted or restricted areas, such as the surgical suite, and prior to

Expert opinion
putting on scrub or sterile attire, to minimise the risk of environmental contamination and prevent the transfer of hair or dandruff onto sterile clothing.

7.10 Value judgements

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

Value judgements
GPP 7.1 and 7.2 None to note

7.11 Intentional vagueness

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

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

Intentional vagueness
GPP 7.1 and 7.2 There is inadequate evidence and variation in facility layouts, making it impractical to specify an exact location or step by step method for

Intentional vagueness
donning headwear while ensuring the guidance remains adaptable to different clinical settings.

7.12 Exceptions

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

Exceptions
GPP 7.1 and 7.2 None to note

7.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
GPP 7.1 and 7.2 Observational or experimental studies to determine the optimal location and sequence for donning headwear in relation to other surgical attire, assessing impacts on contamination rates and infection outcomes.

Research Question 8: Where and how should headwear be doffed (taken off)?

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
Five documents were included for this question, all graded SIGN 50 level 4 expert opinion.[2, 3, 5, 7, 29] No primary studies relevant to this question were identified. SIGN 50 level 4 guidance carries a risk of bias, as there is limited detail on how recommendations were formulated, and it is not always clear when expert opinion has taken precedence over scientific evidence. As a result, it is considered low-quality evidence.	5 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
Where to Doff Only one SIGN 50 level 4 expert opinion (AfPP)[3] offers guidance on where to remove headwear, recommending that it should be taken off before travelling between buildings and before leaving the healthcare facility. Although the AORN[2] does not specify an exact location for doffing, it advises that headwear should not be worn outside the surgical or perioperative environment, which implies it should be removed before leaving these areas. **How to Doff** Three SIGN 50 level 4 expert opinion documents provide consistent guidance on removing surgical headwear, all highlighting that headwear should be removed in a manner that minimises contamination. [5, 7, 29] In summary, extant guidance is consistent in principle that headwear should not be worn beyond controlled areas and removed in a manner that minimises contamination, but inconsistent in the level of detail and lacking a standardised procedure.

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 evidence originates from UK[3], the USA[2, 5, 7], and one intended for an international audience.[29] Considering the contexts of these documents, the recommendations are applicable to Scotland. 3 x US[2, 5, 7]

Comments
1 x UK [3] 1 x International[29]

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

Comments
No primary studies were identified for this research question, so factors determining generalisability, such as sample size and methods, do not apply.

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
Due to the nature of the evidence identified for this research question, which primarily consists of expert opinion guidance pieces, it is not possible to ascertain publication bias.

B: Evidence to Decision

8.6 Recommendations

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

Note the following terminology:

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

Recommendation	Grading
GPP8.1 Headwear should be removed before leaving semi-restricted or restricted areas of the healthcare facility to prevent contamination of other environments (see GPP6.1) [Revised Slightly]	Good Practice Point
GPP8.2 Headwear should be removed in a manner that minimises contamination to the wearer or environment, avoiding contact between the outer surface of the headwear and hair, skin, or clothing [Revised Slightly]	Good Practice Point

8.7 Balancing benefits and harms

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

Benefits

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

Benefits
GPP8.2 Following this GPP minimises the risk of transferring potential contaminants from the head surface to the wearer or surrounding environment, helping to reduce environmental contamination.

Risks and harms

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

Risks and harms
GPP 8.1 and 8.2 No harms anticipated

Benefit-Harm assessment

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

Benefit-Harm assessment
GPP 8.1 and 8.2 Only benefits identified.

8.8 Feasibility

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

Describe (if applicable):

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

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

Feasibility
GPP 8.1 and GPP 8.2 There may not be clearly designated areas for doffing (taking off) headwear in operating theatres. Specific environmental factors may impact this (space availability, ergonomics, and room layout) which will require local decision-making.

8.9 Expert opinion

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

Expert opinion
GPP8.1 and 8.2 The good practice points recommending that headwear be removed before leaving semi-restricted or restricted areas of the healthcare facility, and in a manner that minimises contamination, are informed by expert opinion from

Expert opinion
SIGN 50 level 4 documents.[2, 3, 5, 7, 29] This evidence was deemed insufficient to support a recommendation. However, ARHAI Scotland and its stakeholders. support these good practice points as it is considered good practice to remove headwear before exiting the surgical suite and in a manner that minimises contamination. A changing room may be a suitable designated space.

8.10 Value judgements

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

Value judgements
GPP 8.1 and 8.2 None to note

8.11 Intentional vagueness

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

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

Intentional vagueness
GPP 8.1 and 8.2 None to note

8.12 Exceptions

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

Exceptions
GPP8.1 and 8.2 None to note.

8.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
GPP 8.1 and 8.2 Further research is needed to better understand the role of headwear in the transmission of pathogens within healthcare settings and to identify the most effective locations for doffing to minimise contamination risks. Further research to identify the most effective sequence for removing headwear to minimise self-contamination.

Research Question 9: How should headwear be disposed?

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
Four guidance documents were included for this question, all graded SIGN50 level 4 expert opinion.[2, 3, 5, 7] No relevant primary studies were identified. As SIGN 50 level 4 guidance provides limited detail on how recommendations are formulated, it is unclear when expert opinion takes precedence over scientific evidence. As a result, this type of evidence is considered low quality and subject to potential bias.	4 x SIGN50 Level 4

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
Disposable headwear Four SIGN 50 level 4 documents[2, 3, 5, 7] consistently advise that disposable headwear should be discarded immediately after use in appropriate waste receptacles. **Re-usable headwear** • Two SIGN 50 level 4 guidance documents provide advice on disposal of re-usable headwear.[2, 5] AORN[2] advises that organisations establish clear processes for managing reusable headwear, including defined laundering methods and frequency. While AST[5] recommend that if reusable headwear is contaminated with potentially infectious material such as blood and body fluids, it should be removed and laundered. However, the AST advise that visibly soiled and contaminated headwear must not be home laundered as it cannot be properly monitored and therefore fails to meet the rigorous standards of accredited laundry facilities. Overall, there is consistency in the evidence regarding the disposal of disposable headwear, which should be discarded immediately after use. However, there is no guidance on how reusable headwear should be disposed of if it becomes permanently stained or physically damaged.

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
Evidence identified is from the UK [3] and the USA.[2, 5, 7] While the majority of the guidance originates from the USA, where healthcare practices, infrastructure, and resources may differ slightly from those in Scotland, these guidelines come from

Comments
similarly developed contexts. Therefore, they could be cautiously adapted for use in Scottish health and care settings. 1 x UK [3] 3 x USA[2, 5, 7]

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

Comments
No primary studies were identified for this research question, so factors determining generalisability, such as sample size and methods, do not apply.

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
Due to the nature of the evidence identified for this research question, which primarily consists of an expert opinion guidance piece, it is not possible to ascertain publication bias.

B: Evidence to Decision

9.6 Recommendations

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

Note the following terminology:

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

Recommendation	Grading
GPP9.1 Disposable headwear should be discarded immediately after use in an appropriate clinical waste receptacle	Good Practice Point
GPP9.2 Reusable headwear that is visibly soiled and/or contaminated with blood or body fluids should be processed through a healthcare accredited laundry facility.	Good Practice Point

9.7 Balancing benefits and harms

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

Benefits

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

Benefits
GPP 9.1 Following this GPP would minimise the spread of microorganisms by ensuring contaminated disposable items are safely discarded and removed from the clinical environment. GPP 9.2 Following this GPP ensures consistent decontamination and hygiene of reusable headwear by requiring laundering under controlled, auditable conditions that meet healthcare laundry standards, thereby minimising the risk of cross-contamination.

Risks and harms

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

Risks and harms
GPP9.1 No harm anticipated GPP9.2 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 or visitor perspective, the societal perspective, or both. Recommendations or Good Practice Points are possible when clear benefit is not offset by important harms, costs or adverse events (or vice versa).

Benefit-Harm assessment
GPP 9.1 While environmental sustainability concerns exist, these are outweighed by the potential infection prevention benefits and the contribution to maintaining a safe clinical environment for staff, patients, and visitors. Additionally, the option to use reusable headwear exists. GPP9.2 Only benefits identified.

9.8 Feasibility

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

Describe (if applicable):

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

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

Feasibility
GPP 9.1 Sustainability concerns linked to disposable headwear can be balanced by increased use of reusable, properly laundered alternatives. GPP 9.2 Access to suitable laundering facilities and quality assurance processes will be required for reusable headwear, and this may vary across sites.

9.9 Expert opinion

Summarise the expert opinion used in creating the Recommendation or Good Practice Point. If none were involved, state “none”. Translating evidence into action

often involves expert opinion where evidence is insufficient. Clearly outlining that expert opinion helps users understand their influence on interpreting objective evidence. Expert opinion may also be required where there is no evidence available.

Expert opinion
GPP 9.1 The evidence underpinning this Good Practice Point consists of four SIGN 50 level 4 guidance documents and was considered insufficient to develop a formal recommendation. [2, 3, 5, 7] Therefore, ARHAI Scotland and its stakeholders support the expert opinion that disposable headwear should be discarded immediately after use in an appropriate clinical waste receptacle to minimise the spread of microorganisms. GPP 9.2 This good practice point is drawn from a single SIGN 50 level 4 guidance document[5], which was not sufficient to support a formal recommendation. As a precaution. Although, it was not explicit within the evidence, ARHAI Scotland and its stakeholders support the view that reusable headwear that is visibly soiled and/or contaminated should be processed through a healthcare accredited laundry.

9.10 Value judgements

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

Value judgements
GPP9.1 and 9.2 None to note.

9.11 Intentional vagueness

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

acknowledging the reasoning clearly promotes transparency. Reasons for vagueness may include:

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

Intentional vagueness
GPP9.1 and 9.2 None to note.

9.12 Exceptions

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

Exceptions
GPP9.1 and 9.2 None to note.

9.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
Controlled experimental or observational studies to investigate optimum laundering temperatures and frequency.

Research question 10: How should headwear be stored?

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
Two documents were included for this question: • one mandatory legislation[30] • one guidance document graded SIGN 50 level 4 expert opinion.[31] Legislation is generally broad and does not account for specific contexts, while SIGN 50 level 4 guidance is considered low-quality evidence due to potential bias, lack of detail on how recommendations were formulated, and unclear distinctions between expert opinion and scientific evidence. No primary studies were identified related to this question.	1 x Mandatory 1 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
Although limited evidence was identified, there is consistency regarding how headwear should be stored. Both legislation and expert opinion from the UK Government recommend that PPE, including headwear, must be properly maintained and stored in a clean, dry place, such as a cupboard.[30, 31] They also emphasise that PPE should be in good repair and a clean condition before being stored. The COSHH regulations further mandate that employers must provide appropriate storage for PPE when not in use, ensuring it is protected from contamination, damage, or loss.[30] The type of storage such as lockers, labelled pegs, shelves, or containers should be appropriate for the quantity and use of the PPE. Both documents provide general PPE storage recommendations that are neither specific to headwear nor tailored to health and care settings.

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
Both identified documents [30, 31] apply across the UK, making their findings relevant to Scottish health and care settings.

Comments
2x UK[30, 31]

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

Comments
No primary studies were identified for this research question, so factors determining generalisability, such as sample size and methods, do not apply.

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
Due to the nature of the evidence identified for this research question, which primarily consists of an expert opinion guidance piece and one legislation document, it is not possible to ascertain publication bias.

B: Evidence to Decision

10.6 Recommendations

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

Note the following terminology:

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

Recommendation	Grading
R10.1 Headwear should be stored away from direct sunlight, heat sources and liquids, including chemicals, in an area that is clean and protects it from contamination.	Recommendation

10.7 Balancing benefits and harms

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

Benefits

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

Benefits
R10.1 Appropriate storage protects headwear from damage caused by environmental factors such as sunlight, dampness, or mechanical wear, increasing its lifespan, and minimises the risk of contamination. Appropriate storage helps preserve cleanliness and integrity of headwear.

Risks and harms

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

Risks and harms
R10.1 No harms anticipated.

Benefit-Harm assessment

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

Benefit-Harm assessment
R10.1 Only benefits identified

10.8 Feasibility

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

Describe (if applicable):

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

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

Feasibility
R10.1 There will be a requirement for designated storage areas to facilitate the safe storage of headwear. The storage facilities will require a programme of regular cleaning, monitoring and maintenance.

10.9 Expert opinion

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

Expert opinion
R10.1 Although the available evidence is limited and primarily general to PPE rather than headwear specifically, consistent guidance from UK legislation such as COSHH Regulations and UK Government PPE legislation supports the principle

Expert opinion
that PPE must be maintained and stored appropriately. There is no additional expert opinion to note.

10.10 Value judgements

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

Value judgements
R10.1 None to note.

10.11 Intentional vagueness

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

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

Intentional vagueness
R10.1 There is intentional vagueness in not specifying the exact configuration or type of storage facilities such as lockers, shelves, or containers as this will vary locally depending on the specific settings.

10.12 Exceptions

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

Exceptions
R10.1 None to note.

10.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research
R10.1 None to note.

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Appendix 1 - Definitions

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