





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	5 December 2025	New document

Approvals

Version	Date Approved	Group or Individual
1.0	November 2025	National Policy, Guidance and Evidence (NPGE) Working Group





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Research Question 1: Are there any legislative requirements or standards (BS/EN/ISO) for the use of footwear as PPE for infection control purposes?

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.

There were eight pieces of evidence included to answer 5 x SIC	SN 50
are the second of the second o	
this research question, including five mandatory 'Manda	atory'
legislation documents ¹⁻⁵ and three Standards documents graded SIGN 50 level 4 expert opinion. ⁶⁻⁸	GN 50 Level 4
No primary research was included owing to the nature of the research question.	
Legislation is typically designed to address broad issues and may not account for specific contexts or unique situations.	
Most available standards, except for BS ISO 15190:2020, are not tailored to health and care settings. They were developed by committees with unclear healthcare expertise and focus on general workplace hazards, raising concerns about their suitability for healthcare-specific risks.	



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 various legislative requirements and standards consistently emphasise the safety, hygiene, and suitability of footwear across different work environments. These requirements generally address overall health and safety rather than infection prevention and control (IPC).

Footwear as protective equipment

Across both British Standards and legislation, footwear is regarded as essential PPE.^{2, 4, 6-8} There is a consistent expectation that footwear must protect users from health risks, ensure comfort, and be appropriate for the working conditions.^{2, 4, 6, 8}

BS ISO 15190:2020 focuses on infection control in medical labs ⁶, particularly in circumstances where contamination risks (for example splashing) exist, while BS EN ISO 20347:2022+A1:2024 and BS EN ISO 20344:2021+A1:2024 outline general occupational safety standards for footwear.^{7, 8}

Water-resistant and disposable footwear

Medical laboratory standards BS ISO 15190:2020 advise the use of water-impermeable shoe covers and disposable footwear in specific high-risk areas where contamination could occur.⁶

These standards emphasise the necessity for specialised footwear for certain areas but do not specify beyond these guidelines.

Maintenance and replacement of footwear

Both the standards BS EN ISO 20347:2022+A1:2024 and UK legislation the Personal Protective Equipment at Work Regulations 2022, emphasise the importance of maintaining, cleaning, and replacing footwear to ensure its



Comments

continued effectiveness.^{4, 7} This consistency highlights the requirement for well-maintained footwear.

Health and safety legislation

The Health and Safety at Work Act 1974 and the Control of Substances Hazardous to Health Regulations 2002 provide broad health and safety duties, including the requirement for appropriate PPE. Footwear is consistently listed as part of the essential PPE for protecting against exposure to hazardous substances.^{1, 2}

The PPE (Enforcement) Regulations 2018 further reinforce the need for footwear to meet specific safety standards (such as being UKCA marked) before being introduced into the market.⁵

Employer responsibilities

Legislation like the Health and Safety at Work Act (1974) and Control of Substances Hazardous to Health (COSHH) Regulations (2002) align in requiring employers to provide PPE, to protect workers from workplace hazards.^{1, 2} There is also uniformity in requiring employers to maintain, clean, and replace PPE to ensure its effectiveness.

Specific policy

The Scottish Government National Uniform Policy adds another layer of consistency by recommending closed-toe, soft-soled shoes for healthcare workers, aligning with general safety principles across the legislative landscape.³

Overall, legislative requirements and standards consistently emphasise the importance of safety, protection from hazardous substances, and regular maintenance of protective footwear. Within the evidence, there is a consistent demand for compliance with safety regulations across all settings to ensure that workers are shielded from potential harm. While certain types of footwear may be classified as personal protective equipment (PPE) in some occupational contexts, footwear in health and care environments is generally not regarded as PPE for IPC purposes.



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

Eight standards⁶⁻⁸ and legislative documents¹⁻⁴ were identified covering the UK and Scotland. These are applicable to Scottish health and care settings.

7 x UK ^{1, 2, 4, 6-8}

1 x Scotland³

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.





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
R1.1 The following legislation and policy must be	Recommendation
adhered to by employers and employees when providing	
and wearing footwear in Scottish health and care	
settings.	
The Health and Safety at Work etc. Act 1974	
The Control of Substances Hazardous to Health	
(Amendment) Regulations 2004	
The Personal Protective Equipment at Work	
(Amendment) Regulations 2022 (PPER 2022)	
R1.2 Where there is an indication to procure	Recommendation
footwear for use as PPE for IPC purposes in	
Scottish health and care settings, the items must	
be UK Conformity Assessed (UKCA).	



Recommendation	Grading
GPP 1.1 Where there is a need for footwear to be	Good Practice Point
procured specifically for use as PPE for IPC purposes in	
Scottish health and care settings, it should be ensured	
that the items comply with the relevant standards as	
outlined in Appendix 2.	

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

R1.1 Adhering to current legislation and policy allows compliance with associated corporate and social governance responsibilities, including the legal requirements of the applicable health and safety management policy.

R1.2 If footwear with the UKCA marking is procured, it will ensure compliance with The PPE (Enforcement Regulations) 2018 which is a legal requirement.

GPP 1.1 Ensuring footwear meets industry standards will allow for standardisation when purchasing and will provide assurance of the quality of the product and may result in increased user confidence.

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

R1.1 and R1.2 No harms anticipated

GPP 1.1 With the exception of BS ISO 15190:2020, none of the available standards were specifically developed for health and care settings. These standards were created by technical committees whose expertise in healthcare environments is unclear. The testing methods described in these standards are designed for general occupational hazards rather than the unique challenges found in healthcare settings. This raises concerns that current footwear performance requirements and testing methods may not adequately address the specific needs and risks present in 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

R1.1 and R1.2 Only benefits identified

GPP 1.1 While the current standards relating to the quality and performance of footwear were not specifically designed for healthcare settings, they are the only available standardised tests. Despite this limitation, using footwear that meets these general standards is still safer than using untested equipment or no protection at all. Therefore, the protective benefits of procuring PPE that complies with the extant standards outweigh any potential drawbacks from the standards not being healthcare specific.



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

R1.1, R1.2, and GPP1.1 No additional resource or feasibility issues are expected as a result of adhering to relevant legislation and standards.

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

R1.1 The evidence underpinning this recommendation is mandatory legislation; the Health and Safety at Work etc. Act 1974,¹ the Control of Substances Hazardous to Health (Amendment) Regulations 2004⁹ and the Personal Protective Equipment at Work (Amendment) Regulations 2022⁴ and is therefore sufficient. No expert opinion to note.



Expert opinion

R1.2 The evidence underpinning this recommendation is mandatory legislation; the Personal Protective Equipment at Work (Amendment) Regulations 2022⁴ and is therefore sufficient. No expert opinion to note.

GPP1.1 Although these British and European standards are based only on expert opinion (graded SIGN 50 Level 4 evidence), they are considered best practice in UK workplaces. For this reason, ARHAI Scotland and its stakeholders recommend following them.

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

None to note.

1.11 Intentional vagueness

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

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



ethical or religious reasons

Intentional vagueness

R1.2 There is no specific situation prescribed by legislation where footwear must be used for IPC purposes. However, the recommendation deliberately remains broad to allow for future scenarios where UK Conformity Assessed (UKCA) footwear may be required in Scottish health and care settings.

1.12 Exceptions

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

Exceptions

None to note.

1.13 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 footwear worn in health and care settings. As such, expanding existing general legislation and standards to address the appropriate use of footwear as personal protective equipment (PPE) for infection prevention and control (IPC) in these settings would be beneficial.



Research Question 2: What type(s) of footwear are suitable for 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
Seventeen documents were included for this research	15 x SIGN 50 Level 4
 Two guidelines graded AGREE 'recommend with modifications' due to limitations regarding the systematic review methodology used to underpin the recommendation.^{14, 23} 15 guidance documents graded SIGN 50 level 4 	2 x AGREE recommend with modifications.
expert opinion. ^{6, 10-13, 15-22, 24, 25} No primary studies were identified as relevant to this question.	
SIGN 50 level 4 expert opinion guidance has potential bias given little detail is provided regarding how recommendations were formulated, and it is not always clear where expert opinion has taken precedence over scientific evidence. It is therefore considered low quality evidence.	



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

The evidence base identified regarding the suitability of footwear for health and care settings shows a degree of consistency across international and national guidelines. It is important to note that this evidence relates to general footwear use rather than footwear specifically classified as PPE for IPC purposes. Despite regional variations, common themes emerge regarding the key characteristics of appropriate footwear for these settings, including safety, and worker comfort. There is general consistency in the following areas.

Protective features

Most guidelines, including one AGREE 'recommend with modifications' guideline¹⁴ emphasise the need for closed-toed shoes to protect against hazards such as spills, dropped sharps, and fluid exposure This is seen in recommendations from UK guidance (NHS England, NHS Wales, HSE) ^{12, 13, 16, 17}, Ireland²⁵ and international bodies such as WHO, Canadian Centre for Occupational Health & Safety, the Australian and New Zealand College of Anaesthetists (ANZCA), the Australian National Health & Medical Research Council and the American College of Surgeons. ^{10, 11, 19, 22, 23} The French Society for Anaesthesia and Intensive Care (SFAR) further emphasises that footwear should have a closed back without perforations. ¹⁴

Non-Slip Soles

The focus on slip-resistant soles is consistent across six guidance documents including one AGREE 'recommend with modifications' graded guideline²³, with advice for nonslip, rubber-soled shoes to prevent falls and maintain balance.^{13, 15, 20, 22, 24}



Comments

Comfort and ergonomics

Five SIGN 50 level 4 expert opinion documents emphasise the importance of comfort, particularly in settings where healthcare workers are on their feet for long periods. Soft soles, low heels, and ergonomic designs are recommended.^{6, 16, 17, 19, 22}

Durability and cleanability

Four documents (two AGREE 'recommend with modifications' graded guidelines and two SIGN 50 level 4 expert opinion documents) describe a requirement for footwear to be easy to clean and durable, particularly in environments prone to contamination. 14, 15, 21, 23 Reusable, fluid-impermeable materials are frequently mentioned.

Compliance with health and safety standards

Four SIGN 50 level 4 guidance documents advise that footwear must adhere to occupational health and safety standards, with emphasis on performance tests for slip resistance and durability.^{7, 17, 18, 20}

Tailored recommendations for specific environments

Four SIGN 50 level 4 expert opinion documents, ^{6, 18, 21, 22} and one AGREE 'recommend with modifications' graded guidelines, ¹⁴ provide recommendations for specific environments, such as those for operating theatres, and laboratories. ⁶ This includes the use of cleanable, closed, antistatic or waterproof footwear due to the specific hazards in these settings. ^{6, 14, 18, 22} Additionally the French Society of Gastro-Intestinal Surgery advises clogs specifically reserved for operating theatres which are cleaned daily, or disposable overshoes for each surgical intervention. ²¹

In summary, the evidence consistently points to footwear for use in health and care settings to be closed-toed, nonslip, and fluid-impermeable. There was no direct evidence of the types of footwear that should be used with the exception of theatre footwear. Consistently, the evidence supported that footwear should be:

Comfortable: Soft-soled, low-heeled, and designed for long shifts.



Comments

- Protective: Able to protect against spills, dropped sharps, and contamination.
- Slip-Resistant: With various sole patterns or materials to prevent falls.
- Easy to clean and maintain.

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

Seventeen documents were identified originating from different geographical locations. Six from the UK (Including Wales and England),^{6, 12, 13, 16-18} three from Ireland,^{15, 24, 25} two from France,^{14, 21} two from Australia,^{11, 19} two from USA,^{20, 22} one from Canada,¹⁰ and one international guidance (WHO).²³ The guidance from non-UK regions may not account for differences in healthcare practices, infrastructure, and available resources, potentially limiting their relevance to Scottish Healthcare Settings

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6 x UK 6, 12, 13, 16-18
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3 x Ireland 15, 24, 25

2 x France 14, 21

2 x USA²⁰ 22

2 x Australia^{11, 19}

1 x Canada¹⁰

1 x International²³

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

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



B: Evidence to Decision

2.6 Recommendations

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

Note the following terminology:

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

Recommendation	Grading
GPP 2.1 Footwear used within health and care settings should be:	Good Practice Point
Comfortable: Soft-soled, low-heeled, and designed for long shifts.	
 Protective: Able to protect the foot against spills, dropped sharps, and contamination. 	
Have closed toes.	
Slip-Resistant: With various sole patterns or materials to prevent falls.	
Easy to clean and maintain.	



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 IPC.

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 2.1 Healthcare workers benefit from wearing appropriate footwear that is comfortable with soft soles and low heels to prevent fatigue during long shifts, protective against spills and sharps injuries, slip-resistant to prevent falls, and easy to clean for maintaining hygiene standards. These features collectively help ensure staff safety, prevent workplace accidents, maintain infection control standards, and support optimal patient care delivery.

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 2.1 No risk or 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



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or both of the above

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 2.1 Only benefits identified.

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

or 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 2.1 Some feasibility issues may include:

- Depending on the level of usage, footwear may wear out quickly in a healthcare setting, leading to frequent replacements. This could increase both the logistical burden, and the financial costs associated with replacement.
- Some healthcare workers may have specific foot health needs for example orthotics, and standard footwear may not accommodate these requirements,



Feasibility

necessitating customisation, which could increase costs and complicate implementation.

Finding suitable footwear that meets all the necessary requirements
 (comfortable, protective, slip-resistant, and cleanable) in the required sizes
 and styles may be challenging.

2.9 Expert opinion

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

Expert opinion

GPP2.1 The evidence supporting this good practice point includes two AGREE "recommend with modifications" graded guideline documents^{14, 23} and 15 SIGN 50 level 4 expert opinion documents.^{6, 10-13, 15-22, 24, 25} 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 supports the extant expert opinion that advises that footwear used within health and care settings should be comfortable with soft soles and low heels protective against spills, dropped sharps and contamination, slip-resistant with appropriate sole patterns and materials to prevent falls, and easily cleanable and maintainable.

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

GPP2.1 None to note.

2.11 Intentional vagueness

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

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

Intentional vagueness

GPP2.1 Specific footwear design specifications are not provided due to limited evidence in this area, however, the relevant legislative requirements and standards that footwear must meet are detailed in RQ1 and Appendix 2.

2.12 Exceptions

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

Exceptions

GPP2.1 None to note.





List any aspects of the question that require further research.

Recommendations for research

None to note.



Research Question 3: Should overshoes be used?

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
Eleven guidance documents were identified in relation to	2 x AGREE
this question. ^{14, 19, 21, 25-32}	"recommend with
Two guidelines graded AGREE 'recommend with	modifications"
modifications' due to limitations regarding the	9x SIGN 50 level 4
systematic review methodology used to underpin	
the recommendation. ^{14, 29}	
Nine guidance documents graded SIGN 50 level 4	
expert opinion. ^{19, 21, 25-28, 30-32}	
No primary studies were identified relevant to this	
question.	
SIGN 50 level 4 expert opinion guidance has potential	
bias given little detail is provided regarding how	
recommendations were formulated, and it is not always	
clear where expert opinion has taken precedence over	
scientific evidence. It is therefore considered low quality	
evidence.	



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 regarding the use of overshoes in health and care settings is generally inconsistent, with recommendations varying between guidelines and organisations.

There is a common trend across several guidelines.

- Two AGREE 'recommend with modifications' guidelines^{14, 29} and one SIGN
 50 level expert opinion,²⁶ advise against the use of overshoes, stating there is no evidence that they reduce environmental contamination.
- This view is echoed by three SIGN level 4 expert opinion from the American Association of Nurse Anaesthesiology, ³⁰ the Australian and New Zealand College of Anaesthetists, ¹⁹ the Department of Health of Ireland ²⁵ and the Australian Government, ²⁷ where overshoes are only recommended when gross contamination and/or risk of splash is anticipated.
- SIGN 50 level 4 expert opinion from the WHO provides an exception, suggesting that impermeable shoe covers may be used if boots are unavailable, but this is in a more specific context where HCWs are at high risk of exposure to infectious materials for example during procedures involving significant fluid exposure.²⁸

On the other hand,

 Two SIGN 50 level 4 guidance documents from the NICE³¹ and the French Society of Gastro-Intestinal Surgery and the Association of Hepato-Bilio-Pancreatic and Transplantation Surgery,²¹ suggest the use of disposable overshoes during surgical interventions or theatre operations.



Comments

 The Health and Safety Executive (HSE), in their guidance on the selection of PPE, suggests wearing wellington boots when there is a risk of liquid coming into contact with the lower leg as part of the COSHH regulations.³²

This divergence shows a lack of consistency, with recommendations based heavily on expert opinion rather than uniform, evidence-based research. The inconsistency in the evidence makes it challenging to form a definitive recommendation.

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

Eleven guidance documents were identified originating from different geographical locations. 14, 19, 21, 25-32 Three from the UK, 29, 31, 32 one from Ireland, 25 two from France, 14, 21 two from America, 26, 30 two from Australia, 19, 27 and one international guidance published by WHO. 28 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 countries, they could be cautiously adapted for use in Scottish health and care settings.

- $3 \times UK^{29, 31, 32}$
- 1 x Ireland²⁵
- 2 x France^{14, 21}
- 2 x USA^{26, 30}
- 2 x Australia 19, 27
- 1x International²⁸

3.4 Are the studies generalisable to the target population?

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

Comments

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, which primarily consists of expert opinion guidance documents, it is not possible to ascertain publication bias.





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
There are limited examples where overshoes would	Good Practice Point
prove beneficial within health and care settings. Where	
they are required, their use would be refined to existing	
HCID ensembles or during healthcare construction and	
maintenance projects. Given the unclear evidence, no	
good practice point could be developed.	

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 IPC.





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

No GPP developed.

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

No GPP developed

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 of the above

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

No GPP developed.



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

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

Feasibility

No GPP developed.

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

N/A

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

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

Value judgements

N/A

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

No GPP developed.

3.12 Exceptions

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

Exceptions

No GPP developed.

3.13 Recommendations for research

List any aspects of the question that require further research.



Recommendations for research

Further research should focus on:

- Categorisation of procedure type associated with splash risk to guide risk assessment for the use of overshoes
- Clinical risk factors that would help guide risk assessment for the use of overshoes for IPC purposes
- Further evidence regarding situations where overshoes are required to guide recommendations.



Research Question 4: When should specialist footwear be worn?

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
Three guidance documents were included for this	1 x AGREE
question. ^{14, 19, 33}	'recommend with
 One guideline graded AGREE 'recommend with modifications' ¹⁴ because, while a systematic search for literature was conducted, no details on the search strategy were provided. Two graded SIGN 50 level 4 expert opinion. ^{19, 33} No primary studies were identified relevant to this question. 	modifications' 2 x SIGN 50 Level 4
SIGN 50 level 4 expert opinion guidance has potential bias given little detail is provided regarding how recommendations were formulated, and it is not always clear where expert opinion has taken precedence over scientific evidence. It is therefore considered low quality evidence.	



4.2 Is the evidence consistent in its conclusions?

(see SIGN 50, section 5.3.2)

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

Comments

The evidence on when specialist or dedicated footwear should be worn is relatively consistent with three key organisations emphasising its use in specific environments like operating theatres to minimise contamination.

The AGREE 'recommend with modifications' graded French Society for Anaesthesia and Intensive Care (SFAR) guideline, ¹⁴ and expert opinion guidance published by the Australian and New Zealand College of Anaesthetists (ANZCA), ¹⁹ and the Association of Anaesthetists of Great Britain & Ireland ³³ recommend dedicated footwear for restricted areas such as operating rooms, emphasising minimising contamination. SFAR provides specific advice about machine-washing and frequent changing (at least daily, or more frequently if visibly stained). This supports routine decontamination aimed at reducing the risk of contamination. ANZCA¹⁹ supports the principle of dedicated footwear in high-risk areas but does not specify what these areas are.

However, it should be noted that while the available literature supports the use of dedicated footwear in such settings, there was no evidence identified regarding the use of footwear as PPE specifically for IPC purposes.

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 guidance documents originate from different geographical locations: one from the UK,³³ one from Australia,¹⁹ and one from France.¹⁴ These documents are produced for similarly developed countries and can be cautiously extended to Scottish health and care settings.

- 1 x UK³³
- 1 x France¹⁴
- 1 x Australia¹⁹

4.4 Are the studies generalisable to the target population?

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

Comments

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

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

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



Evidence to Decision B:

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 Dedicated footwear should be worn in the	Good Practice Point
theatre environment.	
GPP 4.2 Dedicated footwear should only be worn within	Good Practice Point
the theatre environment.	

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 IPC.

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 and GPP 4.2 Using footwear only in that dedicated care area for that dedicated purpose will minimise cross-contamination both within and out with the operating theatre.

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 None to note.

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 of the above

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



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

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

Feasibility

GPP4.1 and GPP4.2 Financial resources are required for purchasing and maintaining dedicated footwear stocks. There are infrastructure requirements for storage and changing areas, and operational considerations for ensuring continuous availability, cleaning and compliance across all staff shifts.

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

GPP4.1 and GPP 4.2 The evidence supporting these good practice points is based on three documents: one AGREE 'recommend with modifications' guidance document¹⁴ and two SIGN 50 level 4 documents. ^{19, 33} Due to the limited availability of evidence and the limitations within these documents, evidence is considered insufficient to support a recommendation leading to the development of a good practice point instead. ARHAI Scotland and it's stakeholders endorse the expert consensus outlined in these sources, which advocates for the use of dedicated footwear in operating environment to minimise the risk of cross-



Expert opinion

contamination, although this would not be constituted specifically as PPE for IPC purposes.

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

GPP4.1 and GPP 4.2 These good practice points prioritise patient safety, over convenience and logistical challenges to minimise infection transmission risks.

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

The term 'dedicated footwear' is intentionally vague to provide flexibility in choosing footwear that meets the needs and resources of the setting, especially given the lack of a standardised definition of specialised footwear within the literature.

4.12 Exceptions

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

Exceptions

GPP4.1, GPP4.2

These GPPs may be temporarily suspended when:

- Emergency situations require immediate patient transfer where delays for footwear changes could compromise patient safety
- Critical care transfers (for example, theatre to ITU) where clinical continuity of care takes precedence
- Life-threatening scenarios where immediate clinical intervention is required.

4.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research

The scarcity of evidence and the reliance on expert opinion in the current evidence base highlights the lack of primary research regarding the effectiveness of specialised or dedicated footwear in reducing contamination in restricted areas such as operating theatres.



Research Question 5: Where and how should footwear be donned?

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 guidance documents were included for this	3 x SIGN 50 Level 4
question all graded as SIGN 50 level 4 expert opinion. ^{28,}	
30, 33	
No primary studies were identified relevant to this	
question.	
SIGN 50 level 4 expert opinion guidance has potential	
bias given little detail is provided regarding how	
recommendations were formulated, and it is not always	
clear where expert opinion has taken precedence over	
scientific evidence. It is therefore considered low quality	
evidence.	

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

Sequence of donning

Two guidance documents graded SIGN 50 level 4 (the WHO,²⁸ and AANA)³⁰ recommend putting on footwear (rubber boots or shoe coverings) after personal items are removed but before hand hygiene, with AANA advising that shoe coverings be put on before other PPE and gloves. This suggests a consistent approach where footwear is donned early in the PPE donning sequence, ensuring that contamination is minimised before further PPE is applied.

Location of donning

The WHO²⁸ and AANA³⁰ advise donning occurs in 'specific areas' with the WHO suggesting this occurs in changing areas.

The Association of Anaesthetists of Great Britain & Ireland advises changing into dedicated footwear before entering the operating theatre.³³

In summary, while there is general consistency on the need for designated areas for donning footwear, two sources provide a specific location (before entering an operating theatre or in changing areas).

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

Three guidance documents originated from different geographical locations: one from the UK,³³ one international guidance (WHO),²⁸ and one from the USA.³⁰ Although these documents provide expert opinion specific to their respective countries, they come from developed contexts and can be cautiously extended to Scottish health and care settings.

1 x UK³³



Comments

1 x USA³⁰

1 x International²⁸

5.4 Are the studies generalisable to the target population?

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

Comments

No primary studies were 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 documents, 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 Footwear designated for use in operating	Good Practice Point
theatres should be put on within a designated area, such	
as a changing room prior to entering the operating	
theatre.	
GPP 5.2 Footwear should be donned after removing	Good Practice Point
personal items and before donning any other items of	
PPE.	

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 IPC.





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 Ensuring footwear is donned in a designated area before entering operating theatres may help minimise cross-transmission risks within these settings.

GPP 5.2 Donning footwear prior to all other PPE items would minimise the risk of PPE 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 5.1 and GPP 5.2 No risks or 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 of the above

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 and GPP 5.2 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

or 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 There may be a requirement to provide clearly defined areas for donning (putting on) footwear in operating theatres. Local factors may impact this (space availability, ergonomics, room layout) which will require local assessment.

GPP5.2 There may be a requirement for staff education and training to support compliance with the donning sequence.

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

These good practice points are informed by three guidance documents graded SIGN 50 level 4 expert opinion. ^{28, 30, 33}

GPP 5.1 ARHAI Scotland and it's stakeholders support extant expert opinion that footwear should be donned in designated areas, such as theatre changing rooms. Having designated donning areas supports management of dedicated footwear, including appropriate decontamination and ensuring footwear remains allocated to the correct clinical area, thereby reducing the risk of cross-contamination. For operating theatres, designated footwear should be put on before entering the operating theatre.

GPP 5.2 ARHAI Scotland and it's stakeholders support extant expert opinion that footwear should be donned early in the PPE donning sequence. This would minimise the risk of cross-contamination from footwear to other PPE.

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 and GPP 5.2 None to note.

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:



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- 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 and GPP 5.2 None to note.

5.12 Exceptions

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

Exceptions

GPP5.1 and GPP5.2 None to note.

5.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research

GPP 5.1 and GPP 5.2 Research to evaluate the effectiveness of the dedicated locations for donning footwear to reduce contamination opportunities may be beneficial.



Research Question 6: Where and how should footwear be doffed?

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 were included for this research question.	1 x AGREE
One guideline graded AGREE 'recommend with modifications', ³⁴	'Recommend with modifications'.
Three guidance graded SIGN 50 level 4 expert opinion. 18, 30, 35	3 x SIGN 50 Level 4
No primary studies were identified in relation to this research question.	
SIGN 50 level 4 expert opinion guidance has potential	
bias given little detail is provided regarding how	
recommendations were formulated, and it is not always	
clear where expert opinion has taken precedence over	
scientific evidence. It is therefore considered low quality	
evidence.	



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

Location of doffing

There is consistency within the evidence (One AGREE 'recommend with modifications' guideline³⁴ and two SIGN 50 level 4 expert opinion)^{18, 30} that theatre footwear should be removed just outside the operating theatre before exiting the area, although there is no consistency regarding other types of footwear.

• The Healthcare Infection Society (HIS) and the European Society of Clinical Microbiology and Infectious Diseases (ESCMID),³⁴ in their joint guidelines on operating theatre behaviour, advise changing footwear when leaving the theatre complex with the intention of returning, but do not specify an exact location for this. Similarly, the Association for Perioperative Practice (AfPP) recommends removing footwear in an area outside the theatre, ensuring contaminated footwear is not left in changing rooms or other spaces. The American Association of Nurse Anaesthesiology (AANA), in their IPC guidelines, advise changing shoe covers each time a worker exits the area, but they also do not specify a precise location for this. The American Association of Specify a precise location for this.

How to Doff

Two SIGN 50 level 4 guidance documents provide similar advice on how to doff footwear. ^{30, 35}

 The WHO³⁵ provides detailed guidance on how to doff footwear within a broader sequence of removing PPE when worn for isolation rooms.
 According to WHO, boots or overshoes should be removed after the apron, head/neck covering, gown, eye/face protection, and masks, but before gloves.³⁵ Hand hygiene should be performed on the gloves before removing



Comments

the footwear. If the boots are to be used elsewhere, they should be cleaned and decontaminated before leaving the doffing area. Similarly, the AANA advises that, if double-gloved, the outer glove should be removed before doffing shoe covers to minimise contamination risks.

In summary, there is consistency in the available evidence that theatre footwear should be removed just outside the operating theatre before leaving the area. Although only the WHO provides specific step-by-step guidance for doffing, both the WHO and AANA advise that footwear should be removed in a manner that reduces the risk of self-contamination, with emphasis on performing hand hygiene to reduce cross-contamination.

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

One expert guidance document covers the UK, with one AGREE recommend guidance document encompassing the EU.^{18, 34} Additionally, one document is intended for an international audience,³⁵ and one document from the USA³⁰. Considering the contexts of these documents, the recommendations are applicable to Scotland.

1x UK & EU34

1 x UK¹⁸

1 x International³⁵

1 x USA³⁰



6.4 Are the studies generalisable to the target population?

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

Comments

No primary studies were 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 documents, it is not possible to ascertain publication bias.





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 Theatre footwear should be removed in a	Good Practice Point
designated area within the operating theatre complex	
prior to exiting the area.	

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 IPC.

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 Removing theatre footwear in a designated area within the operating theatre complex minimises the spread of contaminants from the theatre to other areas. Removing footwear within designated areas minimises clutter within other areas of the operating theatre complex.

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 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 of the above

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):



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

or 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 There may not be clearly designated areas for doffing (taking off) footwear in operating theatres. Local environmental factors may impact this (space availability, ergonomics, and room layout) which will require local decision-making. Staff resource may be required to support this.

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

GPP6.1 The good practice point to remove (doff) theatre footwear outside the operating theatre before exiting the area is informed by one AGREE 'recommended with modifications'34 guideline and three expert opinion documents. 18, 30, 35 This evidence was deemed insufficient to support a recommendation. However, ARHAI stakeholders support a good practice point as it is considered good practice to remove footwear in a designated area within the operating theatre to limit the spread of contamination and subsequent



Expert opinion

environmental contamination of other areas of the facility. A changing room may be a suitable designated space

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

None.

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 The use of 'designated area' allows flexibility for facilities to define and adapt the designated area based on their layout.





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

Exceptions

None to note.

6.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research

GPP 6.1 Further research is needed to better understand the role of footwear 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 footwear to minimise self-contamination.



Research Question 7: When and how should footwear be cleaned?

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
Seven documents were included for this question.	1 x AGREE
One was a guideline graded AGREE 'recommend with modifications' because, while a systematic search for literature was conducted, no details on the search strategy were provided.	'Recommend with modifications' 6 x SIGN 50 Level 4
Six were guidance documents graded SIGN 50 level 4 expert opinions. ^{32, 33, 35-38}	
 No primary studies were identified in relation to this research question. 	
SIGN 50 level 4 expert opinion guidance has potential	
bias given little detail is provided regarding how	
recommendations were formulated, and it is not always	
clear where expert opinion has taken precedence over	
scientific evidence. It is therefore considered low quality	
evidence.	



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

The evidence presented on when and how footwear should be cleaned demonstrates a moderate degree of consistency across different sources, particularly concerning the regular cleaning and maintenance of theatre footwear.

When to clean footwear

Five SIGN level 4 guidance documents,^{32,34,36, 37, 38} and one AGREE recommend with 'modifications'¹⁴ provide consistent advice surrounding the cleaning of footwear, particularly theatre footwear.

- The UK Health Building Notes,^{36, 37} and Association of Anaesthetists of Great Britain and Ireland³³ provide recommendations for theatre footwear, advising cleaning footwear daily or when visibly soiled. They also emphasise the importance of having cleaning facilities located near changing areas.
- The French Society for Anaesthesia and Intensive Care¹⁴ advocates for regular machine-washing of theatre shoes but does not provide a clear timeline for how often cleaning should occur.

While the HSE³² and Public Health Wales³⁸ provide recommendations for general PPE advising regular cleaning and maintenance of PPE to prevent health risks, particularly in cases when PPE is reusable and shared between employees.

How to clean footwear

All guidance documents emphasise regular cleaning but lack detailed instructions on the cleaning process itself apart from the WHO. The WHO³⁵ provides a detailed cleaning process for boots, advising that they be soaked in a 0.5% chlorine

Comments

solution for 30 minutes, then rinsed and dried. If the boots are covered in mud or other organic materials, the dirt should be brushed off before soaking.

Although there is reference on how footwear should be decontaminated, it was predominantly for theatre footwear only and made no reference to footwear used as PPE for IPC purposes.

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

Five guidance documents originate from the UK: two from England, one from Wales, and two covering the entire UK. 32, 33, 36-38 Additionally, there was one guidance document from France, 14 and another international guidance document (The WHO). 35 Overall, the recommendations from these documents are applicable to Scottish health and care settings.

5 x UK^{32, 33, 36-38}

1 x France¹⁴

1 x International35

7.4 Are the studies generalisable to the target population?

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



Comments

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 consists of guidance documents, 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
GPP 7.1 Dedicated theatre footwear should be cleaned	Good Practice Point
daily when in use and if contaminated.	
GPP7.2 Cleaning facilities should be located near or	Good Practice Point
within changing areas to facilitate regular cleaning.	
GPP 7.3 Reusable theatre footwear should be cleaned	Good Practice Point
according to local policy or as per manufacturer's	
instructions.	

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 IPC.

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 7.1 Cleaning and decontaminating dedicated theatre footwear daily helps prevent the spread of potentially harmful pathogens, thereby minimising the risk of HAIs.
- GPP 7.2 Easy access to cleaning facilities will promote timely cleaning of footwear, helping to minimise the risk of cross-contamination.
- GPP 7.3 Cleaning according to manufacturer's instructions helps to preserve the integrity of materials and ensures cleaning methods are suitable for the specified footwear.
- GPP 7.3 Cleaning according to local policy or manufacturer's instructions will promote suitable levels of decontamination.



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 7.1 and GPP 7.3 Frequent cleaning, especially with harsh chemicals, may compromise the material of the footwear, reducing its durability and lifespan.

GPP 7.1 and GPP 7.3 There is a potential risk of contamination to the environment or individual when manually decontaminating footwear.

GPP 7.2 None.

Benefit-Harm assessment

Classify as "benefit outweighs harm" (or vice versa) or a "balance of benefit and harm." Description of this balance can be from the:

- individual service user, staff or visitor perspective
- the societal perspective
- or both of the above

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 GPP 7.3 Regular cleaning and maintenance of reusable footwear minimises the risk of contamination to environment and individual. While this may reduce footwear durability, maintaining appropriate hygiene standards is considered necessary.

GPP 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

or 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 GPP 7.3 Staff may face time constraints in ensuring daily cleaning, especially during busy shifts or emergencies, leading to low compliance.

GPP 7.2 There may be a requirement for designated areas for cleaning. Modifying or installing cleaning facilities near changing areas may have financial and infrastructure implications.

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, GPP 7.2, GPP 7.3 The evidence supporting these good practice points includes one AGREE 'recommend with modifications'¹⁴ guidance document and five SIGN 50 level 4 documents.^{32,34,36, 37, 38} The evidence was deemed insufficient to form a formal recommendation, resulting in the development of good practice points instead.

GPP 7.1 ARHAI and it's stakeholders support the extant opinion that dedicated theatre footwear should be cleaned daily when in use and when contaminated.

GPP7.2 ARHAI and it's stakeholders support the extant opinion that cleaning facilities should be located near or within changing areas to facilitate regular cleaning.

GPP 7.3 ARHAI and it's stakeholders support the extant opinion that reusable footwear should be cleaned according to manufacturer's instructions or per local policy.

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

None.

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:



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- 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 None.

GPP 7.2 and GPP 7.3 contain intentional vagueness to varying degrees:

GPP 7.2 There is no specific detail on what constitutes a cleaning facility (e.g., sink, dedicated cleaning station). The vagueness allows facilities to adapt the good practice point based on their layout and available space.

GPP 7.3 The GPP defers to the manufacturer's instructions and local policy rather than prescribing a uniform standard, which introduces flexibility but also leaves room for variation depending on the product.

7.12 Exceptions

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

Exceptions

None

7.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research

GPP 7.1, GPP 7.2, GPP 7.3 Need for primary studies evaluating different cleaning frequencies (e.g., daily, after each use, weekly) and methods (brushing, machinewashing, chemical disinfection).

Research Question 8: How should footwear be stored?

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
Six documents were included for this question:	1 x Mandatory
One is a mandatory legislation. ²	5 x SIGN 50 level 4
Five were graded SIGN 50 level 4 expert opinion	on
guidance documents. ^{13, 18, 36, 37, 39}	
No primary studies were identified relevant to the	nis
question.	
SIGN 50 level 4 expert opinion guidance has potential	
bias given little detail is provided regarding how	
recommendations were formulated, and it is not alway	vs
clear where expert opinion has taken precedence over	r
scientific evidence. It is therefore considered low quali	ity
evidence.	



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

Although low in quantity, evidence for this research question was consistent regarding how footwear should be stored.

Proper storage facilities

Four SIGN 50 level 4 documents emphasise the importance of having proper storage facilities (such as lockers, cupboards, or shelves) for storing PPE, including footwear, to protect it from contamination, damage, exposure to harmful substances and environmental factors like dampness or sunlight. ^{13, 36, 37, 39} This is mandated by COSHH,² and echoed in HSE recommendations, ¹³ which suggest keeping PPE in a clean, dry space when not in use.

Designated spaces for storage

Health building notes from England,^{36, 37} and Scotland³⁹(SIGN 50 level 4 expert opinion) provide additional support by recommending designated rooms or areas for the storage of footwear, which should include provisions such as mechanical ventilation to maintain hygiene.

Clean and maintained

Both the HSE,¹³ and the Association for Perioperative Practice (AfPP)¹⁸ recommend that footwear should be cleaned and kept in good condition before storage, ensuring it is ready for use when needed.

In summary, the evidence is generally consistent, though some sources are more specific to footwear (AfPP)¹⁸ while others address PPE in general (COSHH, HSE).²



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

Four guidance documents were from the UK, with one from Scotland, two from England and three not specific to any nation but the whole UK. 13, 18, 37, 39

The mandatory legislation (COSHH) is specific to the UK.²

This evidence is applicable to Scottish health and care settings.

8.4 Are the studies generalisable to the target population?

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

Comments

No primary studies were identified for this research question, so factors determining generalizability, 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

One issue to consider is that guidance that aligns with existing legislation and regulations, such as COSHH and HSE PPE guidelines for the workplace, might be more likely to be published.



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
R 8.1 Dedicated footwear worn as PPE must be stored	Recommendation
in a designated storage facility that protects it from	
contamination, loss, or damage by harmful substances,	
dampness, or sunlight.	

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 IPC.

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

R 8.1 Appropriate storage protects footwear worn as PPE from damage caused by environmental factors such as sunlight, dampness, or mechanical wear, increasing its lifespan, and prevents contamination between wears.

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

R 8.1 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 of the above

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

R 8.1 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

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

Feasibility

R 8.1 There will be a requirement for designated storage areas to facilitate the safe storage of footwear worn as PPE. The storage facilities will require a programme of regular cleaning, monitoring and maintenance.

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

R 8.1 The requirement to store footwear worn as PPE in a well-defined location to protect it from damage, accidental loss and contamination is supported by mandatory COSHH legislation.² There is no additional expert opinion to note.

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

R 8.1 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

R 8.1 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

8.12 Exceptions

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

Exceptions

R 8.1 None to note.

8.13 Recommendations for research

List any aspects of the question that require further research.



Recommendations for research

R 8.1 Research to identify the specific risks of contamination (e.g., microbial, chemical) associated with improperly stored footwear in health and care environments would be beneficial.



Research Question 9: When and how should footwear be disposed of?

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 documents were included for this question.	3 x SIGN 50 Level 4
One was a guideline graded AGREE 'recommend	1 x AGREE
with modifications' because, while a systematic	'Recommend with
search for literature was conducted, no details on	modifications'
the search strategy were provided. ¹⁴	
 Three were guidance graded SIGN 50 Level 4 expert opinions.^{7, 10, 30} 	
No primary studies were identified for this question.	
SIGN 50 level 4 expert opinion guidance has potential	
bias given little detail is provided regarding how	
recommendations were formulated, and it is not always	
clear where expert opinion has taken precedence over	
scientific evidence. It is therefore considered low quality	
evidence	



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

The evidence on the disposal of footwear in healthcare settings is inconsistent across the different sources.

When to dispose

Two SIGN 50 level 4 guidance documents including the British Standard⁷ for personal protective equipment related to footwear and the Canadian Centre for Occupational Health and Safety¹⁰ advise replacing footwear when wear and tear compromise their protective functions. However, these documents are not specific to healthcare settings.

The French Society for Anaesthesia & Intensive Care¹⁴ (AGREE 'recommend with modifications') offers more tailored advice for healthcare, suggesting that footwear should be replaced when its protective functions are compromised, although this guidance does not specify how to dispose of the shoes.

How to dispose

Evidence on how to dispose of footwear in healthcare is limited. Only the American Association of Nurse Anaesthesiology (AANA)³⁰ (SIGN 50 level 4) provides guidance on shoe covers, advising they be discarded after each use in appropriate waste receptacles. However, this recommendation applies only to disposable shoe covers and does not extend to the disposal of actual footwear.

In summary, the available guidance is inconsistent and often generalised. British Standards ⁷ and Canadian occupation guidelines¹⁰ provide guidance on when to replace footwear but do not specify disposal methods. SFAR¹⁴ focuses on replacement, and AANA³⁰ addresses only the disposal of shoe covers, leaving gaps in healthcare-specific guidance on footwear disposal.



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

(see SIGN 50, section 5.3.3)

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

Comments

The evidence for this question came from various regions, including the UK,⁷ France,¹⁴ the USA,³⁰ and Canada.¹⁰ Overall, the recommendations from these documents are applicable to Scottish health and care settings.

1x UK⁷

1x France¹⁴

1x Canada¹⁰

1x USA³⁰

9.4 Are the studies generalisable to the target population?

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

Comments

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 consists of expert opinion guidance documents, 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
GPP 9.1 Reusable footwear used as PPE in health and	Good Practice Point
care settings should be replaced when its protective	
functions are compromised and be disposed of into	
appropriate waste receptables in accordance with local	
waste management protocols.	
GPP 9.2 Disposable shoe covers should be discarded	Good Practice Point
after each use in appropriate waste receptacles in	
accordance with local waste management protocols.	



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 IPC.

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 Replacing compromised footwear ensures that healthcare workers maintain adequate protection against hazards such as spills, sharp objects, and contamination, reducing the risk of occupational injuries.

GPP 9.2 Disposal of disposable shoe covers in accordance with local waste management policies may reduce occupational exposure risk form potentially infectious agents and minimise transmission risk from any potential infectious agents.

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 9.1 and GPP 9.2 None.

Benefit-Harm assessment

Classify as "benefit outweighs harm" (or vice versa) or a "balance of benefit and harm." Description of this balance can be from the:

individual service user, staff or visitor perspective



- the societal perspective
- or both of the above

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 and GPP 9.2 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

or 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 and GPP 9.2 Disposal of footwear requires to be managed at a local level with the provision of appropriate facilities, which will have associated costs.

GPP 9.2 There will be sustainability considerations where shoe covers are used

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 This good practice point was informed by two SIGN 50 level 4 guidance documents^{7,10} and one AGREE 'recommend with modifications' document. ¹⁴ The evidence was considered insufficient to form a formal recommendation due to the limitations of SIGN 50 level 4 documents and their lack of specificity to health and care settings. As a result, a good practice point was developed. ARHAI Scotland and it's stakeholders support the expert opinion that reusable footwear used for PPE in health and care settings should be replaced when its protective function is compromised and disposed of into appropriate waste receptables in accordance with local waste management protocols.

GPP 9.2 This good practice point was informed by a single SIGN 50 level 4 guidance document published by the American Association of Nurse Anaesthesiology (AANA),³⁰ which is an insufficient quantity and quality of evidence to support a recommendation. As a result, a good practice point was developed; ARHAI Scotland and it's stakeholders support the expert opinion that disposable shoe covers should be discarded after each use in appropriate waste receptacles in accordance with local waste management policies.

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, GPP9.2 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, GPP9.2 None to note.

9.12 Exceptions

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

Exceptions

None

9.13 Recommendations for research

List any aspects of the question that require further research.

Recommendations for research

GPP 9.1 and 9.2 None to note.



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