

**Standard Infection Control Precautions Literature Review:
Personal Protective Equipment (PPE)
Headwear**

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Version	Date	Summary of changes	Changes marked
2.0	May 2016	<p>When/Where should headwear be worn. This has been reworded to say 'The whole surgical team should wear appropriate headwear whilst in the theatre setting.'</p> <p>How should headwear be removed/disposed of? New recommendation 'Reusable headwear should be processed through a healthcare accredited laundry facility.'</p>	
1.0	January 2012	Defined as final	

Approvals – this document requires the following approvals (in cases where signatures are required add an additional 'Signatures' column to this table)::				
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2.0	April 2016	NPGO Steering Group		
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HPS ICT Document Information Grid

Description:	This literature review examines the available professional literature on PPE (Headwear) in the healthcare setting.
Purpose:	To inform the Standard Infection Control Precaution (SICP) section on PPE (Headwear) in the National Infection Prevention and Control Manual in order to facilitate the prevention and control of healthcare associated infections in NHS Scotland healthcare settings.
Target audience:	All NHS staff involved in the prevention and control of infection in NHSScotland.
Circulation list:	Infection Control Managers, Infection Prevention and Control Teams, Public Health Teams
Update/review schedule:	Updated as new evidence emerges with changes made to recommendations as required.
Cross reference:	National Infection Prevention and Control Manual http://www.nipcm.hps.scot.nhs.uk/
Update level:	Change to practice – No significant change to practice Research – No change to evidence. Changes to wording for clarity in the recommendations and addition of 1 new recommendation.

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1. Objectives

The aim of this review is to examine the extant professional literature regarding the use of headwear as Personal Protective Equipment (PPE) for standard infection control purposes in the clinical setting. The specific objectives of the review are to determine:

- Are there any legislative requirements for the use of headwear as PPE for infection control purposes?
- When/where should headwear be worn?
- What type(s) of headwear should be used?
- When should headwear be removed or changed?
- How should headwear be removed/disposed of?
- How should headwear be stored?
- What considerations should be made regarding religious and/or cultural head/face wear?

N.B. The use of PPE as protection against either suspected or known specific infectious agents is considered as part of the Transmission Based Precautions (TBPs), and is therefore not within the scope of this review. Furthermore, this review did not assess the use of headwear in non-clinical settings where there may be a health and safety requirement for wearing specialist headwear, for example in either estates or kitchen environments.

2. Methodology

This targeted literature review was produced using a defined methodology as described in the [National Infection Prevention and Control Manual: Development Process](#).

3. Recommendations

This review makes the following recommendations based on an assessment of the extant professional literature on headwear as PPE for standard infection control purposes in the **clinical** care environment:

Are there any legislative requirements for the use of headwear as PPE for infection control purposes?

There is no direct legislative requirement to wear head protection for the purposes of the prevention and control of infection; however the Health and Safety at Work Act (1974), Control of Substances Hazardous to Health (2002 as amended) Regulations and Personal Protective Equipment at Work Regulations 1992 (as amended) legislate that employers (i.e. NHSScotland) must provide PPE which affords adequate protection against the risks associated with the task being undertaken. Employees (i.e. healthcare workers) have a responsibility to comply by ensuring that suitable PPE is worn correctly for the task being carried out.

Specific standards relating to the quality and performance of headwear are outlined in [Appendix 1](#).

When/where should headwear be worn?

Theatre setting

Headwear which is appropriate to the procedure being undertaken should always be worn by theatre staff.

(Good Practice Point (GPP))

The whole surgical team should wear appropriate headwear whilst in the theatre setting.

(Grade D recommendation)

Non-theatre settings

Headwear is not deemed necessary as a component of PPE outwith the theatre setting, for example within the Central Sterile Services Department (CSSD) or for minor surgery.

(Good Practice Point (GPP))

What type(s) of headwear should be used?

Headwear for use in the theatre setting should completely cover the hair.

(Grade D recommendation)

Fully adjustable disposable headwear provides a better fit than fabric alternatives and is therefore recommended for use in the theatre setting.

(Good Practice Point (GPP))

When should headwear be removed or changed?

Headwear must be removed or changed:

- prior to leaving the dedicated clinical area;
- at the end of a clinical procedure/task;
- if contaminated with blood or body fluids;
- in accordance with manufacturers instructions.

(Grade D recommendation)

How should headwear be removed/disposed of?

Headwear should be removed by either unfastening the ties – if present; headwear without ties should be removed by handling only the sides or headband.

(Grade D recommendation)

Disposable headwear should be disposed of as healthcare (including clinical) waste.

Reusable headwear should be processed through a healthcare accredited laundry facility.

(Grade D recommendation)

How should headwear be stored?

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

(Good Practice Point (GPP))

What considerations should be made regarding religious and/or cultural head/face wear?

Head and/or face coverings worn for religious/cultural reasons must not impede patient care or impact on clinical practice. If PPE is required to protect against blood/body fluid exposure, religious/cultural head/face wear must not compromise the protective barrier. If worn, religious/cultural head/face wear should be clean and changed in accordance with uniform policy.

(Good Practice Point (GPP))

4. Discussion

4.1 Implications for practice

Are there any legislative requirements for the use of headwear as PPE for infection control purposes?

The wearing of PPE in the healthcare setting is covered by the Health and Safety at Work Act (1974)¹, Control of Substances Hazardous to Health (COSHH) Regulations (2002 as amended)² and the Personal Protective Equipment at Work Regulations (1992 as amended). There are no specific legislative requirements regarding the use of headwear as PPE for infection control purposes.³

The Health and Safety at Work Act broadly covers the use of PPE, but is not healthcare specific. COSHH regulations provide details in relation to hazardous materials and the use of PPE. They may be viewed as a detailed schedule of the Health and Safety at Work Act, including information on potential pathogens encountered in the healthcare environment and the use of appropriate PPE; for example the use of gloves to protect against blood borne viruses during venepuncture. The Personal Protective Equipment at Work Regulations provide further general guidance on the use of PPE and relate to activities within the workplace which are not perceived to involve contact with hazardous materials. As an example, this could be the use of gloves to protect against glass fragments when cleaning up broken glass; however if the glass contained a laboratory sample then the activity would be covered by COSHH regulations.

All of the UK legislation and regulations outline the responsibilities of the employer and employee and also cover any unnecessary exposure to risk of service users, i.e. they cover NHSScotland, NHSScotland employees as well as NHSScotland patients.

Specific standards relating to headwear as PPE in the healthcare setting are outlined in [Appendix 1](#) of this document.

When/where should headwear be worn?

The majority of evidence identified on this topic is specific to the surgical theatre settings. In addition, guidance⁴ from the Association for Professionals in Infection Control and Epidemiology (APIC) also advocates the use of caps as part of 'maximal sterile barrier precautions' within the haemodialysis setting.

There is no clear consensus in the guidance relating to the use of headwear within the surgical setting. While the Hospital Infection Society (HIS) Working Party on Infection Control in Operating Theatres considers that it is not necessary for non-scrubbed staff to wear headwear, the Association of Anaesthetists of Great Britain and Ireland (AAGBI), and the Association of Operating Room Nurses (AORN) advocate the use of headwear for all personnel in the surgical and wider perioperative settings.⁵⁻⁷ There is also further consensus in the evidence regarding the wearing of headwear by the whole theatre team when undertaking specific procedures, including arthroplasty and graft surgery.⁶⁻¹⁰

It is therefore recommended that all NHSScotland surgical staff wear appropriate headwear whilst in the theatre setting.

(Grade D recommendation)

In addition, headwear which is appropriate to the procedure being undertaken should always be worn by staff in other theatre settings. Headwear is not deemed as a necessary component of PPE outwith the theatre setting, for example in CSSD or minor surgery.

(Good Practice Point (GPP))**What type(s) of headwear should be used?**

The rationale for the use of headwear is twofold; to protect the wearer from sources of infection e.g. splashing or spraying of blood, and to protect others from the wearer as a source of infection.^{5;10}

There is agreement in the identified evidence that headwear which completely covers the hair is recommended to minimise contamination during surgery.^{5;8;9;11} Specifically, use of both reusable cloth and single use caps is recommended for anaesthesia care.¹² In addition, AORN guidance also states that both single use and reusable caps are appropriate, but specifies that the use of

skull caps alone is not advocated. Additional coverage with a bouffant cap, over a skull cap is recommended.⁵

A recent observational study¹³ found that disposable caps worn in operating theatres harboured significantly lower numbers of bacteria in comparison to reusable caps, with the authors advocating the wearing of single use headwear only.

Headwear which completely covers the hair is recommended for use across theatre settings in NHSScotland.

(Grade D recommendation)

When should headwear be removed or changed?

Very limited evidence was identified on this topic. The authors of a recent non-systematic review state that headwear should be changed after each clinical procedure,¹³ while a number of guidance documents recommend that headwear should be changed daily and when visibly contaminated.^{5;12} Headwear should be removed before leaving the respective clinical area.

It is therefore recommended that NHSScotland theatre staff should change headwear at the end of a clinical session, or prior to this if contaminated with blood or bodily fluids.

(Grade D recommendation)

How should headwear be removed/disposed of?

Limited evidence was identified relating to appropriate removal and disposal of headwear. Following completion of a procedure, headwear should be removed by unfastening the ties if present. Headwear without ties should be removed by handling only the sides or headband. Care should be taken to refrain from touching the inner surface of the headwear.¹²

(Grade D recommendation)

Single use headwear should be disposed of as healthcare (including clinical) waste within an appropriate waste receptacle.^{5;12} Reusable headwear should be processed through a healthcare accredited laundry facility; home laundering is not recommended.⁵

(Grade D recommendation)

How should headwear be stored?

Insufficient evidence for discussion was identified by this review regarding the storage of headwear in the healthcare setting.

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

(Good Practice Point (GPP))**What considerations should be made regarding religious and/or cultural head/face wear?**

Patient safety comes first, taking cognisance of religious and cultural beliefs. Head and/or face coverings worn for religious/cultural reasons must not impede patient care or impact on clinical practice. If PPE is required to protect against blood/body fluid exposure, religious/cultural head/face wear must not compromise the protective barrier. If worn, religious/cultural head/face wear should be clean and changed in accordance with uniform policy.

(Good Practice Point (GPP))

4.2 Implications for research

The majority of identified evidence within the literature was specific to surgical theatre settings. The necessity for wider research would need to be balanced against the perceived risks associated with the wearing versus not wearing of headwear within various other clinical settings. In addition, specific evidence outlining the potential merits of different types of headwear would also be beneficial.

Several studies assessing the effectiveness of surgical exhaust helmets (as part of surgical space suits), for use within dedicated surgical settings, were also identified as part of this review.¹⁴⁻¹⁷ Overall, the results demonstrated that use of surgical helmets was not associated with an increased benefit, in comparison to wearing a standard surgical gown and no headwear. It is anticipated that further literature will be published relating to the use of surgical helmets in certain surgical settings. Future literature review updates may need to consider the potential benefits and risks associated with the use of these.

Furthermore, there may be a need to clarify or expand legislation relating to the use of appropriate headwear as PPE in the healthcare setting. At present much of the legislation relates to the handling and management of dangerous substances and/or chemicals, and is generally not relevant to infection prevention within a clinical environment.

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Appendix 1

Standards pertaining to headwear as PPE

Standard	Title	Description	Publication date
BS EN 13921:2007	Personal protective equipment. Ergonomic principles.	This standard provides guidance on the generic ergonomic characteristics related to personal protective equipment (PPE) – it does not however cover the requirements which relate to specific hazards that PPE may be designed.	September 2007.
Statutory Instrument 2002 No. 1144	Health and Safety – Personal Protective Equipment Regulations 2002	This instrument sets out the standards for PPE in the UK. Schedule 4 sets out the standards for conformity across the UK (and the EU) and requires that all PPE is CE marked . CE marking demonstrates that an item has been manufactured to a particular standard and passed the appropriate tests for the PPE type and intended use/purpose.	May 2002.