

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

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2.0	August 2015	Updated after review of current literature	
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**HPS ICT Document Information Grid**

<b>Purpose:</b>	To inform the Standard Infection Control Precaution (SICP) section on PPE (Footwear) in the National Infection Prevention and Control Manual.
<b>Description:</b>	This literature review examines the available professional literature on PPE (footwear) in health and social care settings.
<b>Target audience:</b>	All NHS staff involved in the prevention and control of infection in NHSScotland.
<b>Circulation list:</b>	Infection Control Managers, Infection Prevention and Control Teams, Public Health Teams
<b>Update/review schedule:</b>	Updated as new evidence emerges, with changes made to recommendations as required.
<b>Cross reference:</b>	National Infection Prevention and Control Manual <a href="http://www.nipcm.scot.nhs.uk/">http://www.nipcm.scot.nhs.uk/</a>
<b>Update level:</b>	Change to practice – No significant change to practice Research – No significant change

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## 1. Objectives

The aim of this review is to examine the extant professional literature regarding the use of footwear as Personal Protective Equipment (PPE) for standard infection control purposes in health and social care settings.

The specific objectives of the review are to determine:

- Are there any legislative requirements for the use of footwear as PPE for infection control purposes?
- What types of footwear are suitable for health and social care settings?
- When should overshoes be used?
- When should dedicated footwear be put on/removed?
- When/how regularly should footwear be cleaned?

**N.B.** This review did not assess the use of footwear in certain health and social care settings where there may be a health and safety requirement for wearing specialist footwear, 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 footwear as PPE for standard infection control purposes in health and social care settings:

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

There are no specific legislative requirements regarding the use of footwear as for the purposes of the prevention and control of infection; however the [Health and Safety at Work etc Act \(1974\)](#)<sup>1</sup>, [Control of Substances Hazardous to Health \(2002 as amended\) regulations](#)<sup>2</sup> and [Personal Protective Equipment at Work Regulations 1992 \(as amended\)](#)<sup>3</sup> 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. health and social care 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 footwear are outlined in [Appendix 1](#).

#### What types of footwear are suitable for health and social care settings?

Dedicated footwear should be used in the operating theatre.

##### Theatre footwear should:

- have closed toes;

##### (Grade D recommendation)

- be clean and well maintained;
- be easy to clean;
- be non-slip/have good traction;
- support the foot;
- enclose the foot.

##### (Good Practice Point (GPP))

**Footwear in non-theatre settings should:**

- be soft-soled and have closed toes;

**(Mandatory)**

- have low heels;
- be non-slip/have good traction;

**(AGREE Recommend)**

- be clean and well maintained;
- support the foot.

**(Good Practice Point (GPP))**

**When should overshoes be used?**

Overshoes/shoe covers should not be used in the general health and social care environment.

**(Good Practice Point (GPP))**

**When should dedicated footwear be put on/removed?**

When shoe covers/overshoes are used in specific areas (e.g. the theatre environment), these should be removed before leaving that area.

**(Grade D recommendation)**

Where dedicated footwear is used, for example, CSSD, clean rooms or minor surgery, it should be removed before leaving that area.

**(Good Practice Point (GPP))**

**When/how regularly should footwear be cleaned?**

It is the responsibility of the wearer to ensure that theatre footwear is washed with disinfectants in a designated washer-disinfector or autoclaved when visibly contaminated.

**(Good Practice Point (GPP))**

There is no cleaning requirement for footwear used in non-theatre settings unless they become contaminated with blood or body fluids; in which case they should be decontaminated appropriately or disposed of as healthcare (including clinical) waste.

**(Good Practice Point (GPP))**

## 4. Discussion

### 4.1 Implications for practice

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

There are no specific legislative requirements regarding the use of footwear as PPE for standard infection control purposes, although the use of PPE in health and social care settings is covered by the [Health and Safety at Work etc Act \(1974\)](#)<sup>1</sup>, [Control of Substances Hazardous to Health \(2002 as amended\) regulations](#)<sup>2</sup>, and the [Personal Protective Equipment at Work Regulations 1992 \(as amended\)](#)<sup>3</sup>.

The Health and Safety at Work etc Act is the generic health and safety legislation for the UK and broadly covers the use of PPE and risk, but is not healthcare specific. Control of Substances Hazardous to Health (COSHH) is more specific and provides details in relation to hazardous materials and the use of PPE; and can almost be viewed as a detailed schedule of the Health and Safety at Work etc Act, which would include pathogens in health and social care settings and the use of appropriate PPE, for example the use of gloves to protect against blood borne viruses during venepuncture. If an activity does not involve or is perceived not to involve contact with a hazardous material then the Personal Protective Equipment at Work Regulations 1992 provide general guidance on the use of PPE; in health and social care settings 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.

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

Specific standards relating to footwear in the healthcare setting is outlined in [Appendix 1](#) of this document.

## What types of footwear are suitable for health and social care settings?

There is very limited evidence on this topic. One piece of expert guidance was identified that offered recommendations on healthcare worker footwear in non-theatre settings.<sup>4</sup> The guidance recommends that the choice of footwear should be driven by safety, and should decrease the risk of exposure to blood or other potentially infectious material, sharps injuries and slipping.<sup>4</sup> Specifically, the guidance recommends that footwear should have closed toes, low heels and non-skid soles.<sup>4</sup> In addition, the dress code section of the NHSScotland National Uniform Policy, Dress Code and Laundering Policy states that staff should wear soft-soled, closed toe shoes.<sup>5</sup>

### (Mandatory)

The majority of the literature identified was in relation to footwear in theatre settings, and was restricted to professional opinion. There is consensus of professional opinion that special dedicated footwear should be used in the operating theatre.<sup>6-12</sup> It has been recommended that theatre footwear should have closed toes.<sup>8;13</sup>

### (Grade D recommendation)

## When should overshoes be used?

There is no consensus on the use of shoe covers/overshoes in theatre. Some experts have recommended that they should be worn when gross contamination through splashes or spills of body fluids is anticipated.<sup>8;10;13</sup> One article suggests that shoe covers/overshoes are a useful alternative to daily washing of footwear.<sup>14</sup> A study that explored bacterial contamination of various surfaces in operating theatres found that microbial contamination was detected at high levels on the tops of uncovered shoes, while disposable shoe covers/overshoes had less than one third the level of bacterial contamination.<sup>15</sup> The study authors concluded that their findings suggest that uncovered shoes may present an increased risk of bacterial contamination in the theatre setting compared to shoes covered with shoe covers/overshoes.<sup>15</sup>

However, in a report from the Hospital Infection Society Working Party on Infection Control in Operating Theatres it was recommended that the use of shoe covers/overshoes should cease.<sup>6</sup> The use of shoe covers/overshoes is not recommended by the Association of Anaesthetists of Great Britain and Ireland.<sup>12</sup>

As such, no evidence-based recommendation can be made on this question.

### When should dedicated footwear be put on/removed?

If shoe covers/overshoes are used, it is recommended that they are removed before leaving the operating theatre.<sup>13;14</sup>

**(Grade D recommendation)**

### When/how regularly should footwear be cleaned?

There is consensus of professional opinion that theatre footwear should be cleaned with disinfectants in a washer-disinfector or clog washer, or by autoclaving after each use.<sup>6;8;9;14</sup>

**(Grade D recommendation)**

However, a recommendation that theatre footwear is cleaned when visibly dirty is more pragmatic and achievable in practice.

There is no evidence on cleaning requirements for footwear in non-theatre settings.

## 4.2 Implications for research

The evidence identified by this review largely relates to the use of dedicated footwear in the operating theatre setting. It is generally accepted that the use of overshoes is no longer appropriate and that all other footwear is kept clean and in good condition. The need for further research in this area should not be considered a priority.

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## Appendix 1 Standards pertaining to footwear as PPE

Standard	Title	Description	Publication date
<b>BS EN ISO 20344:2011</b>	Personal protective equipment. Test methods for footwear.	This standard outlines performance testing, mechanical testing, thermal testing, electrical testing, water-resistance tests, water-absorption tests, oil-resistance tests, and testing conditions for footwear.	January 2011.
<b>BS EN ISO 13287:2012</b>	Personal protective equipment. Footwear. Test method for slip resistance.	This standard outlines slip tests, friction tests and physical testing for footwear.	November 2012.
<b>BS EN 13921:2007</b>	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.
<b>Statutory Instrument 2002 No. 1144</b>	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 <b>all</b> PPE is <b>CE marked</b> . 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.

BS = British Standards produced by the British Standard Institution ([www.bsigroup.co.uk](http://www.bsigroup.co.uk))

EN = European Standards (European Norm) produced by the European Committee for Standardisation ([www.cen.eu](http://www.cen.eu))

ISO = International Standards produced by the International Standards Organization ([www.iso.org](http://www.iso.org))

EN standards are gradually being replaced by ISO standards – when these are adopted in the UK they are prefixed with BS (e.g. BS EN; BS EN; BS EN ISO). This is usually to accommodate UK legislative or technical differences or to allow for the inclusion of a UK annex or foreword.