

## Standard Infection Control Precautions Literature Review: Safe Disposal of Waste

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3.0	September 2015	Steering (Expert Advisory) Group for SICPs and TBPs		
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1.0	January 2012	Steering (Expert Advisory) Group for SICPs and TBPs		

<b>HPS ICT Document Information Grid</b>	
<b>Purpose:</b>	To inform the Standard Infection Control Precaution (SICP) section on Safe Disposal of Waste in the National Infection Prevention and Control Manual.
<b>Description:</b>	This literature review examines the available professional literature on waste and its management 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>
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## 1. Objectives

The aim of this review is to examine the extant scientific literature on the safe disposal and management of waste for standard infection control purposes in health and social care settings.

The specific objectives of the review are to determine:

- Are there any legislative/mandatory requirements for the handling and disposal of waste for infection prevention and control purposes?
- Are there standard definitions/categories of waste in health and social care settings?
- How should different categories of waste be segregated?
- Should colour coding of waste be applied in health and social care settings?
- Are there specific standards for different waste bags/receptacles in health and social care settings?
- How and where should sharps boxes be used in health and social care settings?
- How should liquid waste be managed in health and social care settings?
- How should waste be handled in health and social care settings?
- How should different types of waste be labelled or tagged in health and social care settings?
- How should waste be transported in health and social care settings?
- How should waste be stored prior to disposal in health and social care settings?
- How should waste spillages be managed to prevent and control infection?

## 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 scientific literature on waste disposal and management in health and social care settings:

#### Are there any legislative/mandatory requirements for the handling and disposal of waste for infection prevention and control purposes?

There is no direct legislation which governs the handling of waste in the hospital setting for the purposes of preventing and controlling infection. There is, however, a raft of legislation/regulation which stipulates that healthcare waste is a controlled waste and therefore must be managed accordingly. This legislation has been synthesised and interpreted in Scottish Health Technical Note 3 (SHTN3), a suite of waste management guidance, which applies across NHSScotland.

#### Are there standard definitions/categories of waste in health and social care settings?

The five core waste streams in NHSScotland are outlined in SHTN3:

- **Healthcare (including clinical) waste:** Waste produced as a direct result of healthcare activities. Healthcare waste can be divided into three sub-categories:
  - **Infectious healthcare (clinical) waste:** Waste that presents a known or potential risk of infection. Healthcare waste generated from healthcare premises, or produced by healthcare workers in the community is considered to be infectious unless categorised otherwise on the basis of a risk assessment.
  - **Medicinal healthcare (clinical) waste:** Expired, unused, spilt, and contaminated pharmaceutical products, drugs, vaccines, and sera that are no longer required and need to be disposed of appropriately. This category includes cytotoxic and cytostatic medicines.

- **Offensive/hygiene waste:** Waste that may cause offence to persons coming into contact with it, but does not present a risk of infection. This was previously known as sanpro waste. Examples of offensive/hygiene waste include incontinence products and other waste produced from human hygiene, sanitary waste and nappies.
- **Other (non-healthcare) special wastes:** Waste with hazardous characteristics produced from support (non-healthcare) activities, such as paints, batteries and waste electrical and electronic equipment (WEEE).
- **Source-segregated recyclates:** Glass, paper, card, plastics, cans and other metals suitable for recycling.
- **Food waste:** Unwanted food from patients, staff and visitors.
- **Residual waste:** The fraction of waste that remains once all special waste, recyclates and food have been removed at source. This is typically described as 'black bag' or 'domestic' waste.

**(Mandatory)**

### **How should different categories of waste be segregated?**

Healthcare waste should be segregated at source across NHSScotland. Appropriate signage, and education and training of staff should be provided to support waste segregation.

**(Grade D recommendation)**

**(AGREE: recommend)**

There has been a legislative requirement to segregate glass, paper, card, plastics, cans and other metals suitable for recycling (source-segregated recyclates) at source since 1<sup>st</sup> January 2014.

**(Mandatory)**

There will be a legislative requirement to segregate food waste at source from 1<sup>st</sup> January 2016.

**(Mandatory)**

### Should colour coding of waste be applied in health and social care settings?

Colour coding of waste should be used in health and social care settings. It is vital to good waste management as it supports correct handling, storage and disposal, thus minimising risk of infection.

#### (Grade D recommendation)

SHTN3 outlines a colour coding segregation system, which although not mandatory for NHSScotland, represents accepted best practice and ensures, at a minimum, compliance with current regulations.

- **Orange lid/bag:** For Infectious (clinical) waste known or suspected to contain pathogens classified as Category B (UN3291). Orange stream waste may be treated to render it safe prior to final disposal. Orange lidded sharps boxes are used for containing sharps including used syringes and vials. Orange lidded leak-proof bins are used for solidified infectious liquids (including blood), tube and suction sets, unrecognisable tissue waste and dialysis waste. Orange bags are used for non-sharp potentially infectious items including low hazard laboratory wastes, dressings, swabs, disposables and other potentially infectious clinical wastes.
- **Light blue bag:** For microbiological cultures and pathogenic laboratory wastes that must be autoclaved on site before being disposed of via the orange stream.
- **Yellow lid:** Yellow lidded leak-proof bins are used for items that require disposal by incineration. Some boards use this type of container for anatomical waste or medicinal wastes. This practice is acceptable as long as the container is clearly marked.
- **Violet/purple lid:** Violet/purple lidded leak-proof bins are used for chemotherapy medicinal waste (cytotoxic and cytostatic medicines). Violet/purple lidded sharps boxes are used for sharps, including used syringes and vials, contaminated with chemotherapy wastes (cytotoxic and cytostatic medicines). This waste is usually incinerated.

- **Blue lid:** Blue lidded leak-proof bins are used for medicinal products (non-chemotherapy medicinal wastes). Blue lidded leak-proof sharps box for full or partially discharged syringes, vials or giving sets. This waste is usually incinerated.
- **Red lid:** Red lidded leak-proof bins are used for a variety of waste streams that require specialist storage and treatment including recognisable anatomical waste, contaminated metal parts (joints etc) and infectious chemical wastes. Waste streams should not be mixed, as waste must be appropriately treated, recovered or disposed of depending on stream.
- **Red lid (white or red body):** Red lidded leak-proof bins with white or red bodies are used for amalgam or amalgam contaminated items.
- **Red lid (red body):** Red lidded leak-proof bins with red bodies are used for chemical wastes.
- **Clear bag:** Clear plastic bags inside a colour-coded recycling bin are used for source segregated mixed dry recyclates and source segregated single recyclate streams.
- **Clear bag or black bag:** Clear plastic bags or black plastic bags inside a colour coded bin for residual waste are used for waste remaining after all source-segregated recyclates have been removed.
- **Yellow and black striped bag ('tiger stripe'):** For offensive/hygiene waste. Small quantities of offensive/hygiene waste can be disposed of in the municipal waste stream, usually in black bags.

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

**Are there specific standards for different waste bags/receptacles in health and social care settings?**

A range of approved colour-coded primary packaging and colour-coded bins is available via a national contract from NSS PCF Strategic Sourcing (formerly NSS National Procurement). These products meet the requirements of the NHSScotland best practice colour-coding system, and have been assessed and meet fire standard and infection control requirements.

Evaluation of receptacle suitability should be made at Board level taking into consideration local circumstances.

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

## How and where should sharps boxes be used in health and social care settings?

Sharps boxes must conform to UN3291/BS EN ISO 23907:2012 and be located as close as possible to the point of use.

### **(Mandatory)**

Sharps disposal containers should:

- Not be used for any purpose other than the safe disposal of sharps
- Be located in a safe position that avoids spillage
- Be located at a height that allows the safe disposal of sharps
- Be located out of the reach of children
- Be located away from public access areas
- Be secured to avoid spillage
- Not be filled above the fill line
- Be disposed of when the fill line is reached
- Be temporarily closed when not in use
- Be disposed of every 3 months, even if not full.

### **(AGREE: recommend)**

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

Prescribers are required to provide needle-clipping devices and/or sharps boxes as necessary for the disposal of sharps waste generated in the community through self-administration of medication. Black sharps boxes (typically less than 0.5 litre capacity) are available for domestic/personal use.

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

### How should liquid waste be managed in health and social care settings?

Liquid waste or solidified liquid waste should be placed in a rigid leak-proof receptacle for disposal. Many infectious waste treatment facilities require infectious liquid wastes (such as blood and other body fluids) to be solidified prior to removal, and producers of waste should seek guidance from their waste contractor regarding this.

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

The majority of sharps boxes are designed for the disposal of sharps only, and must not be used for disposal of liquids.

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

In general, Liquid wastes are normally placed into orange stream rigid containers and self-setting compounds or gel are added to stabilise the waste.

Blood, albumen, plasma bags and transfusion waste, including contaminated liquids and tubing, should be packaged as follows:

For small or *ad hoc* arisings:

- the liquid substance should be placed into an appropriate orange stream rigid container using self-setting compounds or gel to solidify the waste; or
- the liquid substance should be placed in a bag, bottle container or similar primary package then into an appropriate orange stream rigid container, using self-setting compounds or gel to solidify the waste.

For large or recurring arisings:

- liquid waste substances should be placed in bags, suction units, bottle containers or other similar primary packages, then such multiple containers or suction units placed into a 35 litre size or a 60 litre size waste bin container, using self-setting compounds or gel to solidify the waste;

- the waste bin container should be closed when 3/4 full and a self-adhesive “Blood or Contaminated Liquid Waste” label placed on the bin lid and over the existing bin label; or
- the liquid waste substance or the suction unit should be rendered safe by use of a self-setting compound or gel, then placed into the box supplying the suction unit. The box with multiple blood bags, bottle containers or suction units should be placed into a 35 litre size or a 60 litre size waste bin container;
- the waste bin container should be closed when three quarters full and a self-adhesive ‘Blood or Contaminated Liquid Waste’ label placed on the bin lid and over the existing bin label.

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

For removal from the site, containers and boxes should then be placed into a dedicated orange stream bulk container (typically a 240 litre size wheelie bin) provided by the waste contractor. The wheelie bin should be suitably marked as containing blood or contaminated liquids. Containers or boxes containing blood or contaminated liquids should not be mixed with other orange stream waste or any other wastes.

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

### How should waste be handled in health and social care settings?

Healthcare waste bags should be filled to no more than  $\frac{3}{4}$  full, should weigh no more than 4kg, and should be securely sealed. To seal waste bags:

- hold by the neck and twist until tight
- fold the neck of the bag over to form a 'swan neck'
- place a ratchet type healthcare waste tag around the folded neck and tighten until a sturdy seal has been made.

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

When handling waste in health and social care settings:

- never touch the waste receptacle itself while disposing of items; receptacles must be hands free/pedal operated and hard bodied
- never overfill waste receptacles and ensure that they remain upright at all times
- never remove items from waste receptacles
- never reopen sealed waste receptacles
- when handling sealed waste receptacles ensure that suitable personal protective equipment (PPE) is worn based on the level of perceived risk. Heavy duty gloves may be necessary if large quantities of waste/waste receptacles are being handled
- after handling waste PPE should be disposed of appropriately and hand hygiene performed.

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

## How should different types of waste be labelled or tagged in the healthcare setting?

Healthcare waste should be appropriately labelled in health and social care settings.

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

### **(AGREE: Recommend)**

Waste receptacle labels should clearly state the following:

- a description of the waste;
- appropriate United Nations (UN) number(s) and hazard symbol, if the waste is classified as dangerous goods;
- the appropriate treatment or disposal route;
- the source of the waste;
- the date of discard of the waste.

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

### How should waste be transported in health and social care settings?

Where secondary receptacles are used to transport primary waste receptacles, for example the use of large wheeled bins containing sacks, these must also be fit-for-purpose and colour-coded.

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

SHTN3 advises that arrangements should be made to transport waste routinely from ward level to a storage area pending collection by a waste contractor.

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

SHTN3 further advises that on roads to which the public do not have access, dedicated trucks, trolleys, tugs or wheeled containers are needed to transport waste receptacles to storage areas. To prevent contamination, they should not be used for any other purpose. They need to be designed and constructed so that they:

- are easy to clean and drain;
- contain any leakage from damaged receptacles or containers;
- are easy to load and unload;
- do not offer harbourage for insects or vermin, and
- do not allow particles of waste to become trapped on edges or crevices.

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

SHTN3 recommends that containers for on-site transport need to be steam-cleaned or disinfected following leakages or spills, and at regular intervals: if containers are heavily used, cleaning is likely to be required at least weekly.

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

When transporting waste receptacles around the hospital setting:

- Suitable PPE should be worn based on the level of perceived risk.
- Receptacles should be handled with care and held away from the body.
- Bags should only be handled by the neck and must not be dragged or thrown.
- After handling waste PPE should be correctly disposed of and hand hygiene performed.

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

Trolleys, carts or any other containers used for transporting waste must be kept clean and have clear cleaning schedules – especially when spillages of blood and/or body fluids may contaminate them.

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

**How should waste be stored prior to disposal in health and social care settings?**

All healthcare waste must be stored in an area which is secure against unauthorised access by persons or animals, which is protected from the elements, and in containers that comply with relevant regulations.

**(Grade D recommendation)**

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

Waste should not be allowed to accumulate in corridors, wards, or other places accessible to unauthorised personnel or members of the public.

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

Receptacles for healthcare (including clinical) waste and other special wastes should be located away from areas of public access.

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

Storage areas at ward level should be secure and located away from public areas, and sufficient in size to allow packaged waste to be segregated.

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

Where wheeled bins are used they should remain secure and locked at all times except when being filled by staff.

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

Bulk storage areas in healthcare premises or at a licensed or permitted transfer, treatment or disposal facilities should be:

- well-lit and ventilated;
- sited away from food preparation and general storage areas, and from routes used by the public;
- totally enclosed and secure;
- provided with separate storage for sharps receptacles and waste medicines, which may need a higher degree of security to prevent unauthorised access;
- sited on a well-drained, impervious hard-standing;
- readily accessible, but only to authorised people;
- kept locked when not in use;
- secure from entry by animals and free from insect or rodent infestations;
- provided with wash-down facilities;
- provided with washing facilities for employees;
- provided with appropriate fire protection or suppression;
- clearly marked with warning signs;
- provided with separate, clearly labelled areas for waste that requires, rather than is destined for, different treatment or disposal options;
- provided with access to first-aid facilities.

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

## How should waste spillages be managed to prevent and control infection?

Accidental spillages of waste should be cleaned up immediately.

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

Employers should have clear written procedures for dealing with spillages which:

- specify the reporting and investigation procedures;
- specify the use of a safe system of work for clearing up waste spillages;
- set out appropriate requirements for decontamination;
- specify the protective clothing to be worn.

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

Spill kits should be available to help ensure correct action in the event of a waste spillage, and should be provided at waste disposal sites and in all vehicles carrying healthcare waste. Employers should also provide appropriate equipment for collecting spilled waste and placing it in new receptacles.

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

In the event of a waste spillage, Healthcare Workers (HCWs) should:

- Don appropriate PPE and safely gather the waste and place into an appropriate receptacle of the same waste stream.
- Manage spillages of blood/body fluids by following Standard Infection Control Precautions section as outlined in the National Infection Prevention and Control Manual.
- Manage any exposed sharps by following Standard Infection Control Precautions as outlined in the National Infection Prevention and Control Manual.

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

## 4. Discussion

### 4.1 Implications for practice

#### **Are there any legislative/mandatory requirements for the handling and disposal of waste for infection prevention and control purposes?**

Waste generated or produced in health and social care settings is regarded as a controlled waste and hence is subject to a raft of legislation/regulation at both national and international level. The prevention and control of infection runs throughout much of this legislation, however there is no single specific piece of legislation/regulation which explicitly governs the management/disposal of waste in health and social care settings with the purpose of preventing or controlling infection. Specific standards or legislation relating to particular aspects of waste management/disposal are presented throughout the review in the appropriate section, however there is a core of general legislation/regulations which relate to waste in health and social care settings: including 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>; [Environmental Protection Act \(1990\)](#)<sup>3</sup>; [The Controlled Waste Regulations \(1992\)](#)<sup>4</sup>; [The Special Waste Regulations 1996 \(as amended\)](#)<sup>5</sup>; [The Waste \(Scotland\) Regulations 2012](#)<sup>6</sup>; and the [European Waste Catalogue List of Waste \(EWC 2002\)](#)<sup>7</sup>. Waste management in NHSScotland health and social care settings must also comply with [CEL 2 \(2012\): A Policy on Sustainable Development for NHSScotland 2012](#)<sup>8</sup> and [CEL 14 \(2013\): NHSScotland Waste Management Action Plan 2013-2016](#)<sup>9</sup>. Health Facilities Scotland has interpreted and synthesised this legislation/regulation and has produced Scottish Health Technical Note 3 (SHTN3), a suite of waste management guidance.<sup>10-13</sup>

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## Are there standard definitions/categories of waste in health and social care settings?

NHSScotland produces a large variety of wastes which can be broadly classified into five 'core' waste streams, as outlined in SHTN3<sup>10-13</sup>. They are:

- **Healthcare (including clinical) waste:** Waste produced as a direct result of healthcare activities. Healthcare waste can be divided into three sub-categories:
  - **Infectious healthcare (clinical) waste:** Waste that presents a known or potential risk of infection. Healthcare waste generated from healthcare premises, or produced by healthcare workers in the community is considered to be infectious unless categorised otherwise on the basis of a risk assessment.
  - **Medicinal healthcare (clinical) waste:** Expired, unused, spilt, and contaminated pharmaceutical products, drugs, vaccines, and sera that are no longer required and need to be disposed of appropriately. This category includes cytotoxic and cytostatic medicines.
  - **Offensive/hygiene waste:** Waste that may cause offence to persons coming into contact with it, but does not present a risk of infection. This was previously known as sanpro waste. Examples of offensive/hygiene waste include incontinence products and other waste produced from human hygiene, sanitary waste and nappies.<sup>14</sup>
- **Other (non-healthcare) special wastes:** Waste with hazardous characteristics produced from support (non-healthcare) activities, such as paints, batteries and waste electrical and electronic equipment (WEEE).
- **Source-segregated recyclates:** Glass, paper, card, plastics, cans and other metals suitable for recycling.
- **Food waste:** Unwanted food from patients, staff and visitors.
- **Residual waste:** The fraction of waste that remains once all special waste, recyclates and food have been removed at source. This is typically described as 'black bag' or 'domestic' waste.

### **(Mandatory)**

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## **How should different categories of waste be segregated?**

A number of non-systematic reviews, low level-evidence studies and guidance from NICE were identified that emphasise the importance of segregating waste at source.<sup>15-23</sup> Several of these also highlight the importance of providing appropriate signage, as well as the importance of providing education and training to staff to support segregation of waste.

### **(Grade D recommendation)**

#### **(AGREE: recommend)**

Glass, paper, card, plastics, cans and other metals suitable for recycling would commonly have been disposed of as domestic waste in the past, however there has been a legislative requirement for producers of domestic waste (other than occupiers of domestic properties) to segregate this waste (source-segregated recyclates) at source since 1<sup>st</sup> January 2014.<sup>6;12</sup>

Unwanted food from patients staff and visitors to health and social care premises would commonly have been disposed of as domestic waste or macerated and disposed of to the public sewer in the past, however there will be a legislative requirement for most producers of domestic waste (other than occupiers of domestic properties) to segregate this waste (food waste) at source from 1<sup>st</sup> January 2016 (see SHTN3 Part C for specific exceptions to this requirement).<sup>6;12</sup>

### **(Mandatory)**

The specific details of how waste should be segregated in NHSScotland are outlined in detail in SHTN3 Part C.<sup>12</sup>

## **Should colour coding of waste be applied in health and social care settings?**

A limited volume of non-systematic reviews were identified regarding the application of colour coding to waste management.<sup>17;24;25</sup> All three reviews consistently recommend that colour coding should be used in healthcare settings. Segregation of waste at the point of production into suitably colour-coded and labelled packaging is vital to good

waste management as it supports correct handling, storage and disposal, thus minimising the risk of infection.

**(Grade D recommendation)**

SHTN3 outlines a colour coding segregation system, which although not mandatory for NHSScotland, represents accepted best practice and ensures, at a minimum, compliance with current regulations.<sup>10-13</sup> Elements of this colour coding system are advocated in guidance for prevention and control of infection in care homes published by the Department of Health, however this guidance was developed for England and there are some differences.<sup>22</sup>

- **Orange lid/bag:** For Infectious (clinical) waste known or suspected to contain pathogens classified as Category B (UN3291). Orange stream waste may be treated to render it safe prior to final disposal. Orange lidded sharps boxes are used for containing sharps including used syringes and vials. Orange lidded leak-proof bins are used for solidified infectious liquids (including blood), tube and suction sets, unrecognisable tissue waste and dialysis waste. Orange bags are used for non-sharp potentially infectious items including low hazard laboratory wastes, dressings, swabs, disposables and other potentially infectious clinical wastes.<sup>10-13;22</sup>
- **Light blue bag:** For microbiological cultures and pathogenic laboratory wastes that must be autoclaved on site before being disposed of via the orange stream.<sup>10-13</sup>
- **Yellow lid:** Yellow lidded leak-proof bins are used for items that require disposal by incineration. Some boards use this type of container for anatomical waste or medicinal wastes. This practice is acceptable as long as the container is clearly marked.<sup>10-13</sup>
- **Violet/purple lid:** Violet/purple lidded leak-proof bins are used for chemotherapy medicinal waste (cytotoxic and cytostatic medicines). Violet/purple lidded sharps boxes are used for sharps, including used syringes and vials, contaminated with chemotherapy wastes (cytotoxic and cytostatic medicines). This waste is usually incinerated.<sup>10-13</sup>

- **Blue lid:** Blue lidded leak-proof bins are used for medicinal products (non-chemotherapy medicinal wastes). Blue lidded leak-proof sharps box for full or partially discharged syringes, vials or giving sets. This waste is usually incinerated.<sup>10-13</sup>
- **Red lid:** Red lidded leak-proof bins are used for a variety of waste streams that require specialist storage and treatment including recognisable anatomical waste, contaminated metal parts (joints etc) and infectious chemical wastes. Waste streams should not be mixed, as waste must be appropriately treated, recovered or disposed of depending on stream.<sup>10-13</sup>
- **Red lid (white or red body):** Red lidded leak-proof bins with white or red bodies are used for amalgam or amalgam contaminated items.<sup>10-13</sup>
- **Red lid (red body):** Red lidded leak-proof bins with red bodies are used for chemical wastes.<sup>10-13</sup>
- **Clear bag:** Clear plastic bags inside a colour-coded recycling bin are used for source segregated mixed dry recyclates and source segregated single recyclate streams.<sup>10-13</sup>
- **Clear bag or black bag:** Clear plastic bags or black plastic bags inside a colour coded bin for residual waste are used for waste remaining after all source-segregated recyclates have been removed.<sup>10-13;22</sup>
- **Yellow and black striped bag ('tiger stripe'):** For offensive/hygiene waste. Small quantities of offensive/hygiene waste can be disposed of in the municipal waste stream, usually in black bags.<sup>14;22</sup>

### (Good Practice Point (GPP))

The colour coding system for source-segregated recyclates is outlined in SHTN3 Part C.<sup>12</sup>

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## **Are there specific standards for different waste bags/receptacles in the hospital setting?**

A range of approved colour-coded primary packaging and colour-coded bins is available via a national contract from NSS PCF Strategic Sourcing (formerly NSS National Procurement). These products meet the requirements of the NHSScotland best practice colour-coding system, and have been assessed and meet fire standard and infection control requirements.<sup>12</sup>

Evaluation of receptacle suitability should be made at Board level taking into consideration local circumstances.<sup>12</sup>

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

## **How and where should sharps boxes be used in health and social care settings?**

Used sharps should be immediately disposed of at the point of use into a sharps disposal container conforming to current standards<sup>\* 25-29</sup>.

### **(Mandatory)**

Guidance produced by the National Institute for Health and Clinical Excellence (now the National Institute for Health and Care Excellence) and the epic3 evidence based guidelines for the prevention and control of healthcare associated infections make a number of recommendations in relation to the safe use and storage of sharps disposal containers, some of which are supported in SHTN3. The key recommendations are that sharps disposal containers:

- Should not be used for any purpose other than the safe disposal of sharps<sup>29</sup>
- Should be located in a safe position that avoids spillage<sup>29</sup>.
- Should be located at a height that allows the safe disposal of sharps<sup>29;30</sup>.
- Should be located out of the reach of children<sup>29;30</sup>.
- Should be located away from public access areas<sup>29</sup>.
- Should be secured to avoid spillage<sup>30</sup>.

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\* Current standards at the time of publication (September 2015) are UN3291 and BS EN ISO 23907:2012.

- Should not be filled above the fill line (usually  $\frac{3}{4}$  full)<sup>13;29;30</sup>.
- Should be disposed of when the fill line is reached<sup>29;30</sup>.
- Should be temporarily closed when not in use<sup>29;30</sup>.
- Should be disposed of every 3 months, even if not full<sup>12;29</sup>.

**(AGREE: recommend)**

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

SHTN3 makes recommendations on the use and disposal of sharps boxes for sharps waste generated in the community. The guidance states that used sharps waste generated in the community through self-administration, such as the use of insulin by people with diabetes, is not considered infectious waste. Prescribers are required to provide the necessary equipment and instruction to ensure safe disposal: this may include a needle-clipping device and/or a sharps box. Black sharps boxes (typically less than 0.5 litre capacity) are available for domestic/personal use.<sup>13</sup>

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

**How should liquid waste be managed in health and social care settings?**

No peer-reviewed evidence was identified on the management of liquid wastes in health and social care settings.

SHTN3 recommends that liquid waste or solidified liquid waste should be placed in a rigid leak-proof receptacle for disposal.<sup>12</sup> The guidance further notes that many infectious waste treatment facilities require infectious liquid wastes (such as blood and other body fluids) to be solidified prior to removal, and producers of waste should seek guidance from their waste contractor regarding this.<sup>12</sup>

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

SHTN3 notes that the majority of sharps boxes are for disposal of sharps only, and must not be used for disposal of liquids.<sup>12</sup>

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

SHTN3 also outlines the recommended procedures for disposing of liquid orange stream healthcare waste. In general, Liquid wastes are normally placed into orange stream rigid containers and self-setting compounds or gel are added to stabilise the waste.<sup>12</sup>

The guidance states that blood, albumen, plasma bags and transfusion waste, including contaminated liquids and tubing, should be packaged as follows:

For small or *ad hoc* arisings:

- the liquid substance should be placed into an appropriate orange stream rigid container using self-setting compounds or gel to solidify the waste; or
- the liquid substance should be placed in a bag, bottle container or similar primary package then into an appropriate orange stream rigid container, using self-setting compounds or gel to solidify the waste.

For large or recurring arisings:

- liquid waste substances should be placed in bags, suction units, bottle containers or other similar primary packages, then such multiple containers or suction units placed into a 35 litre size or a 60 litre size waste bin container, using self-setting compounds or gel to solidify the waste;
- the waste bin container should be closed when three quarters full and a self-adhesive “Blood or Contaminated Liquid Waste” label placed on the bin lid and over the existing bin label; or
- the liquid waste substance or the suction unit should be rendered safe by use of a self-setting compound or gel, then placed into the box supplying the suction unit. The box with multiple blood bags, bottle containers or suction units should be placed into a 35 litre size or a 60 litre size waste bin container;
- the waste bin container should be closed when three quarters full and a self-adhesive ‘Blood or Contaminated Liquid Waste’ label placed on the bin lid and over the existing bin label.<sup>12</sup>

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

SHTN3 states that for removal from the site, containers and boxes should then be placed into a dedicated orange stream bulk container (typically a 240 litre size wheelie bin) provided by the waste contractor. The wheelie bin should be suitably marked as containing blood or contaminated liquids. Containers or boxes containing blood or contaminated liquids should not be mixed with other orange stream waste or any other wastes.<sup>12</sup>

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

#### **How should waste be handled in health and social care settings?**

SHTN3 states that healthcare waste bags should be filled to no more than  $\frac{3}{4}$  full, should weigh no more than 4kg, and should be securely sealed.<sup>13</sup> The guidance further advises on how to seal waste bags:

- Hold by the neck and twist until tight
- Fold the neck of the bag over to form a 'swan neck'
- Place a ratchet type healthcare waste tag around the folded neck and tighten until a sturdy seal has been made.<sup>13</sup>

This is supported in guidance published by the Department of Health on the prevention and control of infection in care homes.<sup>22</sup>

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

#### **How should different types of waste be labelled or tagged in the healthcare setting?**

SHTN3 states that segregation of waste at the point of production into suitably colour-coded and labelled packaging is vital to good waste management.<sup>10;12</sup> The recommendation that healthcare waste must be suitably labelled is supported in guidance on the prevention and control of infection in primary and community care published by NICE, and in guidance on the prevention and control of infection in care homes published by the Department of Health.<sup>22;23</sup>

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

**(AGREE: Recommend)**

SHTN3 recommends that waste receptacle labels should clearly state the following in order to ensure that everyone in the waste management chain is aware of the contents and manages the waste appropriately:

- a description of the waste;
- appropriate United Nations (UN) number(s) and hazard symbol, if the waste is classified as dangerous goods;
- the appropriate treatment or disposal route;
- the source of the waste;
- the date of discard of the waste.<sup>10;12</sup>

**(Good Practice Point (GPP))****How should waste be transported in health and social care settings?**

This review did not identify any peer-reviewed evidence that examines the transportation of waste within health and social care settings from point of use to bulk/intermediate storage, therefore it is not possible to make an evidence based recommendation on this question.

SHTN3 recommends that where secondary receptacles are used to transport primary waste receptacles, for example the use of large wheeled bins containing sacks, these must also be fit-for-purpose and colour-coded.<sup>10</sup>

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

SHTN3 advises that arrangements should be made to transport waste routinely from ward level to a storage area pending collection by a waste contractor.<sup>13</sup>

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

SHTN3 further advises that on roads to which the public do not have access, dedicated trucks, trolleys, tugs or wheeled containers are needed to transport waste receptacles to

storage areas. To prevent contamination, they should not be used for any other purpose. They need to be designed and constructed so that they:

- are easy to clean and drain;
- contain any leakage from damaged receptacles or containers;
- are easy to load and unload;
- do not offer harbourage for insects or vermin, and
- do not allow particles of waste to become trapped on edges or crevices.<sup>13</sup>

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

SHTN3 recommends that containers for on-site transport need to be steam-cleaned or disinfected following leakages or spills, and at regular intervals: if containers are heavily used, cleaning is likely to be required at least weekly.<sup>13</sup>

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

SHTN3 Part C provides further information on transport of waste outside of healthcare settings.<sup>12</sup>

## **How should waste be stored prior to disposal in health and social care settings?**

There is a lack of evidence in the scientific literature examining the central storage of waste prior to uplift for disposal. The review identified three studies that provide evidence relevant to the storage of waste in health and social care settings.<sup>31-33</sup> One study, conducted in three English hospitals, included environmental sampling of key points of contact with porters and cleaners as they transported waste around the hospital for presence/absence of target organisms (MRSA, *C.difficile*, VRE and MSSA).<sup>33</sup> These included: waste bags (particularly the neck with which they would be lifted); the lids of waste carts and bins; buttons to lifts; and door handles. None of the target organisms were identified from any of the samples taken, however other organisms were isolated indicating a possible hygiene issue.<sup>33</sup> While the results of the study suggest that if waste is handled properly, they should not become contaminated with MRSA, *C.difficile*, VRE and MSSA in within the physical environment, the presence

of other organisms suggest that waste should be stored outside clinical or care areas to avoid risk of cross transmission.

In another English study, bulk storage waste carts at nine hospitals were swabbed to test for contamination.<sup>31</sup> The results of the study suggest that the carts could pose a cross infection risk and that it was therefore vital that they were stored outside of clinical areas; that appropriate personal protective equipment (PPE) was worn; and that adequate hand hygiene was performed after healthcare workers had been in contact with them. Another English study evaluated bulk waste handling at 26 hospital sites to assess whether or not waste was being correctly and safely stored.<sup>32</sup> The study concluded that waste carts did not always comply with appropriate regulations/legislation and that waste was being stored inappropriately at some sites, presenting risk of spillages, unauthorised access, fire and environmental contamination.

The review identified four studies; three non-systematic reviews<sup>16;25;27</sup> and one consensus guideline/expert opinion<sup>34</sup>, as well as a guideline<sup>28</sup> that address the central or bulk storage of healthcare waste. There is consensus that all healthcare waste must be stored in an area which is secure against unauthorised access by persons<sup>16;25;27</sup> or animals (scavengers)<sup>25;28;34</sup>; which is protected from the elements<sup>25;28</sup>; and in the correct lockable containers suitable for the specific waste type.<sup>16;27;34</sup> These recommendations are supported in guidance on the prevention and control of infection in care homes published by the Department of Health, which states that specific areas (stillages) should be designated for waste storage and is kept secure from unauthorised persons and scavenging animals.<sup>22</sup>

**(Grade D recommendation)**

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

SHTN3 makes a number of recommendations in relation to the storage of waste in health and social care settings. The guidance recommends that healthcare waste that is being stored prior to transport/disposal should be stored securely so as to prevent the escape of waste, harm to the environment and harm to human health.<sup>10</sup> It states that waste should not be allowed to accumulate in corridors, wards, or other places accessible to unauthorised personnel or members of the public.<sup>10</sup>

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

SHTN3 advises that receptacles for healthcare (including clinical) waste and other special wastes should be located away from areas of public access in accordance with the recommendations in the NHSScotland Waste Management Action Plan.<sup>10</sup>

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

SHTN3 also advises that storage areas at ward level should be secure and located away from public areas.<sup>10</sup> Storage areas should be sufficient in size to allow packaged waste to be segregated and avoid waste of different classifications being stored together in the same area.<sup>10</sup> Where wheeled bins are used they should remain secure and locked at all times except when being filled by staff.<sup>10</sup>

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

The following recommendations on bulk storage areas in healthcare premises or at licensed to permitted transfer, treatment or disposal facilities are made in SHTN3. They should be:

- well-lit and ventilated;
- sited away from food preparation and general storage areas, and from routes used by the public;
- totally enclosed and secure;
- provided with separate storage for sharps receptacles and waste medicines, which may need a higher degree of security to prevent unauthorised access;
- sited on a well-drained, impervious hard-standing;
- readily accessible, but only to authorised people;
- kept locked when not in use;
- secure from entry by animals and free from insect or rodent infestations;
- provided with wash-down facilities;
- provided with washing facilities for employees;

- provided with appropriate fire protection or suppression;
- clearly marked with warning signs;
- provided with separate, clearly labelled areas for waste that requires, rather than is destined for, different treatment or disposal options;
- provided with access to first-aid facilities.<sup>10</sup>

Department of Health guidance on the prevention and control of infections in care home settings also states that storage should be in a well-drained area, with impervious hard standing and wash-down facilities.<sup>22</sup>

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

#### **How should waste spillages be managed to prevent and control infection?**

No evidence on management of waste spillages was identified in the peer-reviewed scientific literature, and as such no evidence-based recommendation can be made.

Department of Health Guidance on the prevention and control of infections in care homes recommends that accidental spillages of waste in bulk storage areas should be cleaned up immediately.<sup>22</sup>

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

SHTN3 recommends that employers need clear written procedures for dealing with spillages which:

- specify the reporting and investigation procedures;
- specify the use of a safe system of work for clearing up waste spillages;
- set out appropriate requirements for decontamination;
- specify the protective clothing to be worn.<sup>12</sup>

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

SHTN3 also recommends that spill kits are available to help ensure correct action in the event of a waste spillage, and should be available at waste disposal sites and in all

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vehicles carrying healthcare waste. Employers should also provide appropriate equipment for collecting spilled waste and placing it in new receptacles.<sup>12</sup>

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

## **4.2 Implications for research**

There is limited scientific research on this topic, however this is not a research priority because the safe management of waste in health and social care settings subject to regulations, legislation and national guidance developed by waste management experts.

Management of waste in social care settings and home care settings is relatively neglected in comparison to management of waste in healthcare settings. In the context of the integration of health and social care, it may be beneficial if this was given more attention.

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