



National Guidance for Safe Management of Linen in NHSScotland

Health and Care Environments For laundry services/distribution

**Note: Ward/Clinical staff should follow procedures set out in
the National Infection Prevention and Control Manual**

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2.1	August 2017	Minor word changes made for consistency. Updates made in line with the DoH 2016 guidance .
2.0	April 2016	Added to Appendix 1 Patients or residents personal clothing may be batch washed together in a semi-industrial machine provided that: <ul style="list-style-type: none"> the highest temperature setting tolerated by the fabric (see care label) is used. the items are not infectious linen. the patients or residents are not considered high-risk e.g. immunocompromised patients.
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1. Introduction

Within NHSScotland linen associated with care provision is laundered in a number of ways – domestically, in industrial facilities and/or by using outside contracts or facilities. This document aims to provide guidance on the safe management of linen at all stages of the laundering process from the point of collection in the care area to the completion of reprocessing and storage.

This document aims to ensure safe and consistent linen management and reprocessing practice within NHSScotland and supersedes the requirements outlined in NHSScotland MEL (1993)7 and (1993)86. The guidance set out is based on the Department of Health 'Health Technical Memorandum 01-04 – Decontamination of Linen for Health and Social Care'. This guidance is complemented by the National Infection Prevention and Control Manual 'Chapter 1. Standard Infection Control Precautions' which covers safe management of linen at care area level – <http://www.nipcm.hps.scot.nhs.uk/>

This document is intended to serve both health and care environments. Most of the guidance in this document will be implementable in domestic style laundries/social care settings; some additional guidance for domestic-style laundries is also presented ([Appendix 1](#)).

Outlined in this document are:

- The categories of linen reprocessed by NHSScotland.
- The infection prevention and control measures required at all stages of the laundering process including transport and storage.
- The requirements for the laundering and disinfection of linen.
- The requirements for the laundry environment and machinery maintenance.
- Additional guidance for domestic style-laundries ([Appendix 1](#)).
- The responsibilities of all staff members involved in the laundry process ([Appendix 2](#)).

2. BS EN 14065

BS EN 14065 is a European standard that describes a management system for assuring the microbiological quality of processed linen. The system uses a Risk Analysis and Biocontainment Control (RABC) approach to ensure the microbiological quality of processed linen is continuously assured. The Department of Health encourages the adoption of BS EN 14065. Implementation of this standard is not mandatory; however, it may be particularly useful for facilities processing large volumes of linen. Further information on this standard can be found in the Department of Health '*Choice Framework for Local Policy and Procedures*'.
<https://www.gov.uk/government/publications/decontamination-of-linen-for-health-and-social-care>

The following guidance should aid both industrial and domestic style laundry facilities that are **not** implementing BS EN 14065 to achieve and maintain best practise for the safe handling of linen.

3. Segregation of linen in care settings

Linen is segregated into the following categories to prevent cross-contamination of clean linen; prevent the exposure of patients and staff to infectious agents; and to ensure heat-labile linen is subjected to appropriate disinfection processes. With the exception of heat-labile items, the following categories do not influence the process of washing and disinfection; used and infectious linens are subjected to the same processes at the laundry to produce clean linen. All linen should be appropriately segregated, bagged and labelled, and stored separately at ward and other service levels/areas prior to collection or distribution. This would be either a dirty area e.g. sluice or a designated dirty linen store. Used/infectious linen must not be stored in the domestic services room (DSR).

3.1. Categories of linen

There are three categories of linen for infection control:

Clean	Linen washed and ready to be reissued to the service.
Used	All used linen in the ward setting not contaminated by blood or body fluids.

Infectious All linen used by a person known, or suspected to be infectious and linen that is contaminated with blood or other body fluids e.g. faeces.

Used or infectious linen may also be categorised as heat-labile.

Heat-labile Linen that may be damaged (shrinkage/stretching) by thermal disinfection.

NB. If staff uniforms are sent to the laundry they should be segregated and laundered as per normal laundry procedures for used and/or infectious linen.

Infectious linen from suspected or confirmed category 4 infections (e.g. viral haemorrhagic fevers) **should not be returned to the laundry**. These items should be disposed of as category A waste and incinerated. The laundry department should be informed if any items of linen are sent for incineration.

3.2. Colour coding of outer linen bags (fabric hampers) in healthcare settings

Linen hampers in healthcare settings must be colour coded to denote the various categories of linen. It is suggested that the following colour coding is used:

Clean	White
Used	White
Heat labile	Blue
Infectious	Red

If linen processing has been out-sourced to an industrial service provider, follow the categorisation system for used and infectious linen set out by the service provider.

3.3. Use of water-soluble (alginate) bags

Water soluble bags (also referred to as alginate bags) are used for the storage and transport of infectious linen. The entire inner bag is made from either a soluble material or the bag is impermeable but has soluble seams so that linen is released on contact with water. These bags are intended to be placed directly into the washing machine to minimise operator contact with infectious linen. The capabilities of the equipment and composition of the load should be

determined in advance of linen reprocessing. Alginate bags must be placed in a clear polythene bag before being secured in a linen bag (hamper).

4. Transport and storage of linen

All linen bags (hampers) must be labelled with the hospital, care area/ward/department, and dated. Portering, transport and laundry staff will not accept delivery or collect linen that is not appropriately bagged and labelled.

4.1. Safe storage and internal transport in healthcare settings

- Trolleys used for transporting linen must be impervious and have a documented cleaning schedule in place following use (responsibility to be assigned by linen services manager).
- All reusable transport containers and cages should be decontaminated daily (responsibility to be assigned by linen services manager).
- Clean linen must be protected from environmental contamination, e.g. with an impervious protective covering. Clean linen should be stored separately (or physically separated, i.e. a separate compartment) from all other linen.

4.2. Safe management of linen in transfer vehicles

- Clean and used/infectious linen should not be transported in the same vehicle unless they can be physically separated, i.e. in a separate, covered cage or trolley.
- Drivers should have access to hand washing facilities at pickup and delivery points and carry a personal alcohol based hand rub.
- Spill kits for managing body fluids spillages should be available in all linen transfer vehicles.
- All vehicles must have a documented cleaning schedule in place for both internal and external cleaning.

5. Safe laundering of linen

5.1. Protection of laundry staff

To protect against infection and cross-contamination, staff should be provided with uniforms and personal protective equipment (PPE). All staff should be trained and competent in the use of PPE, including the safe removal and disposal of PPE.

- Staff changing facilities should be provided.
- Hand washing facilities should be provided at entry/exit points of all washing/reprocessing areas.
- Staff handling linen should ensure that any abrasions or cuts on the hands are covered with a waterproof dressing.
- Staff should wear PPE at all times when handling linen, such as:
 - disposable gloves (*puncture resistant if necessary);
 - disposable plastic aprons.
- PPE should be safely removed and disposed of when moving between dirty and clean areas. <http://www.nipcm.hps.scot.nhs.uk/>

*Puncture resistant gloves used to prevent sharps injuries when decanting and sorting used linen are not required to be single-use disposable as there is no crossover with clean, processed linen. However, these gloves should be cleaned between use with soap and water and stored to dry. These gloves should be disposed of when visibly worn/damaged and immediately if contaminated with blood or body fluids.

5.2. Receipt and storage of linen

All linen arriving at the laundry must be identified by the hospital, care area/ward/department, and dated. Portering, transport and laundry staff should not accept delivery or collect linen that is not appropriately bagged and labelled.

- Upon arrival, linen should be held in a designated storage area until a viable complete load has been gathered.
- The designated storage area for used/infectious linen should be secure and inaccessible to the public.

Perform hand hygiene after handling used/infectious linen.

Perform hand hygiene before handling clean linen.

- After reprocessing, clean linen must be protected from environmental and microbial contamination.
- Clean linen must be physically separated from used and infectious linen at all times during laundry reprocessing.

- Processed (clean) linen should be kept in a designated area that is not within the 'dirty' or 'washing' areas of the laundry. If this is not possible clean linen should be protected with an impervious cover. Clean linen must be stored above floor level.

5.3. Washing and production processes

The purpose of linen reprocessing is to remove or kill microbial contamination. The linen wash process consists of 3 stages: washing, disinfection and dilution. These stages are required regardless of whether linen is used or infectious. The wash stages should ensure that all linen is visibly clean by removing contamination from the fabric; a chemical or thermal disinfection stage should be performed on **all** linen to reduce the number of viable microorganisms by killing; finally, the number of viable microorganisms on the fabric is reduced by dilution, a minimum of two rinse cycles should be performed to reduce the microbial burden and remove detergents and disinfectants in the wash effluent. Washing processes for used/infectious linen should be carried out in a defined, functionally separate area from clean linen storage.

All processed linen should look visibly clean and should not be damaged or discoloured. Processed linen that does not meet these criteria should be disposed of via the domestic waste stream by the linen services department and the department/ward of origin notified if required.

Decanting linen/machine loading

- Linen hampers should be opened as close to the machine as possible and never emptied onto the floor.
- All clear polythene bags should be disposed of as healthcare waste.
- If a water-soluble bag is present (as for infectious linen) this should **not** be opened but instead placed directly into the machine.
- After decanting the linen, place any reusable hampers directly into the machine.
- Follow the manufacturer's instructions for maximum and minimum load weights.

Wash (used and infectious) – thermal disinfection

- The washing process for both used and infectious linen should include a disinfection cycle where the temperature should be maintained at:
 - 65 °C for not less than 10 minutes or, preferably,
 - 71 °C for not less than 3 minutes.
- To ensure adequate mixing and heat distribution:

- Up to 4 minutes should be added to the above times when using machines with low (less than 0.056kg/L) degrees of loading.
- Up to 8 minutes should be added to the above times when using machines with high (more than 0.056kg/L) degrees of loading.

Heat labile linen

Heat labile linen will be damaged (shrinkage/stretching) by temperatures above 40°C and therefore cannot be subjected to thermal disinfection. The majority of heat labile linen will be personal items/clothing belonging to a patient; in this case patients should have been offered the opportunity to take these belongings home to wash. It is unlikely that these items will present at the laundry facility. [Appendix 1](#) contains additional information for washing heat-labile linen in care settings where the patient is a resident.

All linen should be removed from machines at the end of the day and not left overnight.

6. Management of equipment and the environment in purpose built laundry facilities

Additional guidance for domestic style laundry facilities can be found in [Appendix 1](#).

In order to maintain facilities that are able to adequately disinfect linen and prevent cross-contamination of clean linen planned preventative maintenance schedules are required for:

- The fabric of the laundry, including drainage and water systems; and
- All equipment and machinery.

6.1. Laundry environment/design

- Laundry facilities should be situated in an area that is separate from care areas and is not accessible to the public.
- The facilities/area should be used solely for linen processing and should be accessible only to those staff involved in these activities.
- There should be separate, secure areas for the processing and storage of used/infectious and clean linen.
- The laundry should be designed to minimise frequent movement between areas for storing/processing used/infectious linen and clean linen.

- Extraction ventilation, drainage and water systems should be designed to minimise the spread of infectious agents in aerosols; closed drainage systems should be used where possible and any open drains should be covered.
- Routine environmental cleaning should be in place in addition to cleaning and disinfection of equipment. Refer to the [NHSScotland National Cleaning Services Specification](#).

6.2. Validation and maintenance of equipment

- Before purchase and installation washing machines should be approved by the infection prevention and control team (IPCT), estates and procurement.
- All washing machines must be fitted with accurate heat sensors so that the disinfection stage of each wash can be monitored.
- All washing machines must be checked at least every 6-weeks to ensure compliance with thermal disinfection standards and fitness for purpose. This check must be recorded and logged.
- Recorded and auditable logs of all repair, maintenance and equipment checks undertaken must be held by the laundry engineer. All items checked must be listed and recorded.

6.3. Routine cleaning/disinfection of equipment

- All washing machines must be regularly cleaned according to the manufacturer's instructions and be kept free from algae, biofilm and limescale.
- Before production begins each day, the rinse sections of continuous tunnelled washers must be disinfected to ensure linen is not recontaminated during the rinsing process. Either a thermal or chemical disinfection cycle can be used; the drums must rotate to come into contact with the disinfectant solution or high-temperature liquid.
- All equipment or parts that come into contact with laundry during the production process e.g. chutes, conveyor belts etc. must be kept visibly clean by routine (at least weekly) decontamination with a neutral detergent. A defined protocol for cleaning and disinfecting equipment following a blood or body fluid spill must be in place in accordance with appendix 9 of the [National Infection Prevention and Control Manual](#).

7. References

1. Health Protection Scotland, National Infection Prevention and Control Manual.
<http://www.nipcm.hps.scot.nhs.uk/>
2. Department of Health. Health Technical Memorandum 01-04 – Decontamination of linen for health and social care: guidance for linen processors implementing BS EN 14065 (2016).
3. Department of Health. Health Technical Memorandum 01-04 – Decontamination of linen for health and social care: management and provision (2016).
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6. S. Bloomfield et al. The infection risks associated with clothing and household linens in home and everyday life settings, and the role of laundry. International Scientific Forum on Home Hygiene (2013).
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Appendix 1 – Additional guidance for domestic style laundry facilities

This appendix may contain information that is particularly relevant for specialist wards and residential care settings where semi-industrial (professional) or domestic-type (household) washing machines may be in place for laundering patients' personal items and clothing.

Facilities that have a small in-house service may struggle to achieve consistency. Therefore, before implementing a domestic style washing service a full appraisal of options and risk evaluation should be carried out by the linen services/local estates/infection prevention and control team and a rationale given as to why centralised or out-sourced industrial options are not suitable. In-house facilities should be designed so that workflow progresses from dirty to clean with no crossover to minimise the risk of recontamination.

Staff laundering items in these settings should follow the guidelines set out in this document with the following additions/adjustments:

Guidance for semi-industrial machines only

A semi-industrial machine may be referred to as a 'professional' or 'commercial' washing machine by the manufacturer and will only be available through specialist suppliers. This type of machine may be suitable for specialist wards.

Semi-industrial machines:

- have a larger load capacity than domestic type machines (up to 12.5kg);
- are fully programmable by the user;
- have relatively short cycle times due to higher extraction speeds;
- have reliable temperature control;
- may have a number of extra features such as automated chemical injection and an in-built temperature/data recorder; and
- are heavier and bulkier than domestic machines and usually need to be bolted into place on concrete plinths.

Those facilities using semi-industrial machines should follow the washing and production guidance in [Section 5.3](#). These may be used for reprocessing used/infectious linen provided that accurate temperature validation is in place (see [Section 6.2](#) of this document).

Patients or residents personal clothing may be batch washed together in a semi-industrial machine provided that:

- the highest temperature setting tolerated by the fabric (see care label) is used;
- the items are not infectious linen; and
- the patients or residents are not considered high-risk e.g. immunocompromised patients.

Guidance for domestic-type machines only

Domestic-type machines **must not be used** for processing infectious linen or contaminated uniforms used in the care of NHS patients or of NHS care home residents.

Domestic-type machines are those that would typically be used in a household/home setting. These machines have an average load capacity of around 7kg, are pre-programmed with a selection of wash settings/cycles and have longer wash cycles in comparison to semi-industrial washing machines. Domestic-type washing machines are not typically programmed with the temperature settings required for thermal disinfection (65 or 70°C). The temperature regulation in these machines is less reliable than semi-industrial or industrial washing machines and they may not reach the set temperature e.g. a domestic-type machine set to 60°C may only reach 56°C.

Domestic-type machines may **only** be used for laundering personal items of clothing belonging to patients or residents. Other types of used linen such as sheets must be reprocessed using a validated temperature disinfection stage, either within an industrial laundry facility or using a temperature validated semi-industrial washing machine. A domestic-type laundry facility may be suitable for individuals laundering personal clothing, e.g. adults in rehabilitation facilities or other residential care.

If using a domestic-type washing machine to launder patients'/residents' personal items:

- Use the highest temperature setting tolerated by the fabric (see care label).
- It is considered best practise to launder patients'/residents' personal items separately, i.e. not to mix items from multiple persons within a single load.

- It is particularly important that domestic-type machines are not overloaded as this will inhibit the distribution of heat and detergent/rinse solutions, compromising the wash process and potentially causing damage to the machine.
- Standard wash cycles should be used at all times, i.e. not 'quick wash' or 'eco' setting; ensure that two rinse cycles are included in the washing programme as described in [Section 5.3](#) of this document.
- Machines should achieve an EU Ecolabel performance rating of A. This relates to the machine's energy efficiency.

Cleaning of domestic-type washing machines

Domestic-type washing machines should be regularly cleaned to prevent the build up of biofilms and odours.

- When not in use the washing machine door and detergent box should be left open to allow internal surfaces to dry.
- The rubber lining of the drum should be wiped clean at least weekly, paying attention to the folds of the lining to prevent build up of soap scum and biofilm.
- The detergent box should be removed and cleaned at least weekly to remove residual detergent and prevent biofilm.
- Once a week or every fifth cycle, run a high temperature (90°) wash, or alternatively a chemical disinfectant on an empty cycle to disinfect the interior of the machine.
- Logged and auditable records of washing machine cleaning should be kept.

Appendix 2 - Responsibilities of staff

Health and care workers to:

- Understand and apply the principles of infection prevention and control outlined in the NIP&C manual. <http://www.nipcm.hps.scot.nhs.uk/>
- Report to line managers any deficits in knowledge, resources, equipment and facilities or incidents that may result in transmission of infection.

Laundry workers to:

- Maintain competence, skills and knowledge in infection prevention and control related to laundry and linen processes.
- Demonstrate compliance with health and safety responsibilities, including the Control of Substances Hazardous to Health (COSHH), manual handling, fire safety and incident reporting
- Report to line managers any deficits in knowledge, resources, equipment and facilities or incidents that may result in transmission of infection.

Maintenance manager/engineer (laundry) to:

- Maintain, repair and periodically test all laundry equipment, ancillary equipment, e.g. compressors, tanks etc. and utilities distribution systems within the laundry, and ensure adherence to statutory requirements, decontamination requirements and best practice.
- Keep records of the laundry equipment and ancillary equipment, including all maintenance and test records and report any deficits or faults in equipment.
- Liaise with the laundry/linen services manager with regard to the maintenance, repair, testing and safety of all laundry equipment, ancillary equipment, and utilities distribution systems within the laundry, and ensure adherence to statutory requirements.
- Report to line managers any deficits in knowledge, resources, equipment and facilities or incidents that may result in transmission of infection.

Laundry/linen services manager to:

- Ensure that systems and processes are in place to safely launder all linen and deliver it back to the users in a clean and serviceable condition.
- Ensure that the laundry equipment is fit for purpose, following manufacturer instruction.
- Ensure that the laundry equipment is subject to periodic testing and maintenance.

- Ensure staff have had instruction and training with regard to laundry and linen processes, health and safety, including the principles of infection prevention and control, COSHH, manual handling, fire safety and incident reporting.
- Maintain staff records, including all training records.
- Ensure that the procedures for production, safe working, quality control, packing, dispatch and distribution systems are documented and adhered to in the light of statutory requirements and best practice.
- Report to line managers any deficits in knowledge, resources, equipment and facilities or incidents that may result in transmission of infection.
- Ensure that responsibility for performing routine cleaning/disinfection schedules and their documentation/recording is designated to appropriate staff members.

Professional lead for linen services to:

This generic term is given but in every case denotes the laundry/linen services manager's line manager.

- Ensure that the management structure within the laundry/linen services is adequate to maintain a safe and compliant service with regard to patient safety, local policies and procedures, decontamination and statutory requirements.
- Appoint adequately trained and knowledgeable laundry/linen services management to ensure the safe management and delivery of linen within healthcare premises.
- Ensure that the laundry and linen premises, and equipment provided are safe and fit for purpose with regard to state of repair, equipment, capacity, decontamination and statutory requirements and life expectancy.
- Ensure that adequate resources are provided to the laundry/linen services manager.

NHS boards should ensure:

- Systems and resources are in place to facilitate implementation and compliance monitoring for infection prevention and control amongst all staff e.g. COSHH.
- Incident reporting is promoted and focuses on improving systemic failures that encourage safe working practices