



THE SCOTTISH OFFICE

NHS
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National Health Service in Scotland Management Executive

St. Andrew's House
Edinburgh EH1 3DG

Dear Colleague

HOSPITAL LAUNDRY ARRANGEMENTS FOR USED AND INFECTED LINEN

Summary

1. The enclosed notes give guidance on procedures for laundering and disinfection of used and infected linen and replaces guidance previously issued in 1971.

Background

2. The 1959 report of the Central Health Services Council on 'Hospital Laundry Arrangements' forms the basis of current procedures with further guidance issued in 1971. A panel established in 1986 by the Department of Health and chaired by Professor Ayliffe, Head of the Department of Medical Microbiology, University of Birmingham, reviewed these procedures because of:-

- 2.1 the increase in the use of heat labile clothing;
- 2.2 problems experienced with the sorting and categorisation of used linen, particularly in geriatric and psychiatric units;
- 2.3 health and safety at work legislation; and
- 2.4 the problems of HIV/AIDS infection.

3. This guidance is based on the recommendations of the panel and advice from Health Board laundry managers, including the Society of Hospital Linen Service and Laundry Managers.

Action

4. Health Board General Managers and NHS Trust Chief Executives should bring these notes to the attention of staff responsible for laundry services

3 March 1993

Addressees

For action:
General Managers,
Health Boards

Chief Executives,
NHS Trusts

General Manager,
State Hospital

For information:
Chief Executives
Designate, NHS Trusts

General Manager,
Common Services Agency

To be copied to:
Laundry Services
Managers for action

Enquiries to:

Miss C Lumsden
Directorate of
Strategic Management
NHS Management
Executive 3/1
Room 277
St Andrew's House
EDINBURGH
EH1 3DE
Tel: 031-244 2238
Fax: 031-244 3487

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obtained from:

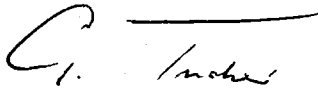
Mrs M Johnstone
NHS Management
Executive 3/1
Room 281
St Andrew's House
EDINBURGH
EH1 3DE
Tel: 031-244 2389
Fax: 031-244 3487

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to review current practices with a view to providing a quality service. The notes can also be used in drawing up specifications in preparing services for market testing.

Yours sincerely



G W TUCKER
Directorate of Strategic Management

GUIDANCE NOTES ISSUED BY THE MANAGEMENT EXECUTIVE NHS IN SCOTLAND ON PROCEDURES FOR LAUNDERING AND DISINFECTION OF LINEN

1. The main change recommended is the introduction of 2 categories for sorting laundry. It is estimated that this will reduce the quantity of laundry work requiring special treatment. Emphasis is placed on the need for an appropriate bag colour coding system for sorting linen and guidance is provided on requisite temperatures and on how to protect staff against the AIDS virus. The revised guidance, based on the panel's recommendations, is set out below:-

CATEGORIES OF LINEN

Note:- In this document 'Linen' refers to all articles for laundering and Dry Cleaning.

2. Linen should be divided by staff in wards and departments into 2 categories as follows:-

2.1 **Used (soiled and fouled)** - all used linen, including heat labile fabrics*, irrespective of state, apart from that from infectious patients, those suspected as being infectious and linen covered by 2.2. Handling policy will be determined at local level with advice from the local infection control committee.

2.2 **Infected** - linen, including heat labile fabrics, from patients with or suspected to be suffering from enteric fever and other salmonella infections, dysentery (Shigella spp), hepatitis A and B sufferers and carriers, HIV risk (AIDS), notifiable diseases, other infections in hazard group 3 (ACDP, 1984) and other infections specified by the infection control officer as hazardous to staff. Linen from patients infected with hazard group 4 organisms must be steam-sterilised by autoclave within the hospital before laundering. It is most important that linen likely to infect staff should be put immediately into an impervious bag, sealed with an appropriate tie and labelled, if considered necessary locally. The containers should be correctly coloured in accordance with the amended SIB(10)20. (See Appendix).

DISINFECTION OF USED (SOILED AND FOULED) LINEN

3. This category accounts for the vast majority of used linen from hospitals. For transportation, such linen should be placed into nylon/polyester laundry bags, colour coded in accordance with the Appendix to these notes. Bags must be securely fastened before being sent to the laundry. Care should be taken to prevent linen or foul seepage escaping from laundry bags and contaminating other items or staff. Use of liner bag would be suitable.

4. The washing process should have a disinfection cycle in which the load temperature is maintained at 105°F (65°C) for not less than

* **Heat-Labile fabrics** are damaged by the normal heat disinfection process and likely to be damaged at thermal disinfection temperatures.

10 minutes or preferably at 160°F (71°C) for not less than 3 minutes. For machines of conventional design and a low degree of loading (for example, below 0.056kg/litre) 4 minutes should be added to these times to allow for 'mixing time'. For machines with a heavy degree of loading (for example 0.056kg/litre) it is necessary to add up to 8 minutes.

5. All washing machines should be checked on commissioning to ensure compliance with disinfection standards. (The special requirements for continuous batch washing machines are set out in paragraph 15). They should also be fitted with accurate thermometers of which sensing elements are correctly placed to register the true wash temperature, ie the temperature of the wash water in contact with the load. Thermometers and thermostats should be checked at 6 weekly intervals on a pre-planned maintenance schedule. Records of such maintenance should be kept.

DISINFECTION OF INFECTED LINEN

6. Linen in this category should not be sorted but should be sealed in a red water-soluble bag, or red bag with a water-soluble membrane, immediately on removal from the bed or before leaving a clinical department. The primary container should then be placed in a clear polythene bag and labelled if considered necessary locally. The inner bag should then be placed in the washing machine. The outer bag should be incinerated. The provision of a designated storage area should not be necessary but infected linen should be stored under secure conditions prior to treatment. Heavily blood-soaked linen from HBs Ag, HIV Positive or Jacob Creutzfeldt Disease sufferers should be placed in a sack for incineration.

7. The recommendations on the washing process for used linen regarding the thermal disinfection stage also apply to the process for infected linen, as set out in paragraph 4. To inactivate hepatitis and AIDS viruses, washing at a temperature of 199°F (93°C) for not less than 10 minutes with an allowance for 'mixing time' (see paragraph 4), combined with the dilution of the washing process, will render linen safe to handle.

8. Where central disinfection areas exist it is not expected that these arrangements will automatically be dispensed with, but, if necessary, will continue because of the financial and practical implications of making the alteration.

DISINFECTION OF 'HEAT-LABILE' LINEN

9. The purchase of fabrics which will not withstand the above temperatures should be avoided where possible. Heat-labile materials need to be washed at low temperature (40°C) to avoid shrinkage. The temperature in tumble driers, if used, must be limited to 60°C. Under these operational conditions thermal disinfection is inappropriate and bacteria can multiply.

10. Disinfection with chemicals at low temperatures is possible with hypochlorites but the performance of hypochlorites is often restricted by the presence of soiling, detergents and alkalis in the wash. However, in clean conditions hypochlorites are active at a temperature below 60°C in low concentrations and will not damage fabrics outside acceptable limits.

11. Disinfection of heat-labile materials, only if suitable, may be achieved by the addition of sodium hypochlorite to the penultimate rinse. This rinse should be of at least 5 minutes duration and sufficient sodium hypochlorite must be added to achieve a solution of 150 ppm available chlorine. Overriding of washing programmes must be avoided. Hypochlorites should not be used on fabrics treated for fire resistance, eg cotton. Other chemical processes may be used if approved by the Control of Infection Committee.

DESIGN FEATURES TO REDUCE CROSS-CONTAMINATION

12. The provision of a barrier between the section which receives the used or infected linen and the rest of the laundry is not considered necessary. It is recommended that infected linen, should be washed in a washer extractor which meets the following criteria:-

12.1 Any vent pipe associated with a machine should remain distinct and separated and be vented.

12.2 Effluent from the drains of such machines must be sealed (closed piped) from the machine to the manhole (preferably situated outside the laundry) to prevent cross-infection.

12.3 If machines drain into an open sump or pit immediately below the machine drain valve it should be covered to reduce the risk of bacteria being spread by the aerosol effect when the water is pumped from the machine.

PROTECTION OF LAUNDRY WORKERS

13. Staff handling linen in the soiled sorting area must wear protective clothing and gloves. Any lesion on the hand must always be covered with a waterproof dressing. The use of surgical face masks is not necessary although care needs to be given to proper protection at all times. Clean overalls should be available for changing as necessary. Hand washing and changing facilities should be provided. Staff must be fully trained and guidelines must be available setting out cleaning procedures for staff, equipment and laundry buildings. This is in line with regulations covering Control of Substances Hazardous to Health (COSHH).

14. All staff should complete a pre-employment questionnaire. Staff should show evidence of a normal chest X-ray within the past year and should be tuberculosis (Mantoux or Heaf Test) positive or show evidence of a previously successful BCG inoculation. Mantoux or Heaf Test, BCG or screening for TB should be offered as necessary. Immunisation against poliomyelitis and tetanus should also be offered to all staff. Typhoid vaccination will not be required in most instances but may sometimes be advised in certain hospitals by the occupational health medical officer.

BATCH CONTINUOUS WASHING MACHINES

15. All batch continuous washing machines must be fitted with the necessary controls and interlocks to ensure that work being processed is not recontaminated during the rinsing stages of the wash process. To satisfy this requirement rinse sections must be thermally disinfected before production commences each working day. The apparatus used to

do this must be interlocked with the normal running control of the machine in order to prevent the machine being set to work before the thermal disinfection of the cool stages of the machine have been satisfactorily completed. The requirements of thermal disinfection are as follows:-

15.1 All sections of the machines, following the high temperature sections, which do not reach a minimum temperature of 65°C, shall receive a thermal disinfection cycle. The disinfection cycle shall be considered satisfactory when the water temperature has been raised to 65°C and held at this temperature for a period of not less than 10 minutes or at a temperature of 71°C for a period of not less than 3 minutes. The disinfection process should be controlled by a timer.

15.2 A timer shall be incorporated into the control system to override the necessity to proceed through the thermal disinfection of the cool stages of the machine if the machine is stopped for short periods during the day. This timer shall be so interconnected that if the machine is shut down for a period of 3 hours or more the cool stage thermal disinfection cycle will proceed, and at the same time 'lock out' the washing controls. The 'lock out' shall include any mechanical devices, interlocked with the washing cycle or not, for feeding work into the machine.

15.3 It is expected that the cool stage disinfection cycle will be initiated by a single button operation and that the cycling of any steam and/or water control valves, necessary to raise the temperature of these stages to that required for thermal disinfection, shall be automatic in operation. The incorporation of hand operated valves in this system is not acceptable.

16. Due to the growth of bacteria which has been found to take place overnight, it will be necessary to run out all linen from the batch continuous washing machine at the end of the day to avoid re-infection. The adequacy of disinfection procedures must also be considered in the following ancillary areas:-

16.1 Tanks which are used to collect water for reuse within the batch continuous washer from the extraction device or the conveyor leading from the washer to the extractor.

16.2 If the installation of a heat exchanger in the recovered water system is envisaged special consideration to thermal disinfection needs must be given.

16.3 Machinery should be kept clean and free from algae.

APPENDIX

1. Under the revised laundry procedures there will be no need to separate soiled from fouled linen and the use of national colour coding as set out below will have to be adapted accordingly.

2. The following procedure is suggested:

2.1 Used (Soiled and fouled) linen (paragraph 2.1) - containers should be coloured white or off-white.

2.2 Infected linen (paragraph 2.2) - containers should be coloured red or at least include red as a prominent feature on a white or off-white background. Additionally the container should carry a bold legend on a prominent yellow label such as **INFECTED LINEN** and show the sender, date and type of infection.

3. Laundries are free to introduce their own choice of colour but the use of red for infected material should be regarded as mandatory.