

# Good practice in infection control

*Guidance for nursing staff*



Royal College  
of Nursing



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## Introduction

In 2000, the Royal College of Nursing published guidance on infection control for nurses working in general practice. This document both revises that information and ensures that it is relevant to all nurses, wherever they are working. Every nurse can play their part in helping to minimise the risk of infection – for example, by ensuring that your hands are properly washed, your clinical environment is as clean as possible and your knowledge and skills are continually updated.

This publication includes information on the general principles of infection control, including decontamination, achieving and maintaining a clean clinical environment, and what to do in the event of an accident. Two small sections give guidance on variant Creutzfeldt Jakob Disease (vCJD) and methicillin resistant staphylococcus aureus (MRSA). The final sections provide sources of further information and reading, useful websites and a checklist of standard precautions.

## The general principles of infection control

Standard – formerly known as universal – precautions underpin routine safe practice, protecting both staff and clients from infection. By applying standard precautions at all times and to all patients, best practice becomes second nature and the risks of infection are minimised. They include:

- ◆ achieving optimum hand hygiene
- ◆ using personal protective equipment
- ◆ managing sharps
- ◆ safely disposing of clinical waste
- ◆ managing blood and bodily fluids
- ◆ decontaminating equipment
- ◆ achieving and maintaining a clean clinical environment
- ◆ managing accidents.

## Hand hygiene

Hand washing is widely acknowledged to be the single most important activity for reducing the spread of disease, yet evidence suggests that many health care professionals do not use the correct technique. This means that areas of the hands can be missed. The diagram on page 3 demonstrates the hand hygiene procedure that should be followed when washing with soap and water or using an alcohol hand gel or rub.

The RCN has produced this diagram as a poster which can be displayed in your workplace. See ‘Useful reading’ at the end of this publication for details on how to obtain a copy.

## Hand washing technique



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Hands should be decontaminated before direct contact with patients and after any activity or contact that contaminates the hands. While alcohol hand gels and rubs are a practical alternative to soap and water, alcohol is not a cleaning agent. Hands that are visibly dirty or potentially grossly contaminated must be washed with soap and water and dried thoroughly.

Hand preparation increases the effectiveness of decontamination. You should:

- ◆ keep nails short, clean and polish free
- ◆ avoid wearing jewellery, especially rings with ridges or stones
- ◆ avoid artificial nails
- ◆ any cuts and abrasions should be covered with a waterproof dressing.

Remove your wristwatch and any bracelets and roll up long sleeves before washing your hands.

In addition, bear in mind the following points:

### ◆ Facilities

Adequate hand washing facilities must be available and easily accessible in all patient areas, treatment rooms, sluices and kitchens. Basins should have lever operated mixer taps or automated controls and be provided with liquid soap dispensers, paper hand towels and foot-operated waste bins.

### ◆ Hand drying

Improper drying can recontaminate hands that have been washed. Wet surfaces transfer organisms more effectively than dry ones and inadequately dried hands are prone to skin damage. Disposable paper hand towels are the best method.

## Using personal protective equipment

Personal protective equipment (PPE) is used to protect both yourself and your patient from the

risks of cross-infection. It may also be required for contact with hazardous chemicals and some pharmaceuticals. PPE includes items like gloves, aprons, masks, goggles or visors. In certain situations it may also include hats and footwear.

### ◆ Disposable gloves

Gloves should be worn whenever there might be contact with body fluids, mucous membranes or non-intact skin. They are not a substitute for hand washing. They should be put on immediately before patient contact, then removed and discarded as soon as the procedure is completed. Hands must always be washed following their removal. Neoprene and nitrile (acrylonitrile) gloves are a good alternative for those who are sensitive to natural rubber latex.

### ◆ Disposable plastics aprons

These should be worn whenever there is a risk of contaminating clothing with body fluids and when a patient has a known infection. You should discard them as soon as the intended task is completed.

### ◆ **Masks, visors and eye protection**

These should be worn when a procedure is likely to cause body fluids or substances to splash into the eyes, face or mouth. Masks may also be necessary if infection is spread by an airborne route – for example, multi drug resistant tuberculosis or severe acute respiratory syndrome (SARS). You should ensure that this equipment fits correctly, is handled as little as possible and changed between patients or operations. Masks should be discarded immediately after use.

## **Managing sharps**

Sharps include needles, scalpels, stitch cutters, glass ampoules and any sharp instrument. The main hazards of a sharps injury are hepatitis B, hepatitis C and HIV. Second only to back injuries as a cause of occupational injuries amongst health care workers, between July 1997 and June 2002, there were 1,550 reports of blood-borne virus exposures in health care workers – of which 42 per cent were nurses or midwives.

Accidents can occur at any stage and to reduce the risk of injury and exposure to blood-borne viruses, it is vital that sharps are used safely and disposed of carefully, following your workplace's agreed policies on safe working procedures. Your employer should provide targeted education and awareness training for all health care workers.

Some procedures have a higher than average risk of causing injury. These include intra-vascular cannulation and venepuncture and injection. Devices involved in these high-risk procedures are:

- ◆ IV cannulae
- ◆ winged steel – butterfly – needles
- ◆ needles and syringes
- ◆ phlebotomy needles.

You should ensure that:

- ◆ sharps are not passed directly from hand to hand
- ◆ handling is kept to a minimum

- ◆ needles are not broken or bent before use or disposal
- ◆ syringes or needles are not dismantled by hand before disposal
- ◆ needles are never re-sheathed
- ◆ used sharps are placed in a special container at the point of use. This should conform to UN standard 3291 and British Standard 7320.
- ◆ sharps containers are not filled by more than two-thirds and are stored in an area away from the public.

Innovative products are available that can reduce the risk of sharps injuries. While they may be more expensive, their cost can be offset against the savings achieved in reducing sharps injuries. Guidance on the most appropriate evaluated safety devices is available from the NHS Purchasing and Supply Agency – see sources of further information for more details.

For information on what to do in the event of an injury, see page 7 of this guidance.

## **Disposing of waste**

Your workplace should have a written policy on waste disposal, which provides guidance on all aspects, including special waste, like pharmaceuticals and cytotoxic waste. This should include colour coding of bags used for waste, for example:

- ◆ yellow bags for clinical waste
- ◆ black bags for household waste
- ◆ cardboard boxes or special bins for glass and aerosols.

All health care and support staff should be instructed in the safe handling of waste, including disposal and dealing with spillages. You should consider segregating waste that can be recycled.



TABLE 1: DECONTAMINATION ACCORDING TO ASSOCIATED RISKS

<b>High risk</b>	Equipment that: ♦ enters a sterile body cavity ♦ penetrates the skin ♦ touches a break in the skin or mucous membranes.	Equipment must be cleaned and sterilised – fully decontaminated – after each patient use. It should be left in a sterile state for subsequent use.	Examples include surgical instruments.
<b>Medium risk</b>	Equipment that touches intact skin or mucous membranes.	Equipment does not need to be sterile at the point of use but must be cleaned and sterilised (decontaminated) between each patient.	Examples include a bedpan.
<b>Low risk</b>	Equipment that does not touch broken skin or mucous membranes, or is not in contact with patients.	Equipment must be cleaned and/or disinfected after use.	Examples include an ophthalmoscope receiver.

Adapted from the Medical Devices Agency publication, *Sterilisation, disinfection and cleaning of medical equipment* (1996).

## Managing blood and bodily fluids

### ♦ Spillages

These should be dealt with quickly, following your workplace's written policy for dealing with spillages. The policy should include details of the chemicals staff should use to ensure that any spillage is disinfected properly, taking into account the surface where the incident happened – for example, a carpet in a patient's home or hard surface in a hospital.

### ♦ Collecting, handling and labelling specimens

A written policy should be in place for the collection and transportation of laboratory specimens. You should:

- ♦ be trained to handle specimens safely
- ♦ collect samples in an appropriate sterile and properly sealed container
- ♦ take care not to contaminate the outside of the container and the request forms
- ♦ ensure that specimens are transported in accordance with the Safe Transport of Dangerous Goods Act 1999.

## Decontaminating equipment

As inadequate decontamination has frequently been associated with outbreaks of infection in hospitals, it is vital that re-usable equipment is scrupulously decontaminated between each patient. To ensure that control of infection is maintained at a high level, all health care staff must be aware of the implications of safe decontamination and their responsibilities to their patients, themselves and their colleagues.

Use table 1 (above) to make an appropriate choice of decontamination method.

Decontamination is the combination of processes – cleaning, disinfection and sterilisation – used to ensure a re-usable medical device is safe for further use.

### ♦ Cleaning

This uses water and detergent to remove visible contamination but does not necessarily destroy micro-organisms, although it should reduce their numbers. Effective cleaning is an essential prerequisite to both disinfection and sterilisation. Cleaning may be performed manually or mechanically in an automated washer-disinfector or ultrasonic bath. For more detailed information, see the NHS Estates' document, *A protocol for the local decontamination of surgical instruments* (2001).

### ◆ Disinfection

This uses chemical agents or heat to reduce the number of viable organisms. It may not necessarily inactivate all viruses and bacterial spores. It should not be used as a substitute for sterilisation.

**Washer-disinfectors** should be used only by those with the correct training and in conjunction with a suitable detergent that has been recommended by the manufacturer. Following the rinse cycle, items should be checked for cleanliness. They must be maintained and tested in accordance with the National Health Service Executive's policy on washer disinfectors (1995). The machine should be emptied and cleaned after use, wearing the appropriate PPE.

**Chemical disinfectants** are classified generically and their biocidal capabilities vary. While most are capable of inactivating bacteria and enveloped viruses, many are not so effective against non-enveloped viruses – for example, the hepatitis viruses, mycobacteria, protozoal cysts and bacterial spores. Efficacy depends on choosing and using the disinfectant correctly. For further information on the most appropriate disinfectants, see *Infection control guidance for general practice* (ICNA and RCGP, 2003).

The use of disinfectants is governed by the Control of Substances Hazardous to Health (COSHH) regulations, which ensure that employers must provide staff with information, instruction and training.

### ◆ Sterilisation

This ensures that an object is free from viable micro-organisms, including bacterial spores. Both acute and primary care trusts should actively work towards achieving central sterilising of reusable equipment, using the local sterile services department (SSD).

All SSDs that supply re-sterilised instruments to other organisations are bound by a European directive (93/42/EEC), which safeguards standards of quality. Advantages include having a cost-effective system that is managed and operated by trained staff in a purpose-built environment.

Where using your SSD is not possible, alternatives are:

- ◆ using pre-sterilised, single-use, disposable items

The advantages include convenience and suitability for use in areas where decontamination could be hard to achieve.

- ◆ a bench top steam steriliser

The following table shows the times and temperatures usually used for steam sterilisation:

TABLE 2: STEAM STERILISATION TIMES AND TEMPERATURES

Sterilising temperature range in centigrade min – max	Approximate pressure (bar)	Minimum hold time in minutes
134 – 137	2.25	3
126 – 129	1.5	10
121 – 124	1.15	15

The Medical Devices Agency bulletins DB 9605 and 2000 provide guidance on bench top steam and vacuum steam sterilisers (1997, 2000). Both draw attention to the need for:

- ◆ daily testing by the user
- ◆ periodic testing by a qualified engineer
- ◆ operator training
- ◆ knowledge of the legal and insurance aspects of ownership and use
- ◆ comprehensive record keeping of testing.

Finally, bear in mind that the effectiveness of decontamination may be hindered at any stage of the process by:

- ◆ poor choice of method
- ◆ poor technique
- ◆ lack of maintenance of equipment
- ◆ inadequate monitoring
- ◆ poor handling or storage of equipment.

## Achieving and maintaining a clean clinical environment

An unclean clinical environment is one of the factors that may contribute towards infection. Conversely, high standards of cleanliness will help to reduce the risk of cross-infection. Good design in buildings, fixtures and fittings is also important. According to guidance published by NHS Estates – an agency of the Department of Health – health care facilities should be patient friendly and offer a safe environment for care. See *Sources of further information* for more details.

Cleaning removes contaminants, including dust and soil, large numbers of micro-organisms and the organic matter that shields them, for example, faeces, blood and other bodily fluids.

### ◆ In hospitals

NHS Estates has published a variety of guidance under its clean hospitals programme, which began in 2000. *National standards of cleanliness for the NHS* (2002) provides trust cleanliness scores. An implementation toolkit and audit materials are also available. Patient Environment Action Teams (PEATs) regularly inspect hospitals to assess a wide range of cleanliness issues in wards, reception and waiting areas, A&E, corridors, furnishings, linen and external appearance.

### ◆ In general practices

Nurses who work in a GP practice should have a regular planned, written and monitored cleaning schedule that details the items and environments to be cleaned:

- ◆ before and after each clinic session
- ◆ daily
- ◆ weekly
- ◆ monthly
- ◆ annually.

Additionally, cleaning equipment such as vacuums, floor scrubbing machines and polishers should be

cleaned and properly maintained. Information on recommended methods of cleaning and disinfection should be available for staff. Detailed guidance is available from *Infection control guidance for general practice* (ICNA and RCGP, 2003).

## Managing accidents

Accidental exposure to body fluids can occur by:

- ◆ percutaneous injury – for example, from needles, instruments, bone fragments or significant bites that break the skin
- ◆ exposure of broken skin – for example, abrasions, cuts or eczema
- ◆ exposure of mucous membranes, including the eyes and the mouth.

Figure 1 (page 8) illustrates the action that should be taken immediately following accidental exposure to bodily fluids, including blood.

### ◆ Managing the risk of HIV

If there has been exposure to blood, high risk body fluids or tissue known or strongly suspected to be contaminated with HIV, the Chief Medical Officer's Expert Advisory Group on AIDS recommends the use of antiretroviral post exposure prophylaxis (PEP). Ideally, this is given within an hour of exposure and the full course lasts for four weeks. Where treatment is delayed but the source person proves to be HIV positive, PEP can be given up to two weeks from the time of the injury. Advice and follow-up care from your occupational health department are essential.

### ◆ Managing the risk of hepatitis B (HBV)

The risk of contracting HBV from needlestick exposure in a health care setting is much higher than HIV because the virus is both more infectious and has greater prevalence. As a result, the RCN recommends that all nurses should be vaccinated against hepatitis B with monitoring of antibody titre levels and boosters, where appropriate. You should contact your occupational health department if you have any concerns.



FIGURE 1: MANAGING ACCIDENTS



## Variant Creutzfeldt Jakob Disease

Thorough cleaning of instruments is extremely important in reducing the possible transmission of all micro-organisms – in particular the abnormal protein prion that is known to cause variant Creutzfeldt Jakob Disease (vCJD). Research shows that these prions are resistant to all common methods of decontamination.

For information and advice on vCJD, risk assessment and how to handle instruments that may have been used on people who have this condition, you should consult your local:

- ◆ consultant in communicable disease control
- ◆ microbiologist
- ◆ infection control nurse.

Further guidance can also be obtained from: *Transmissible spongiform encephalopathy agents: safe working and the prevention of infection* (2003).

## Methicillin resistant staphylococcus aureus

In April 2004, the RCN updated its guidance *Methicillin resistant staphylococcus aureus (MRSA): guidance for nursing staff*. RCN members can order copies by calling RCN Direct on 0845 772 6100 and quoting publication code 000 867. Alternatively, members and non-members can download a copy from the RCN website at [www.rcn.org.uk](http://www.rcn.org.uk). Note that an expert working party is expected to produce further recommendations and advice in spring 2004. Future RCN guidance will be revised accordingly.



## References

- Advisory Committee on Dangerous Pathogens  
Spongiform Encephalopathy (2003) *Transmissible spongiform encephalopathy agents: safe working and the prevention of infection*. London: HMSO.
- Infection Control Nurses Association (ICNA) and the Royal College of General Practitioners (RCGP) (2003) *Infection control guidance for general practice*. Bathgate: ICNA Fitwise. (Tel: 01506 811077 for copies)
- Medical Devices Agency (1996) *Sterilisation, disinfection and cleaning of medical equipment*. London: MDA.
- Medical Devices Agency (1997) *The purchase, operation and maintenance of bench top steam sterilisers DB 9605*. London: MDA.
- Medical Devices Agency (2000) *Guidance on the purchase, operation and maintenance of vacuum bench top steam sterilisers DB 2000*. London: MDA.
- The National Health Service Executive (NHSE) (1995) *Management policy on washer disinfectors 30/80 Health technical memorandum (HTM) 2030*. London: HMSO.
- NHS Estates (2001) *A protocol for the local decontamination of surgical instruments*. London: Department of Health.
- NHS Estates (2002) *National standards of cleanliness for the NHS*. Electronic publication.
- Royal College of Nursing (2004) *Methicillin resistant staphylococcus aureus (MRSA) – guidance for nursing staff*. London: RCN. Publication code: 000 867.

## Useful reading

Chief Medical Officer (2003) *Winning ways – working together to reduce health care associated infection in England*. London: Department of Health.

The RCN has produced a wealth of other information and guidance as part of its *Working Well Initiative*. Titles – including the following – are available to members by calling RCN Direct on 0845 772 6100 and quoting the publication code.

- ◆ Royal College of Nursing (1999) *Losing your touch? Avoid latex allergy*. London: RCN. Publication code: 000 948
- ◆ Royal College of Nursing (2002) *Is there an alternative to glutaraldehyde: A review of agents used in cold sterilisation*. 2nd edition. London: RCN, publication code: 001 362
- ◆ Royal College of Nursing (2004) *Hand washing technique poster*. London: RCN. Publication code: 002 276.
- ◆ Royal College of Nursing (2004) *Standard precautions poster*. London: RCN. Publication code: 002 277.

## Sources of further information

You may find the following websites useful.

- ◆ The Department of Health: [www.dh.gov.uk](http://www.dh.gov.uk)
- ◆ The Health Protection Agency (HPA): [www.hpa.org.uk](http://www.hpa.org.uk)
- ◆ The Hospital Infection Society: [www.his.org.uk](http://www.his.org.uk)
- ◆ Infection Control Nurses Association: [www.icna.co.uk](http://www.icna.co.uk)
- ◆ The Medical and Healthcare products Regulatory Agency: [www.mhra.gov.uk](http://www.mhra.gov.uk)
- ◆ NHS Purchasing and Supply Agency: [www.pasa.nhs.uk/medsurg/intravenous/needlestick](http://www.pasa.nhs.uk/medsurg/intravenous/needlestick)  
This website offers guidance on safety devices.
- ◆ RCN: [www.rcn.org.uk](http://www.rcn.org.uk)
- ◆ The Safer Needles Network: [www.saferneedlesnow.net](http://www.saferneedlesnow.net) and [www.needlestickforum.net](http://www.needlestickforum.net)

In April 2003, the Medical Devices Agency merged with the Medicines Control Agency to form the MHRA. This executive agency of the Department of Health produces a variety of bulletins and alerts including advice on single use items, bench top sterilisers and the decontamination of endoscopes.

- ◆ The National Institute for Clinical Excellence (NICE): [www.nice.org.uk](http://www.nice.org.uk)

In 2001, NICE produced *Standard principles for prevention of hospital acquired infection* and in 2003, *Infection control – prevention of health care associated infection in primary and community care*.

- ◆ NHS Estates: [www.nhsestates.gov.uk](http://www.nhsestates.gov.uk)

For information on their clean hospitals programme and downloadable copies of advice, guidance and audit materials.

# Appendix 1

## Infection control checklist

Standard precautions underpin safe protection and should be used at all times with every patient. Use the following checklist to guide you.

### Have you washed your hands?

Hand washing is the single most important step in reducing the spread of disease. Use the six-step technique before direct contact with patients and after any activity that contaminates the hands. Dry thoroughly afterwards, using disposable towels.

### Do you need to use personal protective equipment?

Carry out a risk assessment if potential contamination by blood or body fluid is likely. Use disposable gloves, aprons, masks, goggles or visors to protect yourself and your patient from these risks of cross-infection, and when handling hazardous chemicals and some pharmaceuticals.

### Are you preventing sharps injuries?

Keep handling to a minimum and never re-sheath. Dispose of sharps carefully in a special container at the point of use.

### Are you disposing of waste safely?

Ensure that you have been instructed in how to dispose of waste safely, including the colour coding of bags used for different types of waste.

### Do you deal promptly with spillages?

Spillages must be dealt with quickly, using appropriate chemical disinfectants as necessary.

Ensure you have a thorough knowledge of chemical disinfectants.

### Do you scrupulously decontaminate equipment?

Meticulously clean, disinfect and sterilise re-usable equipment, as appropriate, to ensure it is safe for future use.

### Are you maintaining a clean environment?

Ensure your workplace has a regularly planned, written and monitored cleaning schedule, which details both the items and environments to be cleaned and how often this should happen.

### Do you know what to do in the event of an accident?

Attend the injury, washing it well in cold running water. If bodily fluids have splashed into eyes, irrigate with cold water. If they have splashed into a mouth, do not swallow and rinse out several times with cold water. Report the incident and seek expert advice.

### And finally, do you know your workplace's procedures?

Ensure that you understand and follow your workplace's written policies and procedures on all aspects of infection control.





Royal College  
of Nursing

**March 2004**

Published by the Royal College of Nursing  
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London  
W1G 0RN

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Publication code 002 278