

Protecting staff from infection

Introduction

Healthcare workers in the NHS are dedicated professionals working in an environment that the Public Accounts Committee concluded 'was dangerous by its very nature'.¹

They are potentially at risk of infection from a large number of biological agents, either in the laboratory or directly from patients. The HSE suggests there may be an infection rate of 30/100,000 a year among nurses. Most of these infections will be with diarrhoea-causing viruses or bacteria but there is the potential for more serious infections – a number of healthcare workers have contracted HIV as a result of needlestick injuries, for example. It is likely that the number of healthcare workers infected is under-reported.

While there has been growing concern about healthcare-acquired infections, much media coverage has been about the risks to patients. Healthcare workers, who care for patients suffering from potentially dangerous and highly-infectious diseases, are also at risk. Procedures that are aimed at protecting patients – who are generally unwell and therefore more susceptible to some diseases – can also reduce the risk to staff. While clinical staff are probably most at risk, there are potential risks to other staff who come into contact with patients or soiled or infected material.

This risk can be considerably lessened by good infection control procedures. Although the presence of some diseases may require enhanced procedures, infection control should be an everyday part of NHS life.

Much infection control is designed to prevent the transmission relatively common and well-known diseases, such as methicillin resistant staphylococcal aureas (MRSA), clostridium difficile (c. dif), respiratory conditions and norovirus (winter vomiting disease). Diseases such as whooping cough and TB, once thought to be under control in the UK, have re-emerged.

However, NHS organisations need to be aware that some risks are less well-known and may be hard to predict. Since 1970 at least 30² previously unknown infectious diseases have become prominent, for which there is no fully effective treatment. The risk to health professionals is real. In Canada a number of healthcare workers were infected with SARS in 2003 and in Africa doctors have died from ebola, likely to have been contracted while caring for patients.

The threat of pandemic or avian flu also needs to be considered (see the chapter on handling an influenza outbreak). In such cases, expert advice on appropriate procedures will be needed.

¹ *A Safer Place to Work: Improving the management of health and safety risks to staff in NHS trusts* (2003), National Audit Office

² *Getting Ahead of the Curve, A strategy for combating infectious diseases* (2002), Department of Health

The legal position

NHS organisations that do not take adequate measures to protect staff and patients from infection risk compensation claims and potential prosecution.

The Health and Safety at Work Act 1974 puts a general duty on an employer to protect the health and safety of employees. However, staff will also have a duty to comply with infection control procedures and take appropriate action to protect themselves.

An NHS trust was recently fined £80,000 for breaches of the Control of Substances Hazardous to Health regulations (2002). The case concerned a patient who died after contracting Legionnaire's Disease while in hospital. A number of cases of MRSA - where patients claimed to have been infected in hospitals - have been settled out of court.

There are specific regulations under COSHH which apply to microbiology laboratories which include notification the first time particularly hazardous biological agents are held in a laboratory.

Infection risks to hospital staff

There are a number of diseases that may theoretically pass from patients to hospital staff. In many cases, staff will be more at risk if they are already unwell or their immune system is compromised. Infection of pregnant women may also endanger the baby they are carrying – for example, if they are infected with chickenpox.

Employers will need to assess the risk and remember that staff members will differ in their own risk factors. Infection control teams can provide expert advice on how to reduce risk, the magnitude of the risk to staff and any groups who may be particularly at risk.

Biological agents: managing the risk in laboratories and healthcare premises (www.hse.gov.uk/biosafety/bioloagents.pdf) is an important document.

Staphylococcus aureus

Staphylococcus aureus is a common skin bacterium which many people carry on their skin or in their nose without ill effects. When the bacteria enters the body – especially if the immune system is compromised - it can cause skin and wound infections, urinary tract infections, pneumonia and bacteraemia (blood stream infection) may then develop. It can also cause food poisoning.

MRSA - Methicillin-resistant Staphylococcus aureus

MRSA is a form of *S. aureus* which has developed resistance to methicillin. It is often passed through hand contact – which means hand hygiene is particularly important in preventing spreads. Some people are colonised by MRSA but do not display any symptoms – decolonisation may be carried out in some cases. Patients are increasingly being screened before they have elective procedures. However, screening of staff is still rare.

Clostridium difficile

Clostridium difficile (c. dif) is a bacterium which is usually found in the large intestine. When patients take antibiotics, they can disturb the balance of gut flora and c. dif can multiply and produce toxins which cause severe diarrhoea and, in severe cases, bleeding, rupture of the intestine and inflammation, and even death. C. dif can be extremely infectious in a hospital environment but the main people at risk are those already on antibiotics.

Tuberculosis

TB may present an increased risk to staff who come into contact with patients. This is particularly important if patients have undiagnosed TB. TB transmission is often airborne and, although it is difficult to catch, close contact with a sufferer – which could include providing healthcare – is a factor. However, transmission from patients to healthcare workers is thought to be uncommon.

Norovirus or winter vomiting disease

This is a viral infection which causes diarrhoea and vomiting. It affects semi-closed communities such as hospitals. Immunity is short-lived and therefore a high proportion of those exposed to infection develop symptoms. In healthy people these are relatively short-lived and mild. Transmission is by person-to-person infection, contaminated surfaces and contaminated food and drink.

Influenza

Flu can potentially be passed from patient to healthcare worker. This is of particular concern if the UK suffers an outbreak of pandemic flu (see the chapter on handling an influenza outbreak).

Hepatitis and HIV

Bloodborne viruses such as hepatitis B or C and HIV are dealt with in the section on needlestick injuries.

This list is by no means exhaustive: many less common diseases will require procedures to ensure healthcare workers are protected.

Principles of infection control

The National Institute for Clinical Excellence has guidelines on infection control (www.guidance.nice.org.uk/CG2) which stress standard principles:

- hand hygiene
- the use of personal protective equipment
- use and disposal of sharps
- education of patients, their carers and staff.

Many measures taken to protect patients using these principles will also protect staff. However, the risks staff face may be significantly different to the risks faced by patients – in particular, staff tend to be generally healthy, which will make them less vulnerable to many infections.

Hand hygiene

Promoting good hand hygiene has been at the forefront of the NHS's drive to reduce MRSA cases. In particular, healthcare workers have been encouraged to wash their hands before and after dealing with individual patients, or when they are likely to be contaminated. In doing so, it is likely they are reducing their own risk of acquiring some healthcare-acquired infections as well.

Hand hygiene requires staff to know when to wash their hands and with what. Soap and water – the traditional method – has tended to be replaced by alcohol-based hand gels in some situations. For example, many hospitals have introduced gel dispensers at the entrances to wards or even by bedsides.

Gel is generally recognised as appropriate and effective in cases where hands are not visibly soiled. Soiling – particularly with body excretions – will require more thorough cleaning with soap and water.

It is important to note the *C. dif* is not killed by the gels generally used – soap and water is important in preventing the spread of this. Hands do not need to be visibly soiled, as the spores can survive for a long time on surfaces and can then contaminate hands.

The availability of washing facilities has been highlighted as a concern in some areas.

See the chapter on handcare for precautions staff should take to minimise the risk of skin problems.

Use of personal protective equipment (PPE)

Personal protective equipment provides a physical barrier between micro-organisms and the wearer. It offers protection by helping to prevent micro-organisms from contaminating hands, eyes, clothing, hair, shoes and so on and includes:

- gloves (see the chapter on latex)
- protective eyewear (goggles, safety glasses and so on)
- mask
- apron
- gown
- boots or shoe covers
- cap/hair cover.

Individuals need to be aware that PPE does not completely eliminate the risk of acquiring an infection. It is important that it is used effectively, correctly and appropriately, and at all times where contact with blood and body fluids of patients may occur.

Note: The use of PPE does not replace the need for basic hygiene. Hand washing or hand disinfection are still a vital part of the process of infection control, even after wearing gloves.

The following principles should guide healthcare workers in the use of PPE:

- it should be chosen according to the risk of exposure. The healthcare worker should assess whether they are at risk of exposure to blood, body fluids and so on and choose the appropriate equipment for the task to be undertaken
- avoid any contact between contaminated (used) PPE and surfaces, clothing or people outside the patient care areas (PPE should not be worn outside the care area)
- if the equipment is re-usable, it must be properly decontaminated before being used again
- washable items must be correctly laundered at the correct temperature (this allows thermal disinfection) to ensure maximum cleanliness
- all disposable items, caps, plastic aprons, shoe covers and so on should be safely discarded, according to the trust's contaminated waste policy
- re-usable boots must be thoroughly disinfected
- splashes of blood, bodily fluids onto skin and/or mucous membranes must be washed off immediately with water according to local policy and the incident reported to occupational health staff.

Use and disposal of sharps

This is important in protecting staff against blood-borne infections. See the chapter on needlestick injury.

Education of patients, their carers and staff

The clean hands campaign has emphasised the importance of basic hand hygiene for healthcare staff and visitors. Most hospitals will now have notices reminding both staff and visitors of the need to clean their hands – often with gel rubs.

Training of staff is also much more on the agenda, both for nursing staff and for those involved in cleaning. This needs to include bank and agency staff who may be less aware of a trust's standard procedures. Including infection control in induction training can be an effective way of reaching a wide range of staff.

www.infectioncontrol.nhs.uk has online infection control training for staff. As well as 'normal' infection control procedures, staff will need to be aware of any special precautions in place – for example, if droplet or contact precautions (see below) are being used with certain patients.

Special precautions

Droplet precautions

Droplet transmission occurs when there is adequate contact between the mucus membranes of the nose, mouth or conjunctivae of a susceptible person and large particle droplets. These are usually generated from the infected person during coughing, sneezing, talking or when healthcare workers undertake procedures such as tracheal suctioning. Diseases which are transmitted by this route include pneumonias, pertussis, diphtheria, influenza type B, mumps and meningitis. The following precautions should be taken:

- implement standard precautions³
- place patient in a single room or in a room with another patient infected by the same pathogen
- wear a surgical mask when working within 1-2 metres of the patient
- place a surgical mask on the patient if transport is necessary
- special air handling and ventilation are not required to prevent droplet transmission of infection.

Contact precautions

Colonisation or infection with multiple antibiotic resistant organisms, enteric infections and skin infections can be transmitted by contact with an infected patient. The following precautions need to be taken:

- implement standard precautions⁴. In particular timely and effective hand decontamination is the cornerstone of safe care
- place patient in a single room or in a room with another patient infected by the same pathogen. Consider the epidemiology of the disease and the patient population when determining patient placement
- wear clean gloves (preferably non-latex) when entering the room
- wear a clean gown when entering the room if substantial contact with the patient, environmental surfaces or items in the patient's room are anticipated
- limit the movement and transport of the patient from the room – patients should be moved for essential purposes only. If transportation is required, use precautions to minimise the risk of transmission.

Good practice

³ Chapter 3, Practical Guidelines for Infection Control in Health Care Facilities (2004), WHO. http://www.wpro.who.int/sars/docs/practicalguidelines/dec2004/cover_page.pdf

⁴ Chapter 3, Practical Guidelines for Infection Control in Health Care Facilities (2004), WHO. http://www.wpro.who.int/sars/docs/practicalguidelines/dec2004/cover_page.pdf

In the UK there has been a high-profile campaign by the nursing and other media publications to tackle hospital-acquired infections. Staff can avoid risk to themselves and their patients by:

- getting vaccinated and keeping up to date with necessary vaccinations
- learning and following safe sharps practice
- always following infection control procedures
- reporting and getting help with any needlestick accident
- always cleaning hands before contact with any patient or wounds, or if carrying out any internal examination, taking blood, or eating
- always cleaning hands after contact with any patient; after removing gloves; changing or 'lifting' dressings; going to the toilet; and assisting a patient with the toilet.

Staff should stay off the wards if:

- they develop any possible infectious rash
- they are unwell with diarrhoea or vomiting
- they have been in contact with chickenpox or shingles (unless they have proven previous infection) – contact with chickenpox should be reported to the OH service
- they are unwell – feverish, dizzy and so on
- they have a sore throat – this could indicate B-Haemolytic streptococcus A and staff should contact their health department.

Before going on to a ward staff should:

- cover any broken skin, unhealed cuts or grazes with an adhesive waterproof dressing
- be sure that their uniform is clean – it is not advisable to travel to or from work in uniform/work clothes.

When staff examine a patient they should:

- wear a disposable plastic apron or gown, depending on the circumstances
- wear gloves, preferably vinyl, if they have active eczema or another skin complaint (this condition should be reported to staff health as it may be inadvisable for the staff member to work in certain areas)
- always wear gloves for any internal examination and examination or dressing of wounds
- follow safe sharps practice (see the chapter on needlestick injury)
- dispose of used gloves and other clinical waste into the correct repository
- always clean their hands thoroughly after carrying out any clinical procedure and after removing gloves. Alcohol-based hand rubs can be used on non-

soiled hands and should be available and accessible at the point of patient care.

Staff are at risk from infection from the following:

- any graze or puncture wound from a used sharp
- a bite from a violent patient, especially if it breaks the skin
- splashing of blood or other body fluids onto broken skin, into the eyes or mouth.

If this happens staff must:

- stop what they are doing as soon as is practicable
- wash off the contaminant immediately, using tap water or normal saline to wash out an eye splash
- encourage bleeding by shaking – don't suck or squeeze a wound, wash in running water
- report any injury to the Occupational Health Department. Even if staff think the patient involved is not an infection risk (they may be unknowingly infected with a blood-borne virus or have asked for their immune status not to be recorded in their notes)
- let the charge nurse for the ward or clinic know of an injury
- complete an accident report form.

More information

This chapter is not intended to be a comprehensive guide to infection control for staff or patients. Its purpose is to make staff aware of the risks they may face in the course of their work and precautions they can take to minimise the risk to the health of themselves, their family and the general public and well as the patient.

More information is available within this guidance (see relevant chapter for each): Managing risk, Dangerous substances, Needlestick injury, Handling infected cadavers and latex.

Comprehensive and detailed information about all aspects of infection control is available from the following organisations:

- the Health Protection Agency – www.hpa.nhs.uk
- the National Patient Safety Agency (cleanyourhands campaign) – www.npsa.nhs.uk/cleanyourhands
- the World Health Organisation – www.who.int/en
- the Department of Health – www.dh.gov.uk/Home/fs/en
- the RCN – www.rcn.org.uk
- UNISON – www.unison.org.uk

- The BMA has a useful guide to healthcare-associated infections available through its website – www.bma.org.uk

References

Audit Tools for Monitoring Infection Control Standards 2004, Infection Control Nurses Association in partnership with the Department of Health – www.icna.co.uk

World Health Organisation – www.who.int/en

UNISON Health and Safety Sheet, MRSA – www.unison.org.uk

Imperial College, London – www.imperial.ac.uk

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