Is your practice an infection hazard?

General practitioners can minimise the risk of iatrogenic infection by: adopting 'Standard Precautions' (appropriate hand washing, use of gloves, safe use of sharps, and appropriate waste disposal); ensuring that instruments are single use or appropriately sterilised or disinfected; and developing a written infection control policy for the practice.

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In recent years, there has been increasing professional and public concern relating to infection control in the healthcare industry. The fact that the best documented episode of iatrogenic crossinfection with HIV occurred during minor surgery in an Australian office practice[1] indicates that the same infection control standards should apply equally to hospitals and general practices. This article will summarise important infection control issues to be considered in an office- based practice.

Standard (universal) Precautions

Before the 1980s, infection control measures relied on routine aseptic techniques for all patient contact, supplemented by specific isolation precautions when patients were known or suspected to have a communicable disease. This system was based on patients presenting with symptoms suggesting a communicable disease, and it was quickly appreciated that this would not protect against transmission of bloodborne viruses such as HIV and hepatitis B or C, where patients are often asymptomatic carriers.

In 1987, the Centers for Disease Control in the USA introduced the concept of universal blood and body fluid precautions (later replaced by the term 'Standard Precautions'). The basic tenet is that blood and body fluids from all patients should be regarded as potentially infectious, regardless of what is known or suspected about their bloodborne virus status, so that work practices can be modified to minimise the risk of accidental exposure through injury or contamination.[2] The main features of a Standard Precautions policy for an office based practice are summarised in the box on page 70.

Additional (or 'transmission based') precautions are still required for patients with airborne infections. Office practices should have a system of triage so that patients presenting with likely airborne infections (such as measles, chickenpox,

IN SUMMARY

- **Proper hand washing is the single most important infection control measure.**
- **Office practices should have a system of triage so that patients presenting with likely airborne infections are either seen first or segregated from other waiting patients.**
- **Blood and body fluids from all patients should be regarded as potentially infectious.**
- **Sharp articles are the most important source of occupational exposure to bloodborne viruses. Needles should not be recapped, and all sharp articles must be discarded immediately into an Australian Standard-specified sharps container.**
- **If an instrument cannot be adequately cleaned, it cannot be sterilised or adequately disinfected.**
- **Every general practice must have a written infection control policy.**

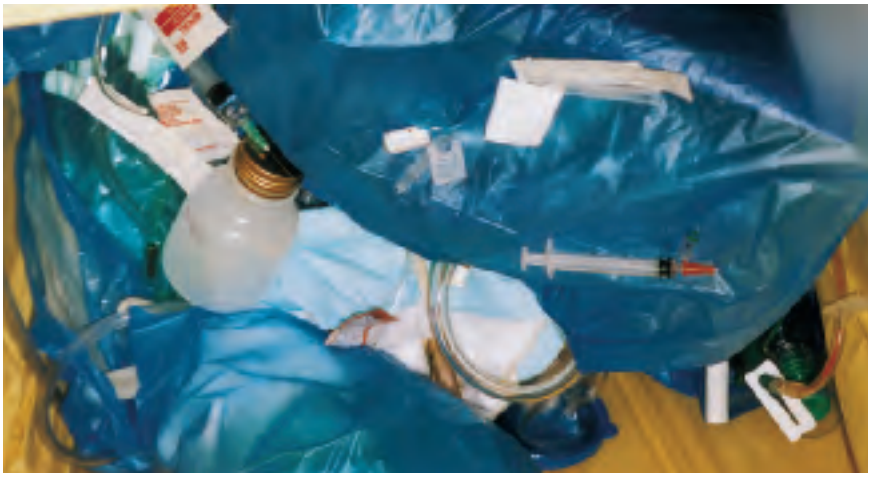

Figure 1. This practice has lost the 'point' about waste disposal!

Figure 2. Do not overfill sharps containers. Store them out of the reach of children.

Standard (universal) Precautions: main features*

- Wash hands before and after every patient contact and after removing gloves.
- Wash hands immediately if they are contaminated with blood or other body substances.
- Wear gloves when contamination of hands with body substances is anticipated.
- Wear masks and protective eyewear when there is a risk of splashing.
- Handle and dispose of sharps safely.
- Clean and disinfect blood and body substance spills safely and with appropriate agents.
- Adhere to disinfection and sterilisation standards.
- Safely dispose of infectious waste.
- Vaccinate all practice staff against hepatitis B.
- Use vacuum-based venipuncture systems and other safer devices, when available.

* Modified from NHMRC guidelines (for reference details, see the box on page 74).

pertussis) are either seen first or segregated from other waiting patients.

Handwashing

Handwashing remains the single most important infection control measure. Hands should be washed with liquid soap and water before and after direct contact with patients. A disinfectant handwash should be used before donning gloves and performing minor invasive procedures. Gloves should be removed and discarded into an infectious waste container immediately upon finishing the procedure, and hands again washed before resuming other activities.

Disposal of sharps

Injuries from sharp articles such as needles and scalpel blades are the most important source of occupational exposure to bloodborne viruses. Needles should not be recapped, and all sharp articles must be discarded immediately into an Australian Standard (AS 4031)-specified sharps container (see Figures 1 and 2 for examples of inappropriate disposal). Containers should not be filled above the three-quarter level before being irreversibly sealed prior to disposal. They should be placed so that they are out of reach of children's prying hands. Once filled, the containers should be disposed of in accordance with government regulations relevant to the practice location.

Managing occupational exposures to blood and body substances

The approximate risk of transmission of the three main bloodborne viruses after a single occupational exposure is summarised in Table 1. While the risk of transmission, particularly of HIV, is very low, the psychological impact of such incidents to the exposed person is often substantial. All office practices should have a written protocol dealing with the reporting, assessment and management of sharp injuries, mucosal splashes or other exposures to potentially contami-

Figure 3. A benchtop autoclave suitable for a general practice.

Table 1. Estimated risk of transmission after a single exposure*

Virus	Estimated risk
Hepatitis B	
– source is e antigen negative	5%
– source is e antigen positive	40%
Hepatitis C	3%
HIV†	0.3%

*Approximate risk of transmission after a single occupational percutaneous exposure.[3]
†For a mucosal exposure to HIV, the estimated risk of transmission is 0.1%.

nated body substances. The main points of such a protocol are summarised in the box on this page. If the risk of HIV transmission is significant, prophylactic antiretroviral therapy may be indicated,[2,3] and specialist infectious diseases advice should be urgently sought.

Disinfection and sterilisation procedures

The level of disinfection required for instruments depends on the level of risk they pose for patients (Table 2). Instruments used to penetrate tissue must be sterile. Single-use sterile injecting equipment must be used and single-dose medication vials used if available. Multi-use instruments or equipment must be cleaned and then sterilised or disinfected before and after every patient.

Scrupulous precleaning of instruments is required before they are subjected to disinfection and sterilisation processes. Ultrasonic cleaners can be used for the initial precleaning of specified items, but it should be remembered that they do not disinfect or sterilise. The golden rule is 'if an instrument cannot be adequately cleaned, it cannot be sterilised'.

General practitioners who wish to perform minor invasive procedures (for example, excision of skin lesions, insertion of IUDs) in their offices must use disposable instruments entirely, have their instruments sterilised off site or sterilise their own instruments using a benchtop autoclave (Figure 3). Autoclaves without a drying cycle should be used only to process unwrapped instruments, which are then used immediately. Autoclaves with a drying cycle may be used to process wrapped instruments (according to the manufacturer's instructions) which can then be stored or transported for later use.

Autoclaves should preferably keep an electronic log or provide a printout of time at temperature and pressure for each cycle; otherwise, a manual logbook will need to be kept. Appropriate chemical indicators should be included with each load. Biological monitoring with spore strips should also be done, either daily or weekly depending on which other monitoring is used. Regular maintenance and calibration checks should be done by the manufacturer. Further details are in the relevant Standards Australia documents (see the box on page 74).

Sample protocol for managing occupational exposure to potentially contaminated body substances[2]

- Wash the exposed area and give first aid.
- Report and document the incident.
- If the source patient is known, test him or her urgently (after obtaining informed consent) for HIV, hepatitis B and hepatitis C.
- Measure baseline HIV, hepatitis B and hepatitis C serology in the exposed person and counsel him or her on the risk of transmission.
- If hepatitis B contact has occurred in an unvaccinated person, give hepatitis B immunoglobulin within 72 hours and commence a primary vaccine course. People previously vaccinated for hepatitis B are given a booster vaccine dose.
- If there has been a high risk exposure to HIV, consider antiretroviral prophylaxis and seek specialist infectious diseases advice urgently.
- Advise exposed people to protect their sexual partners and avoid pregnancy and blood donation during the follow up period of 12 weeks.
- Repeat HIV antibody tests at six and 12 weeks after exposure. Monitor liver function tests if hepatitis C exposure.
- Ensure appropriate documentation of incident, test results and follow up, and review circumstances leading to the exposure.

Disposal of infectious waste

Infectious waste includes body tissues and fluids, soiled dressings, drapes, gloves and equipment. It should be segregated from noninfectious general waste, which can then be disposed of through the usual waste disposal channels. Infectious waste must be discarded into yellow puncture-proof containers with a biohazard symbol, and then disposed of in accordance with government regulations relevant to the practice location.

Infection control policy

Every office practice should have a written infection control policy, including quality control systems to confirm that safe practices have been followed (Table 3). The policy should be familiar to all practice staff.

Infection control regulations, standards and guidelines

Several infection control guidelines of relevance to office practices have been published in recent years by government and college bodies. They are essential reading for all general practitioners. In addition, doctors practising in New South Wales are subject to the NSW Department of Health infection control regulations (Circular 95/13). The relevant Standards Australia documents should be consulted regarding sterilisation and disinfection processes, specifications and monitoring of benchtop autoclaves, and waste disposal (see the box on this page). Unfortunately, there is a lack of consistency between these documents on some minor issues (such as frequency of autoclave monitoring), which has led to some confusion.[5]

Infection control certification for office practices

Some Australian States have a voluntary system of assessment and certification where, for a fee, assessors will review infection control processes within individual general practices and provide certification or recommendations leading to certification. The local AMA branch in each State can be contacted for further details. The Royal Australian College of General Practitioners also assesses infection control practices as part of its own certification system.

Conclusion

Infection control problems are not just confined to hospitals, but may also occur in office-based practices. General practitioners must ensure that their practice meets the high infection-control standards

Important infection control guidelines and standards relevant to office practice

Infection control guidelines

- Australian National Council on AIDS. Infection control in practice: medical, dental and allied health. Sydney: ANCA, 1994.
- Royal Australian College of General Practitioners. Sterilisation/disinfection guidelines for general practice. 2nd ed. Melbourne: RACGP, 1994 (being revised, a new edition should be available this year).
  Website: http://www.racgp.org.au/
- NHMRC. Infection control in the health care setting. Canberra: NHMRC, 1996 (being revised, a new edition should be available this year).
  Website:
  http://www.health.gov.au/nhmrc/
  Toll-free phone number: 1800 020 103

Standards Australia documents

- Standards Australia. Cleaning, disinfecting and sterilizing reusable medical and surgical instruments and equipment, and maintenance of associated environments in health care facilities. AS 4187-1998.
- Standards Australia. Sterilizers – steam – benchtop. AS 2182-1998.
- Standards Australia. Non-reuseable containers for the collection of sharp medical items used in healthcare areas. AS 4031-1992/Amdt 1-1996.
  Website:
  http://www.standards.com.au
  Toll-free phone number: 1300 654 646

Table 2. Sterilisation and disinfection of reusable instruments*

Level of risk	Application	Type of process	Example
Critical	Entry into sterile tissue	Sterilisation (preferably by autoclaving)	Instruments used in invasive surgical procedures
Semi-critical	Contact with intact mucosa	Sterilisation (if autoclavable) or high level disinfection	Vaginal specula†, thermometer‡, ear syringe
Non-critical	Contact with intact skin	Cleaning	Stethoscope

NB. All instruments must be thoroughly precleaned prior to the sterilisation/disinfection process.
*Modified from Australian National Council on AIDS guidelines (for reference details, see the box on this page)
†For critical procedures such as inserting IUDs, disposable or autoclaved vaginal specula should be used. For semi-critical procedures, vaginal specula should also preferably be sterile because of the theoretical risk of transmission of genital wart virus.[5]
‡Glass thermometers should be pre-cleaned and then placed in 70% alcohol for at least 10 minutes.

Table 3. What to include in your infection control policy*

- Standard Precautions (refer to the box on page 70)
- Dealing with known or suspected 'infection risk' patients
- Handwashing and basic hygiene
- Gloves and protective clothing
- Precleaning of instruments and use and monitoring of autoclave
- Use of chemical disinfectants
- Taking blood samples and other specimens
- Disposal of infectious waste
- Procedure in event of accident (e.g. blood spill) or dangerous incident (e.g. needlestick injury)
- Procedure for documenting all accidents and dangerous incidents
- System for validating implementation of safe practices (e.g. documentation of maintenance and monitoring of equipment, staff training)

* Modified from NHMRC guidelines (for reference details, see the box on page 74).

expected by both the profession and the public. The practice can reduce the risks of cross-infection to an absolute minimum by adopting Standard Precautions and ensuring that instruments are single use or appropriately sterilised or disinfected. A written infection control policy should be developed for every practice after first consulting the relevant professional guidelines and standards. General practitioners may also consider having their infection control practices assessed and certified. MT

References

1. Chant K, Lowe D, Ruben G, et al. Patient to patient transmission of HIV in private surgical consulting rooms. Lancet 1993; 342: 1548-1549.
2. Mitchell D, Sorrell T, McDonald P. HIV infection control in medical practice. In: Stewart G, ed. Managing HIV. Sydney: Australasian Medical Publishing Co, 1997.
3. Gerberding J. Management of occupational exposures to blood-borne viruses. N Engl J Med 1995; 332: 444-451.
4. McCance D, Campion M, Baram A, Singer A. Risk of transmission of human papillomavirus by vaginal specula. Lancet 1986; 2: 816-817.
5. Magennis A. Sterilisation: past confusions and current recommendations. Aust Fam Physician 1996; 12: 1825-1829.