Managing community needlestick injuries

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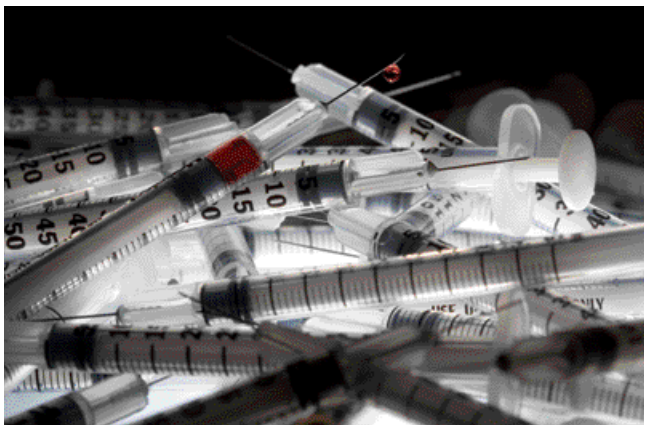
The first article of this new clinic on infectious diseases summarises the five key steps in managing needlestick injuries occurring in the community.



Despite increased awareness and precautions, needlestick injuries continue to occur in the community. Raising an important management issue in the general practice setting, they are often associated with significant patient distress and uncertainty. Most often, needlestick injuries are from contact with a discarded needle and syringe, but they may also occur when people are sharing needles during intravenous drug use or in cases of community occupational exposures, such as those occurring in personal carers or council cleaners. The risk of transmitting a blood-borne infection is different in each setting, and the situation needs to be taken into account when deciding on a management course.

Careful explanation of the risks of infection may greatly reduce patient distress, and prompt antiviral prophylaxis (when appropriate) is highly effective at reducing the risks of seroconversion.[1]

Delays in presentation or treatment may decrease the effectiveness of viral prophylaxis, and it is important that patients who present following a needlestick injury are assessed as promptly as possible.

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Although management must be tailored to individual circumstances, for each needlestick injury there are five key steps to follow. These steps are discussed below and summarised in the flowcharts on pages 81 and 82.

Step one: first aid

The affected area should be washed immediately with soap and water. Harsh abrasives and disinfectants should not be used, but a small waterproof dressing can be applied if there is bleeding from the wound.

Step two: history and documentation

The date and time of the incident, the geographical location that it occurred and the appearance of the needle (in particular whether there was visible blood staining on the needle) should be recorded. The anatomical site and severity of the needlestick injury, which can range from a light grazing of the skin to a deep penetrating injury, should also be determined.

A brief medical history should be taken from the patient, focusing on his or her previous vaccinations (particularly tetanus and hepatitis B) and any pre-existing medical conditions such as immunosuppression or chronic liver disease that may influence his or her tolerance of antivirals or response to vaccination.

If the source of the needlestick is known, it should be ascertained whether the source has any existing blood-borne viral infections or any risk factors for HIV or hepatitis C (such as engaging in unsafe sex practices, using intravenous drugs, having tattoos, etc). A needlestick injury from a source who has multiple risk factors for infection carries a greater risk of infection transmission to the patient. It is also an indication for early referral of the affected patient to an infectious diseases physician for consideration of HIV postexposure prophylaxis.

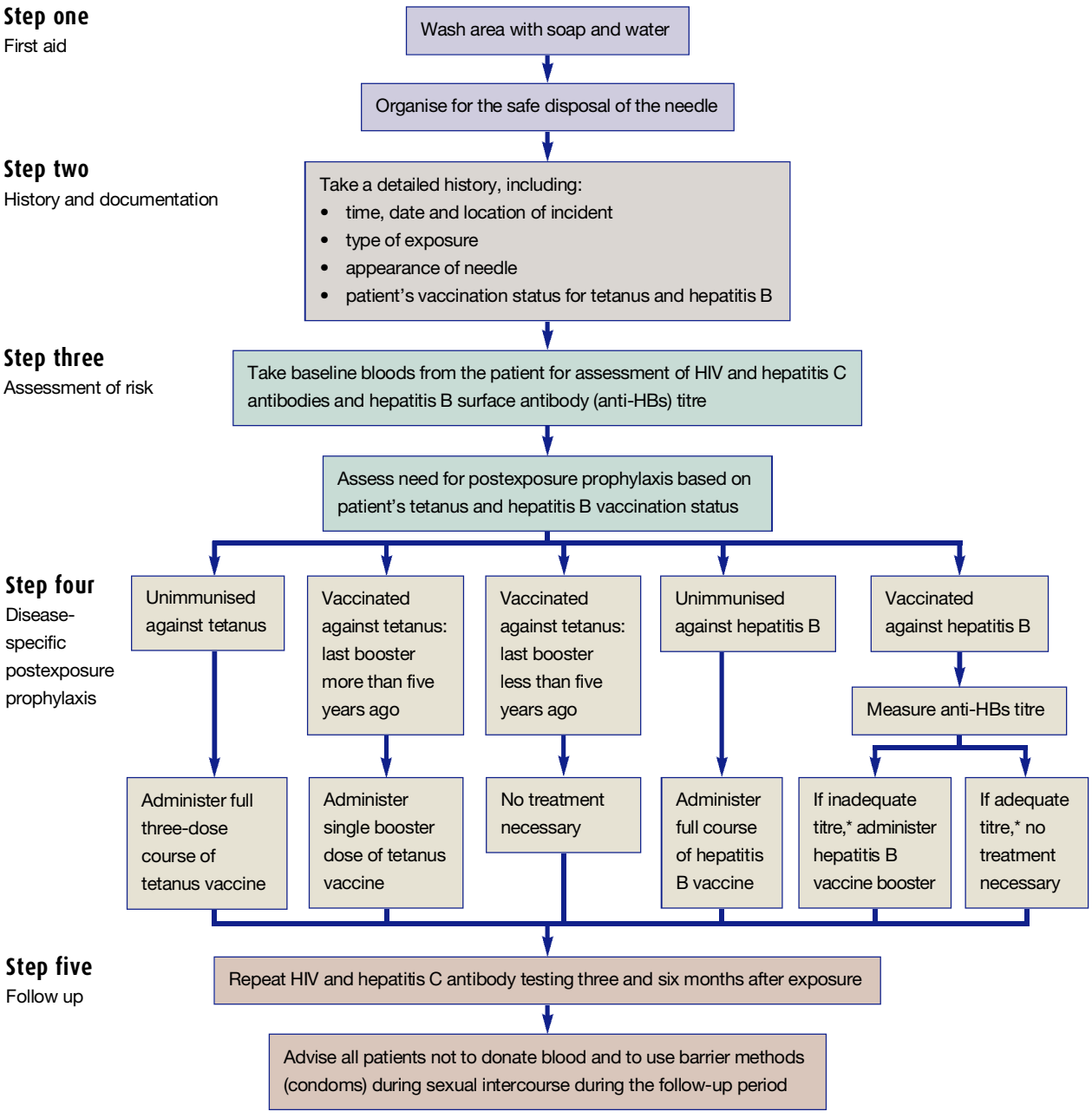
Step three: assessment of risk

The risk of infection following a needlestick injury is highest when there has been exposure to large quantities of blood or to blood from a source who is in the advanced stages of disease or has a high viral load. Viral transmission is most likely when the exposure involves a deep percutaneous injury with a hollow-bore, blood-filled needle.[2] In general, community needlestick injuries typically involve small-bore needles that contain only a small amount of blood, and any virus that may have been present is likely to be nonviable.[3,4]

There is no benefit to testing the blood within a discarded syringe, as the results cannot be validated and a negative result is of unclear significance.

Table 1 shows the estimated rates of blood-borne virus transmission from community-acquired needlestick injuries. These numbers are likely to be an overestimation of the risk. They are certainly

Managing needlestick injuries from an unknown source



* An adequate titre is a hepatitis B surface antibody titre of at least 10 mIU/mL; an inadequate response is a hepatitis B surface antibody titre below 10 mIU/mL.

much higher then the reported incidence of seroconversion following needlestick injuries in Australia, where there have been no documented cases of transmission of HIV, hepatitis C or hepatitis B from a discarded needle. Indeed, it is important to note that there have been no documented instances of HIV transmission from community needlestick injuries and only a single reported case of hepatitis C being acquired in this way worldwide.[5]

When a patient presents following a needlestick injury blood should be taken and tested for HIV and hepatitis C antibodies, and hepatitis B surface antibody. This will allow determination of whether the patient has any pre-existing infection and also his or her immunisation status for hepatitis B.

If a source has been identified and is willing to undertake testing, informed consent should be obtained from him or her (or his or her legal guardian) before blood is tested for HIV and hepatitis C antibodies and hepatitis B surface antigen.

Step four: disease-specific postexposure prophylaxis[6,7]

The most important thing you can do for patients who present following a community needlestick injury is to reassure them that the risk of viral transmission is very low.

Managing needlestick injuries from a known source

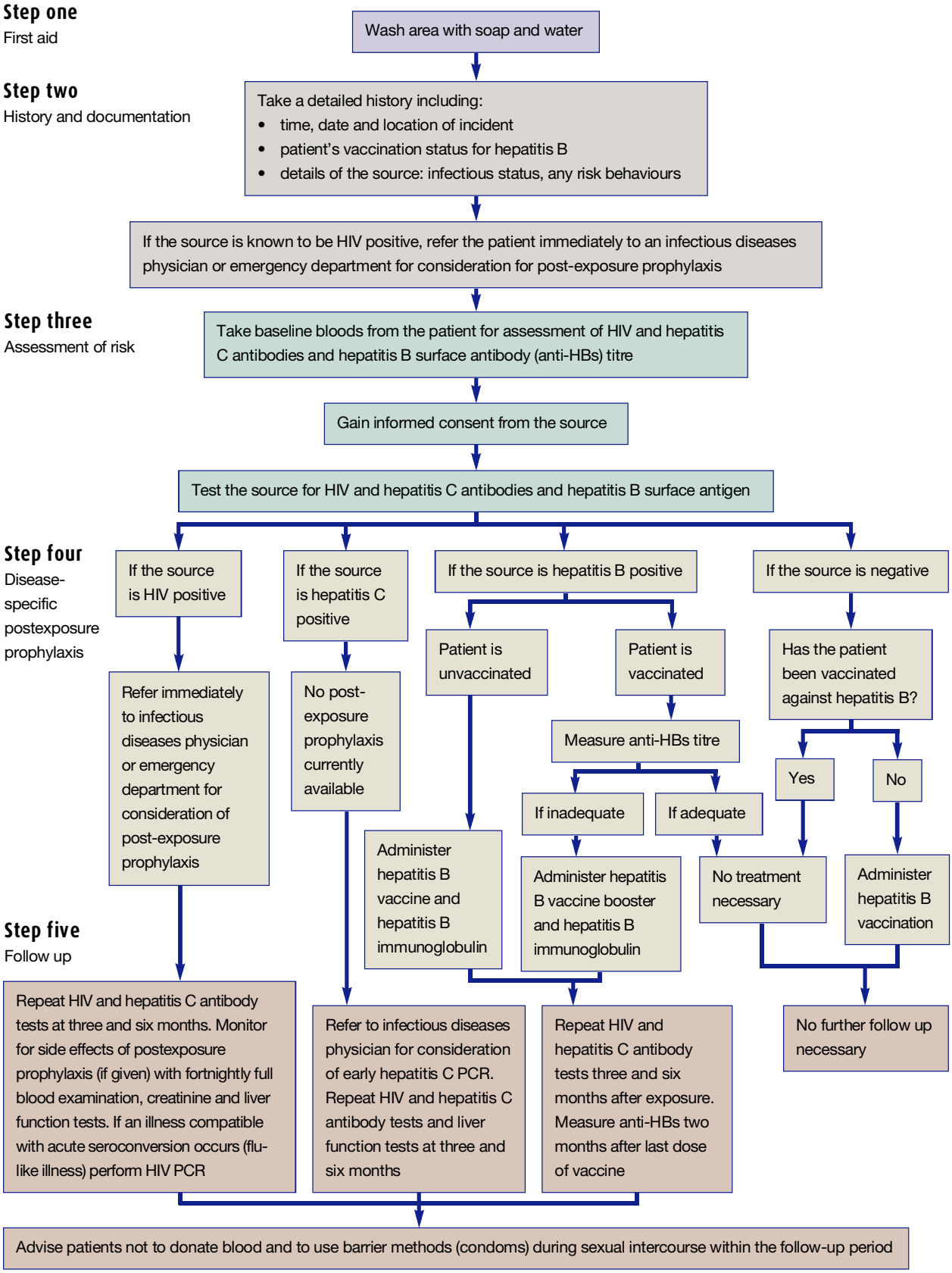


Table 1. Blood-borne virus transmission rates from community needlestick injuries*

Virus	Transmission rate	
	Known source	Unknown source†
HIV	1 in 300	1 in 2000–30,000
HCV	1 in 30	1 in 60
HBV	1 in 3	1 in 3–8

* Given rates are estimates. † Rates from unknown sources will vary based on the prevalence of viral infection in different communities.
Figures derived from Australian data contained in reference 2 (O'Leary and Green).
ABBREVIATIONS: HIV = human immunodeficiency virus; HCV = hepatitis C virus; HBV = hepatitis B virus.

Like all injuries sustained while outdoors, the greatest risk is of tetanus.[8] If affected patients have not had a tetanus booster shot in the last five years, they should receive a single booster dose. If they have never been vaccinated, they should have the full vaccine course of three doses.

At this time there is no evidence for hepatitis C virus postexposure prophylaxis. Patients should receive counselling regarding the risks of hepatitis C transmission and then undergo appropriate testing and follow up to minimise any long-term effects should infection occur.[9]

In general, postexposure prophylaxis for HIV is not warranted because of the low prevalence of HIV in Australian intravenous drug users. If a source can be identified and is known to be HIV positive or at high risk of HIV infection, the patient should be immediately referred to an infectious diseases physician or emergency department for consideration of postexposure prophylaxis.

Hepatitis B postexposure prophylaxis varies depending on the vaccination status of the patient (see Table 2). As with all prophylaxis, early treatment is essential and should be undertaken immediately.

Step five: follow up[1]

Despite the generally low-risk nature of these exposures, strict follow up is vital to allow early identification of patients who have been infected and to provide ongoing counselling and support.

Patients who have had a needlestick injury from an unknown source should undergo repeat HIV and hepatitis C antibody testing three and six months later. Those who have received HIV postexposure prophylaxis need regular monitoring for side effects, including full blood counts, creatinine levels and liver function tests. They should be alert for symptoms that may be suggestive of viral seroconversion, typically a 'flu-like' illness characterised by fevers, aches and pains, headaches and possibly a rash. If such an illness occurs, patients should be tested again for both HIV antibodies and HIV DNA (by polymerase chain reaction).

Finally, patients should be advised not to donate blood and to use barrier methods (condoms) during sexual intercourse during the follow-up period.

Summary

In most cases, transmission of a blood-borne infection is unlikely following a community needlestick injury, particularly if the injury occurred from a discarded needle and syringe. It is important to be aware of particularly high-risk situations so that appropriate prophylaxis and referral can be considered; however, much of the anxiety for patients can be relieved with accurate provision of information and appropriate follow up. MT

References

A list of references is available on request to the editorial office.

COMPETING INTERESTS. None.

Table 2. Hepatitis B prophylaxis after a community needlestick injury

Status of patient	Status of source		
	Unknown	Known	
		Hepatitis B positive	Hepatitis B negative
Unvaccinated	Hepatitis B vaccine	Hepatitis B immunoglobulin plus hepatitis B vaccine	Hepatitis B vaccine
Vaccinated			
• Known responder*	No treatment	No treatment	No treatment
• Patient with an inadequate response*	Hepatitis B vaccine booster	Hepatitis B vaccine booster plus hepatitis B immunoglobulin	No treatment

* A known responder has a hepatitis B surface antibody titre of at least 10 mIU/mL; a patient with an inadequate response has a hepatitis B surface antibody titre below 10 mIU/mL.

Medicine Today 2009; 10(9):80-83

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