

At the **SHARP** end of general dental practice

Deborah E. A. Lockhart¹ and **Andrew J. Smith**² provide answers to some frequently asked questions on blood-borne viruses and also the management of a scenario in general dental practice.

¹Specialist Registrar/Hon Clinical Teacher Microbiology, ²Senior Lecturer/Hon Consultant Microbiologist, Infection Research Group, Level 9, Glasgow Dental Hospital and School, Faculty of Medicine, 378 Sauchiehall Street, Glasgow G2 3JZ
Email: d.lockhart@dental.gla.ac.uk

Accidents happen

The waiting room is full of anxious patients and in the surgery a dentist is in the midst of an extraction. Meanwhile, whilst disposing of a local anaesthetic needle you accidentally stab your finger with the used needle. As a member of the dental team you can probably relate to this scenario. But are you confident of the most appropriate means of managing the injury? Or what infectious agents may pose a threat? This article provides answers to some frequently asked questions relating to blood-borne viruses (BBVs) and the management of this injury in general dental practice.

Frequently asked questions

What are BBVs and why are they of concern?

BBVs are a group of viruses sharing a common mode of transmission between hosts via blood-to-blood contact. Exposure to BBVs such as hepatitis B (HBV), hepatitis C

(HCV) and human immunodeficiency virus (HIV) pose an occupational risk for all members of the dental team engaged in clinical practice.

Prevention and treatment of BBVs

There is an effective vaccine for HBV and immunisation is compulsory for all staff in direct contact with blood.¹ Post exposure prophylaxis (PEP) as vaccine +/- immunoglobulin (HBIG) is available for poor responders or those who aren't vaccinated.²

No vaccine or PEP exists for HCV but there are effective treatments. Appropriate follow-up and monitoring is essential to initiate treatment should infection occur following a sharps injury.

HIV has no vaccine or cure, although the introduction of highly active anti-retroviral therapy (HAART) produces long term suppression of the virus. PEP is available and should be commenced ideally within one hour. The decision to prescribe PEP is complex and requires expert input. Percutaneous

Table 1 Injuries associated with increased risk of HIV transmission⁵

Types of injuries with high risk of transmitting HIV

Deep injury
Penetrating injury by device visibly contaminated with blood
Injury involving placement of needle directly in source patient's artery or vein
Exposure to a source patient with end-stage HIV-related illness



injuries associated with a high risk of transmission are, fortunately, not usually encountered in dentistry (Table 1).

Universal source patient testing assess hepatitis markers and HIV status to reassure healthcare workers (HCWs) and provide guidance on management. Testing for all three BBVs is now routinely undertaken. Although exceedingly rare, occupationally acquired infections with HBV and HCV have been documented in the dental setting.³⁻⁴

Am I protected (immune) from HBV?

An antibody level following completion of a primary course of HBV immunisation will determine whether you have responded to the vaccine and are protected (Table 2). Responders to the vaccine are not required to undergo booster doses of the vaccine.

What is the risk of occupationally acquiring a BBV?

Following a percutaneous exposure to a susceptible host from a positive source the approximate risk is one in three for HBV,¹ one in 30 for HCV¹ and one in 300 for HIV.⁶

How common are sharps injuries and when are they likely to occur?

Determining the true number of sharps injuries in the dental setting is difficult due to a lack of robust surveillance data. Injuries to

Table 2 Immune Status following HBV vaccination²

Immune status	Description
Protected	Antibody titre > 10 ui/l (known responder)
Incomplete protection	No antibody titre available
Unprotected	Results unknown following full primary course
	Unvaccinated/incomplete primary course
	Antibody titre <10 ui/l (non-responder)

dental personnel account for approximately 2% of those reported by all healthcare workers⁶⁻⁷ although there has been a recent surge in the numbers of doctors and dentists reporting sharps injuries from carriers of BBVs.⁴ This may reflect a genuine increase in injuries or improved reporting mechanisms. In a UK dental school 14% of nurses reported having sustained at least one sharps injury during the last six months.⁸

Sharps injuries caused by contaminated instruments may occur during clinical use, after use before disposal and during disposal. Percutaneous injuries from anaesthetic needles account for a significant proportion.⁷

How can these injuries be prevented?

Approximately 56% of sharps injuries are preventable,⁶ therefore, all staff have a

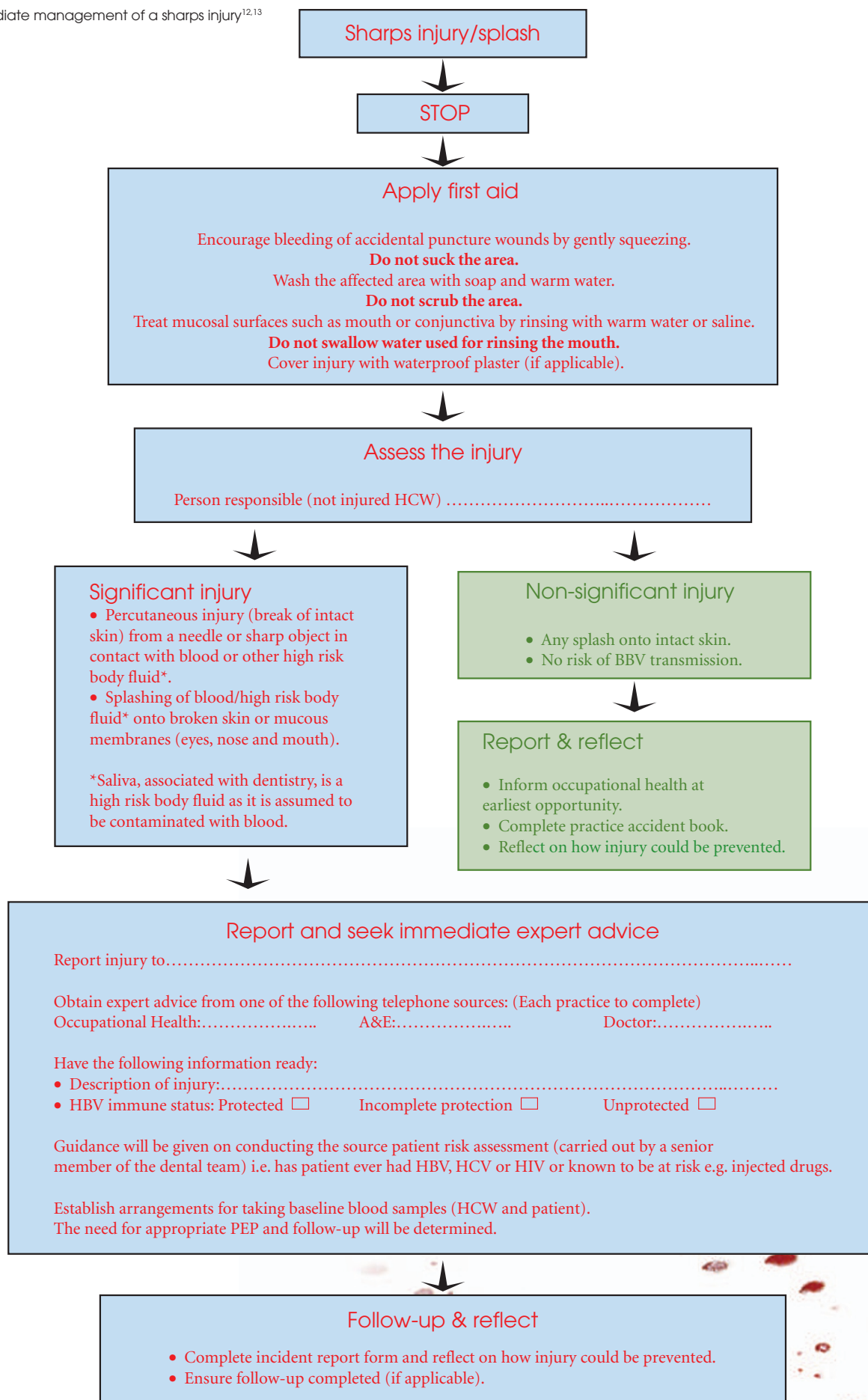
responsibility to comply with standard precautions relating to the safe handling and disposal of sharps. The introduction of safety syringes⁹ is considered the single most beneficial intervention but alarmingly only 8% of injured staff knew if they were available in their department.⁶ This highlights the need for documented staff training and education. Needles must never be re-sheathed without the use of a protective device and sharps should be disposed of by the treating clinician.

What should I do in the event of a sharps injury?

The appropriate management relies on knowing:

1. What action to take
2. Who is responsible for assessing the injury

Fig. 1 Immediate management of a sharps injury^{1,2,13}



3. Where to go for treatment and follow-up
4. How to report the incident.

This information should be readily accessible and displayed as a poster in each clinical area. Where possible follow your local primary care trust policies or alternatively adopt the models supplied by national bodies¹⁰ or the one provided (Fig. 1). There should be a designated person responsible for co-ordinating the management of sharps injuries and maintaining a record of the HBV immune status of staff.

Management of a scenario

Immediate management

The nurse should stop the procedure, remain calm and institute immediate first aid measures (Fig. 1). The injury should be assessed by a second person, for example, the dentist. Having classified the injury as 'significant' immediate expert advice should be sought. Meanwhile, the HBV immune status records indicated the nurse was a poor responder to the vaccine (unprotected).

In conjunction with expert advice, a source patient risk assessment performed by the dentist revealed a former intravenous drug user positive for HCV and HIV. The patient denied ever having HBV but was willing to provide a blood sample for testing.

Treatment and follow-up

Both the nurse and patient attended A&E for baseline blood sampling. As the patient's HBV status was unknown and the nurse unprotected, she was given HBIG and a booster dose of vaccine.

Careful consideration was given to HIV PEP but the injury in this case was not deemed high risk since the local anaesthetic needle was not placed in the source patient's artery or vein (Table 1). Despite being offered PEP the nurse declined on the grounds of the

low risk of transmission and drug side effects. Regular follow-ups and blood tests were negative for HCV and HIV.

Prevention

Having completed an obligatory incident report,¹¹ reflection revealed the incident and associated anxiety could have been avoided by adopting some of the preventative strategies outlined.

Conclusion

Remember that the prevention of sharps injuries is essential, but as accidents may take place, preparation is vital. It is an extremely beneficial exercise for the dental team to undertake role rehearsals and act out different scenarios involving sharps injuries; this may even involve contacting your local A&E department to confirm that they are your point of reference in the event of an injury. This will mean that all staff are rehearsed in dealing with an incident if it occurs.

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