

Factsheet Needlestick injuries, discarded needles and the risk of HIV transmission

Key points

- The risk of infection following a needlestick injury is very low.
- There have been no definite cases of HIV infection among healthcare workers following an occupational needlestick injury in the UK since 1999.
- There are no documented cases of HIV infection through contact with a needle or syringe discarded in a public place.
- There are guidelines on the use of post-exposure prophylaxis (PEP) following needlestick injuries.



A needlestick or sharps injury is the penetration of the skin by a needle or other sharp object (such as a syringe, scalpel or broken glass), which has been in contact with blood, tissue or other body fluids before the exposure.

Needlestick injuries are most likely to happen among healthcare workers who are accidentally exposed to infected blood (occupational exposure). It is estimated that around three million such needlestick injuries take place globally each year, including one million in Europe, although not all such injuries are reported. As described below, documented cases of HIV infection following an injury are extremely rare.

Injuries from discarded needles in the community (non-occupational exposure) are less common and viral infections rare. There have been no documented cases of HIV infection through contact with needles in this way.

Blood-borne viruses that could potentially be transmitted this way include hepatitis B and hepatitis C, as well as HIV. The risk of transmission following a skin puncture injury is dependent on whether the person who previously used the object had an infection, the level of virus in their blood, the amount of blood involved, the type of needle or syringe in question, the time that has elapsed since it was used, and the nature of the injury.

Following known exposure to HIV, post-exposure prophylaxis (PEP) should be considered. PEP

is known to be over 80% effective in preventing HIV from needlestick injuries. A different form of PEP, to protect against hepatitis B, is also available.

How many cases of HIV have resulted from occupational needlestick injuries?

In the US, there were a total of 58 cases of confirmed occupational transmission of HIV to healthcare workers up to 2013, with only one since 1999. In the UK, there have only ever been five definite cases of HIV infection following a needlestick injury in a healthcare setting, and none reported in the past 20 years. The number of cases of HIV acquisition following an accidental needlestick injury globally is thought to be around 100 people in total.

Between 2004 and 2013, a total of 1478 healthcare workers were reported as having been exposed to patient blood containing HIV in the UK. Three-quarters of these took PEP, and almost all did so within 24 hours, with no HIV infections as a result.

What is the risk from needlestick injuries in healthcare settings?

The risk of transmission from a needlestick involving HIV-containing blood has been estimated at 0.23%, or just over one in 500. However, the reviews of transmission probability upon which this calculation is based date predominantly from the 1980s and 1990s, before the wide-scale introduction of antiretroviral therapy. Due to the effectiveness of HIV treatment, the blood of someone living with HIV in the UK could well have no detectable virus (Undetectable equals untransmittable, U=U), lowering that risk even further. In UK guidelines, PEP is therefore no longer recommended following occupational exposure to a source with an undetectable viral load.

The greatest risk to healthcare workers of acquiring HIV is following a skin puncture injury involving a hollow needle that has been in the vein or artery of an HIV-positive person who has late-stage disease and a high viral load. The European Union Sharps Directive of 2013 stipulates measures to protect healthcare personnel.

The risks of acquiring other blood-borne viruses from a contaminated needle are considerably higher than for HIV (6-30% for hepatitis B and 1.8% for hepatitis C). For this reason, healthcare workers are recommended to have the hepatitis B vaccination, although no vaccine is available for hepatitis C.

If you are travelling to a region with basic healthcare facilities, you may want to carry a medical kit with sterilised syringes and needles for personal use.

What is the HIV risk from discarded needles?

When people who use drugs or others leave used needles or syringes in public places, this can often lead to anxieties and concerns about the risk of HIV transmission. In parks, play areas, beaches, public toilets or streets, people may step on discarded needles or children may handle them. Waste workers are also at risk of coming into contact with discarded needles.

Thanks to needle exchange programmes, there is a very low level of HIV among people who inject drugs in the UK. While HIV transmission from a discarded needle is theoretically possible, needles found in the community are much less likely to result in infection than those in healthcare settings as they have been exposed to the environment and the injuries are usually superficial. HIV is a fragile virus that cannot survive when it is dried out. The virus is more likely to survive when there are lower temperatures, greater volumes of blood and within larger syringes.

In 2015, a review of the 1500 reported global cases of needlestick injuries found only five cases of resulting blood-borne viral infections, all of which were hepatitis B or C.

The two cases of **hepatitis B** known to have resulted from discarded needles were both in unvaccinated people who did not receive adequate treatment after their exposure. In 2011, a case of acute hepatitis B infection in an adult two months after a discarded needlestick injury was reported in Australia. In the 1990s, a case of presumed acute hepatitis B infection was reported in a 4-year-old boy in Spain who had been pricked by a needle left by a neighbour known to have HIV and hepatitis B.

There have been three reported cases of **hepatitis C** in adults following needlestick injuries in the community. In 2005, a Spanish case in a 64-year-old woman was reported. She was given PEP and hepatitis B vaccination, but presented three months later with hepatitis C and received treatment. The other two cases were in Australia, one of whom received no medical attention after the injury.

There are no documented cases of **HIV** infection through contact with a needle or syringe discarded in a public place.

In the UK, national guidelines do not recommend the provision of PEP following injury with a needle discarded in a community setting. However, in most cases post-exposure prophylaxis for hepatitis B, vaccination for hepatitis B and vaccination for tetanus are advisable.

What to do after a needlestick injury

If you pierce or puncture your skin with a used needle, follow this first aid advice immediately:

- encourage the wound to bleed, ideally by holding it under running water
- wash the wound using running water and plenty of soap (do not use bleach)
- do not scrub the wound while you're washing it
- do not suck the wound
- dry the wound and cover it with a waterproof plaster or dressing.

You should also seek urgent medical advice to assess your need for PEP or other treatment to reduce the risk of getting an infection.

References

Baggaley RF et al. *Risk of HIV-1 transmission for parenteral exposure and blood transfusion.* AIDS 20: 805-812, 2006.

Joyce et al. *Notes from the Field: Occupationally Acquired HIV Infection Among Health Care Workers, United States, 1985–2013.* MMWR 63(53);1245-1246, 2015.

Woode Owusu M et al. *Eye of the Needle - United Kingdom Surveillance of Significant Occupational Exposures to Bloodborne Viruses in Healthcare Workers: data to end 2013.* Public Health England, London. December 2014.

Elseviers M M et al. *Sharps injuries amongst healthcare workers: Review of incidence, transmissions and costs.* Journal of Renal Care 2014; 40. 10.1111/jorc.12050.

EAGA. *Updated recommendation for HIV post-exposure prophylaxis (PEP) following occupational exposure to a source with undetectable HIV viral load.* December 2013.

HSE. *Risk to healthcare workers.*

HSE. *Health and Safety (Sharps Instruments in Healthcare) Regulations 2013.*

CDC. *Exposure to Blood: What Healthcare Personnel Need to Know,* July 2003.

Canadian Paediatric Society. *Needle stick injuries in the community, Position Statement, 2018.*

CDC. *Updated Guidelines for Antiretroviral Postexposure Prophylaxis After Sexual, Injection Drug Use, or Other Nonoccupational Exposure to HIV, 2016*

Osowicki J, Curtis N. *A pointed question: is a child at risk following a community-acquired needlestick injury?* Arch Dis Child 2014; 99:1172-5.

Res S, Bowden FJ. *Acute hepatitis B infection following a community-acquired needlestick injury.* J Infect 2011;62:487-9.

Garcia-Algar O, Vall O. *Hepatitis B virus infection from a needlestick.* Pediatr Inf Dis J 1997;16:1099.

Libois A, et al. *Transmission of hepatitis C virus by discarded-needle injury.* Clin Infect Dis 2005;41:129-30.

Haber PS et al. *Transmission of hepatitis C virus by needlestick injury in community settings.* J Gastroenterol Hepatol 2007;22(11):1882-5.

EAGA. *EAGA guidance on HIV post-exposure prophylaxis. Updated guidance on occupational HIV post-exposure prophylaxis (PEP) from the UK Chief Medical Officers' Expert Advisory Group on AIDS (EAGA), 2015.*

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