
Managing sharps injuries and other occupational exposures to HIV, HBV, and HCV in the dermatology office



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Dermatologists and their staff are at risk for needlestick injuries and exposures to body fluids. Despite the availability of treatment to reduce the risk of blood-borne infection, many exposures go unreported. This paper identifies current recommendations and the specific details for response to occupational exposures to HIV, hepatitis B virus, and hepatitis C virus in the dermatology office. Issues surrounding each virus are discussed individually, and a summary step-by-step algorithm of how to proceed in the event of an occupational exposure is presented. In addition, a focused Practice Improvement Activity that is based on this paper and provides Maintenance of Certification credit has been developed. To view and participate, visit <https://secure.dataharborsolutions.com/abdermorg/>. (J Am Acad Dermatol 2017;77:946-51.)

Key words: hepatitis B; hepatitis C; HIV; needlestick injuries; occupational exposures.

The practice of dermatology is heavily weighted toward surgical procedures, and injuries related to needles and skin hooks are common. Recapping of needles is a major risk factor, but many injuries also occur outside of this clinical setting. A German study of needlestick injuries among health care workers found that 31.4% of respondents had sustained at least 1 needlestick injury in the previous 12 months.¹ Of all occupational groups, physicians had the highest risk: 55.1%. Overall, 34% of the injuries could have been avoided with the use of safety devices. Survey data from 336 dermatologists indicates that 85.1% reported a sharps injury and 40.6% reported at least 1 injury during the past year.² Perhaps the most disturbing number from this study is that 64% of respondents noted having a sharps injury that went unreported. Dermatologists at academic institutions were more likely to report injuries than those in private practice. Of surveyed dermatology residents in the United States, 45.2%

Abbreviations used:

anti-HBs:	antibody to hepatitis B surface antigen
CDC:	Centers for Disease Control and Prevention
HBeAg:	hepatitis B e antigen
HBIG:	hepatitis B immunoglobulin
HBsAg:	hepatitis B surface antigen
HBV:	hepatitis B virus
HCV:	hepatitis C virus
PEP:	postexposure prophylaxis

responded that they did not report needlestick injuries.³

With ready availability of both sharps engineered to reduce injury risk and prophylaxis to reduce risk of transmitted disease, dermatologists need to reevaluate their use of sharps and their adherence to Centers for Disease Control and Prevention (CDC) occupational exposure recommendations. Zika virus and other rare transmission possibilities should also

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be considered by health care providers working in international settings.⁴

SCENARIO

When a member of a care team sustains a penetrating injury from a skin hook during a surgical procedure, what are the associated risks and what steps should be taken? The 3 most common blood-borne infections transmitted through sharps injury are HIV, hepatitis B virus (HBV), and hepatitis C virus (HCV). Other infections, including hemorrhagic fever viruses, human T-cell leukemia viruses I and II, and malaria, are almost never reported in the United States.⁵⁻⁸

Risk factors that may increase infection transmission include deep injury, presence of visible blood on the injury device, injury with a needle from an artery or vein, hollow-bore needle injury, and large-volume splashes.^{1,5-13} Actual risk of transmission depends on several factors, including injury type, viral pathogen load, recipient immune status, and risk reduction strategies implemented after exposure.

HIV

Occupational exposures. HIV seroprevalence in the general US population is approximately 0.13%,¹³ and the environmental survival half-life of HIV is reported to be from 28 hours to several days.^{14,15} Most health care exposures to HIV are percutaneous (skin cut or puncture), with a transmission rate of 0.3% (95% confidence interval, 0.2%-0.5%).¹³ After mucosal exposure, the risk of HIV transmission to a health care worker is estimated to be 0.09% (95% confidence interval, 0.01%-0.50%).¹³ Transmission risk following exposure of nonintact skin has not been quantified; however, the rate is thought to be less than 0.1%.¹⁶

The HIV transmission risk after a percutaneous (skin cut or puncture) exposure is approximately 0.3%, compared with 0.09% for a mucous membrane (splash) exposure.^{9,10}

Diagnostic testing. After an occupational exposure, the source patient should be tested for HIV with the fourth-generation test, which is a combined antibody and antigen test performed on blood or saliva.¹⁶

Postexposure prophylaxis. Well-documented guidelines are available on how to care for a health care provider exposed to HIV. Important points from the US Public Health Service Guidelines¹⁷ include the following:

1. "Occupational exposures to HIV should be considered urgent medical concerns and treated immediately.... HIV post-exposure prophylaxis (PEP) should be initiated as soon as possible, preferably within hours of exposure."
2. "If the HIV status of a source patient for whom the practitioner has a reasonable suspicion of HIV infection is unknown...antiretroviral medications should be started immediately rather than delayed. If the source patient is [subsequently] determined to be HIV negative, PEP should be discontinued."
3. "PEP should be administered [if the source patient is positive] for 4 weeks, if tolerated."

HBV

Occupational exposures. Although blood is the most important vehicle of HBV transmission in the health care setting, other potentially infectious substances are synovial, cerebrospinal, pleural, peritoneal, pericardial, and amniotic fluids. Saliva, tears, vomitus, sputum, and urine are not considered potentially infectious unless they contain blood. Percutaneous exposure or exposure through nonintact skin can result in HBV transmission.¹⁸⁻²⁰

HBV transmission risk is related to the degree of contact with blood and the hepatitis B e antigen (HBeAg) status of the source patient. HBV infection risk and development of clinical hepatitis when the source blood is positive for both hepatitis B surface antigen (HBsAg) and HBeAg is 22% to 31%; the risk of serologic evidence of HBV infection is 37% to 62%.^{21,22} In contrast, the risk of clinical hepatitis development from a needle contaminated with HBsAg-positive, HBeAg-negative blood is 1% to 6%; the risk of development of serologic evidence of infection is 23% to 37%.^{21,22}

The Occupational Health and Safety Administration mandates that HBV vaccination be available for health care personnel at no charge within 10 days

CAPSULE SUMMARY

- Dermatologists have a high rate of needlestick injuries and body fluid exposures.
- Many dermatologists do not follow the US Centers for Disease Control and Prevention recommendations after an exposure.
- Improvement in injury reporting by clinical personnel and subsequent appropriate management can reduce the risk of blood-borne disease transmission.

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