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Occupational exposures to human immunodeficiency virus, hepatitis B virus, and hepatitis C virus: risk, prevention, and management

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In dental settings, the transmission of bloodborne pathogens, such as human immunodeficiency virus (HIV), hepatitis B virus (HBV), and hepatitis C virus (HCV), is a rare event. Because the consequences can be serious, however, dental practices should have detailed plans to prevent these infections and to manage any exposures that occur. Theoretically, transmission could occur from patient to dental health care personnel (DHCP), DHCP to patient, and from one patient to another. Transmission is most likely to be from patient to DHCP, who frequently contact blood and blood-contaminated saliva during dental procedures. Exposures that might place DHCP at risk of HBV, HCV, or HIV infection include percutaneous injuries (eg, a needlestick or cut with a sharp object), or contact between potentially infectious blood, tissues, or other body fluids and mucous membranes of the eye, nose, or mouth or nonskin (eg, exposed skin that is chapped, abraded, or afflicted with dermatitis). Percutaneous injuries pose a greater risk of transmission.

Avoiding occupational exposures to blood is the primary way to prevent transmission of HBV, HCV, and HIV to health care personnel (HCP) [1].

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Methods to reduce the risk of occupational exposures have included the use of standard precautions (which incorporates universal precautions), modifications of work practices, and, more recently, the adoption of devices with safety features. Such measures have proved effective in decreasing percutaneous injuries among dentists over recent years [2–5]. Nonetheless, needlesticks and other blood contacts continue to occur. Thus, an established protocol for postexposure management that sets forth procedures for promptly reporting and evaluating occupational exposures is essential for all dental facilities. This article discusses the risk of occupational transmission of bloodborne pathogens in dental settings, strategies to prevent or reduce occupational exposures, and the management of such exposures, including postexposure prophylaxis (PEP) when indicated.

Risk of occupational transmission of bloodborne pathogens to DHCP

The risk of occupational exposure to bloodborne viruses is largely determined by their prevalence in the patient population, the likelihood of acquiring the infection after a single contact, and the nature and frequency of blood contacts. These factors have been assessed by seroprevalence studies, by prospective studies of HCP, and by studies of occupational contact with blood and other body fluids.

Risk of occupational transmission of HIV

Information available from the Centers for Disease Control and Prevention (CDC) indicates that the risk of transmitting HIV to DHCP remains very small. As of December 2001, there were no DHCP among the 57 United States HCP with documented HIV seroconversion after a specific exposure to a known HIV-infected source [6]. The CDC has received reports of an additional 137 HCP with possible occupational HIV transmission–of these, only six were DHCP. For each of the 137, no other risk for infection, such as sexual or drug behavior or blood transfusion, could be identified during follow-up. Each of the six DHCP reported a history of percutaneous or mucous membrane exposure to blood or body fluids in the dental setting, but seroconversion could not be linked to a specific exposure. Other evidence supporting a very small risk includes seroprevalence studies showing low rates of HIV infection among DHCP, including oral surgeons [2,3,7].

Prospective studies worldwide indicate that the average risk of HIV infection after a single percutaneous exposure to HIV-infected blood is 0.3% (1 in 300) [8]; after an exposure of mucous membranes in the eye, nose, or mouth, approximately 0.1% (1 in 1000) [9]. The precise risk of transmission after skin exposures is not known but is believed to be even smaller.

Several factors affect the risk of HIV transmission after an occupational exposure. Laboratory studies have found that if needles that pass through

latex gloves are solid rather than hollow-bore or are of small gauge (eg, anesthetic needles commonly used in dentistry), they transfer less blood [10]. In a retrospective case-control study of HCP, an increased risk for HIV infection was associated with exposures to a relatively large volume of blood (as indicated by a deep injury, injury with a device that was visibly contaminated with the patient's blood, or a procedure that involved a needle placed in a vein or artery) [11]. The risk also was increased if the exposure was to blood from patients with terminal illness, possibly reflecting the higher titer of HIV in late-stage AIDS.

Risk of occupational transmission of HBV

HBV, a well-recognized occupational risk for DHCP, is transmitted by percutaneous or mucosal exposure to the blood of a person with either acute or chronic HBV infection. Persons infected with HBV can transmit the virus for as long as they are surface antigen (HBsAg) positive. If the source is also positive for hepatitis B e antigen (HBeAg [a marker of increased infectivity]), the risk of infection is at least 30%, approximately 10 times higher than for exposure to a source positive for HBsAg alone [12].

Over the past two decades, occupational infections of HBV among HCP have declined dramatically [13]. For example, estimated HBV infections among HCP declined from 17,000 in 1983 to 400 in 1995 [14]. Since the hepatitis B vaccine became available in 1982, over 90% of US dentists have been vaccinated and serologic evidence of past HBV infection decreased from prevaccine levels of 14% in 1972 to 8% to 9% in 1989 [15]. Since 1989, levels have remained relatively unchanged (Chakwan Siew, PhD, American Dental Association, Chicago, IL, personal communication, November 2002). These decreased infection rates probably reflect not only increased levels of immunity due to the vaccine but increased use of other preventive measures (eg, standard precautions) as well. It is reasonable to expect that infection rates will decline further as vaccinations remain high among young dentists and as older dentists with lower vaccination rates—and higher rates of infection—retire [15]. These trends eventually would result in almost all dentists being protected from HBV infection.

Risk of occupational transmission of HCV

HCV is not transmitted efficiently through occupational exposures to blood. Follow-up studies of HCP exposed to HCV-infected blood through percutaneous or other sharps injuries have found that the rate of seroconversion averaged 1.8% (range, 0% to 7%) [16–19], with one study indicating that transmission occurred from hollow-bore needles but not other sharps [17]. Similarly, in a study that evaluated risk factors for infection, a history of accidental needlesticks was the only occupational risk

factor independently associated with HCV infection [20]. Although these studies did not document seroconversion associated with mucous membrane or nonintact skin exposure, at least two cases of transmission of HCV from a blood splash to the conjunctiva [21,22] and one case of simultaneous transmission of HCV and HIV after nonintact skin exposure have been reported [23].

There are few data from which to estimate the occupational risk of HCV infection among HCP, but most studies suggest that the prevalence of this infection among dentists, surgeons, and hospital-based HCP is similar to that in the general population, about 1% to 2%, or approximately one tenth that of HBV infection [20,24–31]. A prospective study following hospital-based DHCP in San Francisco from 1984 to 1992 found that none of the 54 personnel became positive for HCV antibodies during that period [27]. Another study, conducted in 1991–1992 among 343 oral surgeons and 305 general dentists who had attended national meetings in the United States, found seroprevalence rates of 2.0% and 0.7%, respectively [30]; about 1% to 2% of 982 dentists and 121 dental hygienists and assistants attending a national meeting in 1999 were positive for HCV antibodies [31]. From these studies, one may tentatively conclude that the risk of occupational transmission of HCV to DHCP is very low.

Risk of percutaneous injury among DHCP

Observational studies and surveys indicate that percutaneous injuries among general dentists occur less frequently than among general and orthopedic surgeons and that they decreased in frequency between the mid-1980s and the mid-1990s [2–4,32]. This decline has been attributed to safer work practices, safer instrumentation or design, and continued worker education [5,7]. Percutaneous injuries among dental personnel generally occur outside the patient's mouth, involve very small amounts of blood, and are caused by burs, syringe needles, and other sharp instruments [3,4,32,33]. Among oral surgeons, limited data suggest that injuries may occur more frequently during fracture reductions using wires [7,34]. Experience, as measured by the years in practice, does not appear affect the risk of injury among general dentists or oral surgeons [4,7,34].

Prevention of occupational exposures to blood

Some exposures may be difficult to avoid (eg, when a sharp instrument or needle is dropped) but many are preventable. Methods used to prevent occupational exposures in dental settings include standard precautions, changes in technique, and modifications in the design of sharp instruments. Standard precautions include handwashing, use of barrier precautions, and careful handling and disposal of sharp instruments. Barrier precautions are

used to prevent exposures to skin and mucous membranes and should be appropriate for the type of procedure performed. Examples include gloves, masks, protective eyewear with side shields, and gowns. Changes in work techniques should incorporate specific practices to protect personnel who handle, use, assemble,or reprocess sharp devices or sharps disposal containers. For example, anesthetic needles on nondisposable syringes should be recapped only by a one-handed "scoop" technique or by using a mechanical device to hold the needle sheath. Other modifications in work practices include using instruments instead of fingers to guide anesthetic needles during injections or to retract tissue from the operative field during suturing. Engineering controls are intended to reduce exposure either by removing, eliminating, or isolating the hazard from DHCP. Such measures include incorporating safety features (eg, self-sheathing anesthetic needles) and changes in equipment design (eg, dental units designed to shield burs in handpieces) [5,32,35]. The use of such equipment as well as other strategies to reduce occupational exposures to blood should be included in the curriculum of dental educational programs and during job orientation as well as ongoing job training. In addition, DHCP should be encouraged to report exposure incidents, which can be used to identify unsafe devices or work practices.

Devices with engineered safety features

Mandated by the Needlestick Safety and Prevention Act [Public Law No. 106-430, November 6, 2000], changes to the Occupation Health and Safety Administration's (OSHA's) bloodborne pathogens standard were published January 18, 2001, and became effective April 18, 2001. These revisions clarify the need for employers to select safer needle devices as they become available and to involve employees in identifying and choosing such devices [36,37]. Safer versions of sharp devices used in hospital settings have become available, and their impact on reducing injuries has been studied [38,39]. Aspirating anesthetic syringes that incorporate safety features have been developed for dental treatment, but low injury rates limit assessment of their effect on reducing injuries among DHCP.

Experience in medical settings should be applicable to dentistry as well; evidence from medical practice suggests that devices with engineered safety features could reduce percutaneous injuries in dental settings. A program to prevent sharps injuries that includes a process to identify, screen, and evaluate safer dental devices should be developed by each dental practice and integrated into the existing infection control and safety program. Staff responsible for infection control should identify a team to develop, implement, and monitor the safety program. Under the revised OSHA bloodborne pathogen standard, this team should include employees directly responsible for patient care (eg, dentists, hygienists, and dental assistants) [36,37].

Vaccination against HBV infection

Because of the high risk of HBV infection among HCP, DHCP who perform tasks involving contact with blood, blood-contaminated body fluids, other body fluids, or sharps should be vaccinated [40–44]. Vaccination will protect both DHCP and patients from HBV infection and should be completed when dentists or other DHCP are still in their training program and before they have contact with blood. Prevaccination testing for previous infection is not indicated for persons being vaccinated because they have an occupational risk. One to 2 months after completing the 3-dose vaccination series, DHCP should be tested for antibody to HBsAg (anti-HBs). Knowledge of the antibody response aids in determining appropriate PEP or the need for additional doses of vaccine doses [42]. DHCP who do not respond adequately to the vaccine should complete a second 3-dose series or be evaluated to determine whether they are HBsAg positive. If a protective antibody response ($>$10mIU/ml) develops after vaccination, the person is considered immune. Vaccine-induced antibodies decline gradually over time, and 60% of persons who initially respond to vaccination will lose detectable antibodies over 12 years. Even so, immunity continues to prevent clinical disease or detectable viral infection. Vaccine responders do not need booster doses of vaccine or periodic serologic testing to monitor antibody concentrations [42].

Management of HCP potentially exposed to HIV, HBV, or HCV

Avoiding exposure remains the primary strategy for reducing occupationally acquired infection but occupational exposures will still occur. Each dental setting and training program should have written protocols for managing percutaneous injuries and exposures to blood of both mucous membranes and non-intact skin. These protocols should encourage prompt reporting, facilitate access to postexposure care, and ensure confidentiality for both the exposed DHCP and source patient. When appropriate, the policy must be consistent with the practices and procedures for worker protection required by OSHA's final rule on occupational exposure to bloodborne pathogens and current United States Public Health Service (USPHS) recommendations for managing occupational exposures to blood [43,44].

Reporting of exposures

DHCP (including students) who might reasonably be considered at risk of occupational exposure to blood or other potentially infectious fluids should be taught strategies to prevent blood exposures and the principles of postexposure management, including options for PEP, as part of their job orientation and ongoing job training. Studies have shown substantial underreporting of occupational blood exposures by DHCP, apparently

because they do not consider them to pose significant risk [45]. Thus, educational programs for DHCP should emphasize reporting all exposures as soon as possible, because certain interventions (eg, PEP for HIV and HBV) must be initiated promptly to be effective [44]. Reporting mechanisms must be easy to access, nonpunitive, and communicated to all personnel at risk. These mechanisms should also ensure the confidentiality of the employee's medical records and timely access to PEP.

Exposure assessment and emergency management

Before workers and students or others are placed at risk, a qualified health care professional should be selected who is capable of managing an occupational exposure, performing appropriate counseling, and carrying out all necessary medical follow-up and referral, in accordance with current USPHS recommendations. After the selection, dental employers and occupational and safety staff should familiarize that person about the types of blood contacts and dental instruments common in dentistry. This information will assist the health care professional to determine whether an in injury is severe enough to warrant PEP.

After an occupational blood exposure, exposed personnel should immediately report the exposure to a designated staff member (ie, a person knowledgeable in postexposure management), who should initiate referral to the qualified health care professional and complete necessary reports. If needed, first aid should be administered as soon as possible. Puncture wounds and other injuries to the skin should be washed with soap and water; mucous membranes should be flushed with water [44]. An antiseptic agent for wound care may be applied, but there is no evidence that using antiseptics or expressing fluid by squeezing the wound reduces the risk of transmission. Extraordinary measures, such as soaking injured tissues in bleach, excessive scrubbing, or doing anything else that challenges the integrity of the skin, should be avoided.

After any exposure, efforts should be made to identify and evaluate the source patient, clinically and epidemiologically, for evidence of HIV, HBV, and HCV. A dental staff member (never the injured worker) should discuss the incident with the source patient (if known) and initiate referral for medical evaluation and testing as indicated. State and local laws regarding consent for testing source persons must be followed. Confidentiality of the source patient must be maintained at all times.

Because many factors contribute to the risk of infection after an occupational exposure to blood, the following information should be included in the exposure report, recorded in the exposed person's confidential medical record, and provided to the qualified health care professional:

- Date and time of exposure; details of the procedure being performed, including where and how the exposure occurred and whether the

exposure involved a sharp device, the type and brand of device, and how and when during its handling the exposure occurred;
- Details of the exposure, including its severity and the type and amount of fluid or material. For a percutaneous injury, this would include the depth of the wound, gauge of the needle, and whether fluid was injected; for a skin or mucous membrane exposure, by the estimated volume of material, duration of contact, and the condition of the skin (eg, chapped, abraded, or intact); and
- Details about the exposure source—whether the source material was known to contain HIV or other bloodborne pathogens and, if the source was infected with HIV, the stage of disease, history of antiretroviral therapy, and viral load, if known.

Each occupational exposure should be evaluated individually for its potential to transmit HBV, HCV, and HIV. This evaluation should be based on the type and amount of body substance involved; the type of exposure (eg, percutaneous injury, exposure of mucous membranes or nonintact skin, bites resulting in blood exposure to either person involved); the infection status of the source; and the susceptibility of the exposed person [44]. All of these factors should be considered in assessing the risk of infection and the need for further follow-up (eg, PEP).

Management of exposures to HIV

DHCP exposed to HIV should be tested for HIV antibody as soon as possible to establish serostatus their before exposure. If the exposed person is initially seronegative for HIV, follow-up testing should be performed at 6 and 12 weeks and at 6 months to determine whether infection has occurred. Although instances of delayed seroconversion have been reported, routine follow-up beyond 6 months is not recommended. Follow-up testing for HBV and HCV infections should be conducted in accordance with current USPHS recommendations [44].

The qualified health care professional should provide counseling to exposed DHCP about their infection status, risk for infection, considerations for PEP, and results and interpretation of all tests. Information about the side effects of PEP regimens (eg, nausea, headache, diarrhea), the signs and symptoms of acute HIV infection, such as fever, rash, and flu-like illness, and the prevention of secondary transmission by abstaining from sex, using condoms, and avoiding blood or tissue donation should be emphasized.

Rationale for PEP

The ideal study to evaluate the efficacy of PEP after occupational exposure—prospective, randomized, and placebo controlled—is impractical because of the large sample of HCP that would be needed to detect

a significant benefit. Thus, the rationale and recommendations to establish PEP as a standard of care after an exposure to HIV-infected blood are based on indirect evidence of PEP efficacy, including data on HIV pathogenesis and human and animal studies on PEP.

Current information suggests that systemic infection does not occur immediately after an exposure. Thus, PEP can be considered biologically plausible, as there is a short window of opportunity during which PEP may limit or prevent viral replication. Animal studies have found that PEP prevented retroviral infection altogether or decreased its rate in some cases; efficacy was lower with delayed time to treatment, shorter duration of therapy, or decreased dose. How much these animal studies can be extrapolated to humans is largely unknown, however.

In the retrospective case-control study among HCP, PEP was associated with an 81% decrease in the risk of HIV seroconversion after percutaneous exposure to HIV-infected blood [11]. Although these results suggest efficacy, there were few cases, and cases and controls came from different sources. Trials of zidovudine (ZDV) and other antiretroviral drugs to prevent perinatal HIV transmission have shown considerable effectiveness [46], but only part of the protective effect of ZDV was explained by reduction of the HIV viral load in the maternal blood, indicating that other mechanisms were involved.

Failure of PEP to prevent HIV infection in HCP has been reported in at least 21 instances [44,47]. Possible factors have included exposure to a resistant strain, high titer or large inoculum, delayed initiation or short duration of the regimen, and host factors such as diminished cellular immune response.

Recommendations using PEP for occupational HIV exposures

Because most occupational exposures to HIV do not result in transmission, the decision to recommend PEP must balance the risk of infection (represented by details of the exposure itself and information about the exposure source) with the efficacy and adverse side effects of PEP. Most HIV exposures will warrant a two-drug regimen (Table 1), using two nucleoside analogues (eg, ZDV and lamivudine [3TC], 3TC and stavudine [d4T]). Adding a third drug should be considered only for exposures that pose an increased risk for transmission or in which the virus is known or suspected to be broadly resistant. One study found that 24% of DHCP exposed to a source patient subsequently found to be HIV negative took PEP [48]. Use of a rapid HIV test for establishing the serostatus of the source patient can prevent the unnecessary use of PEP and its associated adverse symptoms when results are provided to exposed HCP as soon as they are available [49]. If PEP is indicated, it should be started as soon as possible—within hours rather than days. The exposed person should be re-evaluated within 72 hours so that regimens can be altered as additional information becomes

Table 1
Recommended HIV postexposure prophylaxis for percutaneous injuries

	Infection status of source				
Exposure type	HIV positive class 1[a]	HIV positive class 2[a]	Source has unknown HIV status[b]	Unknown source[c]	HIV negative
Less severe[d]	Recommend basic 2-drug PEP	Recommend expanded 3-drug PEP	Generally, no PEP warranted, but consider basic 2-drug PEP[e] for source with HIV risk factors[f]	Generally, no PEP warranted, but consider basic 2-drug PEP[e] in settings where exposure to HIV-infected persons is likely	No PEP warranted
More severe[g]	Recommend expanded 3-drug PEP	Recommend expanded 3-drug PEP	Generally, no PEP warranted, but consider basic 2-drug PEP[e] for source with HIV risk factors[f]	Generally, no PEP warranted, but consider basic 2-drug PEP[e] in settings where exposure to HIV infected persons is likely	No PEP warranted

[a] HIV positive, class 1—asymptomatic HIV infection or known low viral load (<1,500 RNA copies/mL). HIV positive, class 2—symptomatic HIV infection, AIDS, acute seroconversion, or known high viral load. If drug resistance is a concern, obtain expert consultation. Initiation of postexposure prophylaxis (PEP) should not be delayed pending expert consultation and, because expert consultation alone cannot substitute for face-to-face counseling, resources should be available to provide immediate evaluation and follow-up care for all exposures.

[b] Source of unknown HIV status (eg, deceased source person with no samples available for HIV testing).

[c] Unknown source (eg, a needle for a sharps disposal container).

[d] Less severe (eg, a solid needle and superficial injury).

[e] "Consider PEP" indicates that PEP is optional and should be based on an individualized decision by the exposed person in consultation with the treating clinician.

[f] If PEP is taken and the source is later determined to be HIV negative, PEP should be discontinued.

[g] More severe (eg, large-bore hollow needle, deep puncture, visible blood on device, or needle used in patient's artery or vein).

Adapted from CDC. Updated U.S. Public Health Service guidelines for the management of occupational exposures to HBV, HCV, and HIV and recommendations for postexposure prophylaxis. MMWR 2001;50(No. RR-11):24; with permission.

available. When a source patient is determined to be HIV negative, PEP should be discontinued.

Safety concerns are important when comparing the risks and benefits of PEP. Should an exposed DHCP choose to take PEP, it is important that she or he complete the regimen. Failure to complete PEP often occurs because of the side effects, particularly among HCP taking the three-drug regimen. Counseling about potential side effects can improve compliance as well as the management of specific problems with other medications. Whenever PEP is used, monitoring for drug toxicity should include testing at baseline and after 2 weeks. If toxicity is noted, the qualified health care professional should consider reducing the dose and determine whether further tests are indicated.

Management of exposures to HBV

For exposures to HBV, the need for PEP (with hepatitis B vaccine or hepatitis B immunoglobuolin [HBIG]), vaccination, or both depends on the surface antigen (HBsAg) status of the source patient and the hepatitis B vaccination and vaccine-response status of the exposed person. Table 2 summarizes current recommendations for managing different HBV exposures [44]. Prophylaxis with HBIG should be administered within 24 hours of exposure; its effectiveness is unknown if given later than 7 days after exposure. In addition, because vaccination status is an important factor in determining appropriate PEP for HBV exposures, the CDC now recommends that HCP who have contact with blood and are at risk for sharps injuries be tested for antibody response 1 to 2 months after the third dose of the vaccine series [42].

Management of exposures to HCV

Unfortunately, no vaccine is available to prevent HCV, and immune globulin or antiviral agents, such as alpha-interferon, are not recommended for postexposure management. Still, in the absence of effective postexposure prophylaxis, HCP with an occupational exposure (eg, needlestick or other sharps injury) to an HCV-positive source patient may benefit from knowing their infection status so that they can seek evaluation and treatment from a specialist knowledgeable in this area [44,50].

Current guidelines recommend that individual health-care institutions establish policies and procedures for HCV testing of persons after percutaneous or mucosal exposures to blood and ensure that all personnel are familiar with these policies and procedures [50]. At a minimum, such policies should include:

- For the source, performance of baseline testing for anti-HCV.
- For the person exposed to an anti-HCV positive source:
- Performance of baseline testing for anti-HCV and liver enzyme activity (ALT).

Table 2
Recommended postexposure prophylaxis for exposure to hepatitis B virus

Vaccination and antibody response status of exposed workers[a]	Treatment		
	Source HBsAg[b] positive	Source HBsAg[b] negative	Source unknown or not available for testing
Unvaccinated	HBIG[c] × 1 and initiate HB vaccine series[d]	Initiate HB vaccine series	Initiate HB vaccine series
Previously vaccinated			
Known responder[e]	No treatment	No treatment	No treatment
Known nonresponder[f]	HBIG × 1 and initiate revaccination or HBIG × 2[g]	No treatment	If known high-risk source, treat as if source were HBsAg positive
Antibody response unknown	Test exposed person for anti-HBs[h] 1. If adequate,[e] no treatment is necessary 2. If inadequate,[f] administer HBIG × 1 and vaccine booster	No treatment	Test exposed person for anti-HBs 1. If adequate,[d] no treatment is necessary 2. If inadequate,[d] administer vaccine booster and recheck titer in 1–2 months

[a] Persons who have previously been infected with HBV are immune to reinfection and do not require postexposure prophylaxis.
[b] Hepatitis B surface antigen.
[c] Hepatitis immune globulin; dose is 0.06 mL/kg intramuscularly.
[d] Hepatitis B vaccine.
[e] A responder is a person with adequate levels of serum antibody to HBsAg (ie, anti-HBs $\geq$10 mIU/mL).
[f] A nonresponder is a person with inadequate response to vaccination (ie, serum anti-HBs <10 mIU/mL).
[g] The option of giving one dose of HBIG and reinitiating the vaccine series is preferred for nonresponders who have not completed a second 3-dose vaccine series. For persons who previously completed a second vaccine series but failed to respond, two doses of HBIG are preferred.
[h] Antibody to HBsAg.

Adapted from CDC. Updated U.S. Public Health Service guidelines for the management of occupational exposures to HBV, HCV, and HIV and recommendations for postexposure prophylaxis. MMWR 2001; 50 (No. RR-11):22; with permission.

- Performance of follow-up testing (eg, at 4 to 6 months) for anti-HCV and ALT activity (if earlier diagnosis of HCV infection is desired, testing for HCV RNA may be performed at 4 to 6 weeks).
- Confirmation of all anti-HCV results reported positive by enzyme immunoassay through supplemental testing (eg, recombinant immunoblot assay) [50].
- Avoidance of PEP with immune globulin or antiviral agents.

Summary

Current data indicate that the risk for transmitting bloodborne pathogens in dental health care settings is low. Pre-exposure hepatitis B vaccination and the use of standard precautions to prevent exposure to blood are the most effective strategies for preventing DHCP from occupational infection with HIV, HBV or HCV. Each dental health care facility should develop a comprehensive written program for preventing and managing occupational exposures to blood that: (1) describes the types of blood exposures that may place DHCP at risk for infection; (2) outlines procedures for promptly reporting and evaluating such exposures; and (3) identifies a health care professional who is qualified to provide counseling and perform all medical evaluations and procedures in accordance with the most current USPHS recommendations. Finally, resources should be available that permit rapid access to clinical care, testing, counseling, and PEP for exposed DHCP and the testing and counseling of source patients.

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