Update on Emerging Infections: News From the Centers for Disease Control and Prevention

Editor's note: This article is part of a regular series on emerging infections from the Centers for Disease Control and Prevention (CDC) and the EMERGEncy ID NET, an emergency department–based and CDC-collaborative surveillance network. Important infectious disease public health information with relevance to emergency physicians is reported. The goal of this series is to advance knowledge about communicable diseases in emergency medicine and foster cooperation between the front line of clinical medicine and public health agencies.

The Management of Occupational Exposures to Blood and Body Fluids: Revised Guidelines and New Methods of Implementation


In June 2001, the Centers for Disease Control and Prevention (CDC) released updated guidelines for the treatment of exposures to blood and body fluids in health care providers.1 This article provides a brief summary of how these guidelines differ from their predecessors,2-4 a discussion of new tools for implementing the guidelines, and an abridged version of the guideline. The full guideline is available at http://www.cdc.gov/mmwr/pdf/RR/RR5011.pdf.

Major Changes in the Guidelines

Emergency physicians should be aware of the following changes and shifts in emphasis that differentiate this set of guidelines from its predecessors.

Changes related to the transmission of HIV:

• The CDC is concerned with the unnecessary use of long courses of HIV postexposure prophylaxis (PEP) drug regimens in health care providers who are exposed to blood and/or body fluids from non–HIV-infected source patients. The new guidelines encourage the use of the rapid HIV test to determine the source’s HIV status in real time, thereby eliminating more than 1 dose of antiviral PEP to health care providers exposed to HIV-negative blood. The guidelines emphasize that when rapid HIV testing is not available, it is imperative that the health care provider be given a 48- to 72-hour follow-up visit, at which time any prescribed PEP can be discontinued if the source’s HIV status is negative.

• The CDC is also concerned that 3-drug therapy, with its higher incidence of complications, is being overused. Three-drug therapy is now limited to cases in which the skin is punctured with an object from a source known to be HIV positive. Decision tables have been revised and nomenclature changed to clarify which health care providers should be offered no PEP, 2-drug PEP, or 3-drug PEP.

• At the same time, an emphasis is placed on the following: the consideration of the health care provider’s preexisting medical conditions and pregnancy status; the potential for drug interactions and side effects; and the potential for HIV drug resistance when
selecting drugs for PEP. Providers are urged to contact local experts or the National Clinicians’ Postexposure Prophylaxis Hotline (PEPLine) at 888-448-4911, when they encounter a case that provides a challenge regarding the decision to give PEP or the choice of PEP drugs.

Changes related to hepatitis B virus transmission:
- The CDC now believes that successful hepatitis B vaccination (as documented by anti–hepatitis B surface antibodies ≥10 IU at some time during the health care provider’s life) confers lifetime protection. There is no need to test either the source or the health care provider when the health care provider reports with certainty that he or she has been successfully immunized.
- The guidelines clarify the treatment of health care providers who have not responded to hepatitis B vaccine. Health care providers who did not respond to a single vaccine series (3 shots) are differentiated from those who did not respond to 2 vaccine series (6 shots). The former group, when exposed to hepatitis B surface antigen (HBsAg)—positive blood, may receive either hepatitis B vaccine and hepatitis B immune globulin (HBIG) or 2 HBIG doses 1 month apart, whereas the latter group should be given the sequential HBIG shots.

Changes related to hepatitis C virus transmission:
- There are no changes regarding hepatitis C. There continues to be no recommended treatment for prophylaxis against hepatitis C infection.

METHODS FOR IMPLEMENTING THE GUIDELINES

The CDC is aware that these guidelines are sufficiently complex that the typical physician is unlikely to fully internalize them for application to routine cases. Furthermore, for complicated cases, especially those involving clinically important exposures to strains of HIV that are resistant to certain antiviral medications, the guidelines are insufficiently detailed to explicitly guide therapy. In response to these shortcomings, the CDC has partially sponsored 2 projects designed to address these issues and facilitate care. The National Clinicians’ PEPLine (available 24 hours a day, 7 days a week) provides advice regarding the management of body fluid exposures among health care personnel. This service is designed to provide practitioners with help regarding difficult-to-manage cases that are not explicitly covered by the guidelines. The Needlestick! Web site, at http://www.needlestick.mednet.ucla.edu, is designed to help practitioners manage routine cases. Each aid is now considered in detail.

The National Clinicians’ PEPLine

The National Clinicians’ PEPLine offers 24-hour telephone consultation for clinicians managing occupational exposures to HIV and hepatitis B and C. Expert clinicians from the University of California, San Francisco and San Francisco General Hospital provide immediate, confidential, and free consultation services to callers. Although the service is available for any case, it is intended primarily for cases that present a management challenge, such as the use of PEP in pregnant health care providers and the selection of antiviral agents for PEP when HIV drug resistance is suspected.

Needlestick!

There is ample evidence that guidelines are only effective at improving care when they are actively implemented. In this instance, the complete guideline is more than 50 pages long. The abridged version you are reading is 8 pages. It is unlikely that you will be able to read this article once, internalize all the clinically relevant data, and replicate the guideline with 100% accuracy when confronted with an exposed health care provider at 3 AM on your next shift. Even if you think you can, there is evidence that you probably cannot. In response to this problem, Needlestick! was developed.

Needlestick! is a Web-based electronic medical record (EMR) that is intended to assist emergency physicians with the management of occupational exposure to blood and bodily fluids. Embedded in the EMR are the CDC guidelines.

In developing the program logic, we encountered content regions in which the formal guideline was insufficiently detailed to permit direct translation into software rules. We consulted with several content experts at the CDC, as well as with local experts, to develop contingency tables that address all possible situations (contingency tables can be accessed at http://www.needlestick.mednet.ucla.edu/help/conting.htm). Thus, programming rules were more detailed than those contained in the printed guideline, but never contradicted them.

CDC UPDATE

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Abridged Version of the Updated US Public Health Service Guidelines for the Management of Occupational Exposures to Hepatitis B Virus, Hepatitis C Virus, and Human Immunodeficiency Virus and Recommendations for Postexposure Prophylaxis


Note: What follows is an abridged version of the Centers for Disease Control and Prevention (CDC) guidelines. We tried to retain the rationale for each recommendation, while thinning out animal studies and peripheral material that would not be of interest to most readers. The guidelines begin with definitions and a discussion of the transmission and prevention of transmission of hepatitis B, hepatitis C, and HIV. They conclude with recommendations for the evaluation and treatment of exposures.

SUMMARY

This report updates and consolidates all previous US Public Health Service recommendations for the management of health care personnel who have occupational exposure to blood and other body fluids that might contain hepatitis B virus (HBV), hepatitis C virus (HCV), or HIV.

Recommendations for HBV postexposure management include initiation of the hepatitis B vaccine series to any susceptible, unvaccinated person who sustains an occupational blood or body fluid exposure. Postexposure prophylaxis (PEP) with hepatitis B immune globulin (HBIG) and/or hepatitis B vaccine series should be considered for occupational exposures after evaluation of the hepatitis B surface antigen status of the source and the vaccination and vaccine-response status of the exposed person. Guidance is provided to clinicians and exposed health care personnel for selecting the appropriate HBV PEP.

Immune globulin (IG) and antiviral agents (eg, interferon with or without ribavirin) are not recommended for PEP of HCV. For HCV postexposure management, the HCV status of the source and the exposed person should be determined, and for health care personnel exposed to an HCV-positive source, follow-up HCV testing should be performed to determine whether infection develops.

Recommendations for HIV PEP include a basic 4-week regimen of 2 drugs (zidovudine [ZDV] and lamivudine [3TC]; 3TC and stavudine [d4T]; or didanosine [ddI] and d4T) for most HIV exposures and an expanded regimen that includes the addition of a third drug for HIV exposures that pose an increased risk for transmission. When the source person’s virus is known or suspected to be resistant to 1 or more of the drugs considered for the PEP regimen, the selection of drugs to which the source person’s virus is unlikely to be resistant is recommended.

In addition, this report outlines several special circumstances (eg, delayed exposure report, unknown source person, pregnancy in the exposed person, resistance of the source virus to antiretroviral agents, toxicity of the PEP regimen) in which consultation with local experts and/or the National Clinicians’ Postexposure Prophylaxis Hotline (PEPline; 888-448-4911) is advised.

Occupational exposures should be considered urgent medical concerns to ensure timely postexposure management and administration of HBIG, hepatitis B vaccine, and/or HIV PEP.

INTRODUCTION

Avoiding occupational blood exposures is the primary way to prevent transmission of HBV, HCV, and HIV in health care settings. However, hepatitis B immunization and postexposure management are integral components of a complete program to prevent infection after bloodborne pathogen exposure and are important elements of workplace safety.

Definition of Health Care Personnel and Exposure

In this report, health care personnel are defined as persons (eg, employees, students, contractors, attending clinicians, public safety workers, volunteers) whose activities involve contact with patients or with blood or other body fluids from patients in a health care, laboratory, or public safety setting.

An exposure that might place health care personnel at risk for HBV, HCV, or HIV infection is defined as a percutaneous injury (eg, a needlestick or cut with a sharp object) or contact of mucous membrane or nonintact skin (eg, exposed skin that is chapped, abraded, or afflicted with dermatitis) with blood, tissue, or other body fluids that are potentially infectious.

In addition to blood and body fluids containing visible blood, semen and vaginal secretions are also considered potentially infectious. The following fluids are also considered potentially infectious: cerebrospinal fluid, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid, and amniotic fluid. The risk for transmission of HBV, HCV, and HIV infection from these fluids is unknown; the potential risk to health care personnel from occupational exposures has not been assessed by epidemiologic studies in health care settings. Feces, nasal secretions, saliva, sputum, sweat, tears, urine, and vomitus are not considered potentially infectious, unless they contain blood. The risk for transmission of