



Introduction

Infection Control in Healthcare Personnel: Epidemiology and Control of Selected Infections Transmitted Among Healthcare Personnel and Patients (2024)

AT A GLANCE

Introduction from the Infection Control in Healthcare Personnel: Epidemiology and Control of Selected Infections Transmitted Among Healthcare Personnel and Patients (2024) guideline.

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Scope and Purpose

The prevention of infectious disease transmission among healthcare personnel (HCP) and patients is a critical component of safe healthcare delivery in all healthcare settings. Occupational Health Services (OHS) provides occupational infection prevention and control (IPC) expertise to a healthcare organization (HCO) and services to HCP, such as those aimed at reducing risks for acquiring infections on the job (e.g., immunizing HCP) and managing HCP infectious exposures and illnesses that prevent the transmission of infectious diseases from potentially infectious HCP to patients, HCP, and others.

In 1998, the Centers for Disease Control and Prevention (CDC) published *Guideline for infection control in health care personnel, 1998*^[1] ("1998 Guideline"), which provided information and recommendations for OHS on the prevention of transmission of infectious diseases among HCP and patients. This update, *Infection Control in Healthcare Personnel: Epidemiology and Control of Selected Infections Transmitted Among Healthcare Personnel and Patients*, supersedes updated sections of the *1998 Guideline, Part E: Epidemiology and Control of Selected Infections Transmitted Among Health Care Personnel and Patients*, and their corresponding recommendations in Part II of the *1998 Guideline*.

Additional updated sections are forthcoming.

HCP may be exposed to contagious infectious diseases in the community or in the workplace. Only those infectious diseases that may be transmitted in healthcare settings are addressed in the update.

The updated recommendations are intended to guide OHS in the management of exposed or infected HCP who may be contagious to others in the workplace. The updated recommendations in these sections focus on postexposure management, including postexposure prophylaxis (PEP),

for exposed HCP and work restrictions for exposed or infected HCP. Each section describes occupational exposures; clinical features of disease, such as the incubation period and clinical signs and symptoms; and disease testing and diagnosis.

This update does not address non-infectious elements of occupational health, such as slips, trips and falls; patient handling injuries; chemical exposures; HCP burnout; and workplace violence. This update does not provide recommendations about other aspects of IPC such as environmental infection control and isolation precautions for patients. Readers are referred to Advisory Committee on Immunization Practices (ACIP) resources for recommendations related to HCP immunization. Further, this update does not address emerging pathogens, clinical treatment, or outbreak management, nor does it describe all federal, state, and local requirements related to occupational IPC, such as those maintained by the Occupational Safety and Health Administration (OSHA).

Rationale

This update is intended to:

- provide current infection-specific guidance on the management of exposed or potentially infectious HCP, and
- prevent the transmission of infectious diseases among HCP and patients.

Audience

The recommendations in this update are intended for use by OHS leaders and staff who provide occupational IPC services to HCP.

This update may also provide relevant information to additional individuals or groups whose responsibilities affect or address occupational IPC services, such as the administrators and leaders of HCO who provide resources for the delivery and management of occupational IPC services, infection prevention departments, human resources departments, and regulatory compliance groups. The recommendations in this document are intended to benefit persons who work in healthcare settings by facilitating the prevention and management of infectious exposures and illnesses, as well as patients and others with whom infectious HCP may interact.

Definitions

In this document, "HCP" refers to all paid and unpaid persons serving in healthcare settings who have the potential for direct or indirect exposure to patients or infectious materials, including body substances; contaminated medical supplies, devices, and equipment; contaminated environmental surfaces; or contaminated air. For this document, HCP does not include dental healthcare personnel, autopsy personnel, and clinical laboratory personnel, as recommendations to address occupational IPC for these personnel are available elsewhere [\[2\]](#) [\[3\]](#) [\[4\]](#) [\[5\]](#).

The term "healthcare settings" refers to places where healthcare is delivered and includes, but is not limited to, acute care facilities, long-term acute care facilities, inpatient rehabilitation facilities, nursing homes and assisted living facilities, home healthcare, vehicles where healthcare is delivered (e.g., mobile clinics), and outpatient facilities, such as dialysis centers, physician offices, and others.

"OHS" is used synonymously with "Employee Health," "Employee Health Services," "Employee Health and Safety," "Occupational Health," and other such programs. OHS refers to the group, department, or program that addresses many aspects of health and safety in the workplace for HCP, including the provision of clinical services for work-related injuries, exposures, and illnesses. In healthcare settings, OHS addresses workplace hazards including communicable diseases; slips, trips and falls; patient handling injuries; chemical exposures; HCP burnout; and workplace violence.

Methods

A Workgroup of the Healthcare Infection Control Practices Advisory Committee (HICPAC) was convened to update the *1998 Guideline*. The Workgroup consists of current and former HICPAC members and representatives from professional organizations, including the American College of Occupational and Environmental Medicine (ACOEM), the Infectious Diseases Society of America (IDSA), and the Society for Healthcare Epidemiology of America (SHEA). Additional support and technical advice was provided by CDC subject matter experts, including experts at the National Institute of Occupational Safety and Health (NIOSH).

To update each section of the *1998 Guideline*, the Workgroup reviewed the *1998 Guideline* to assess which recommendations remained applicable and should be carried forward; which recommendations required alignment with other current CDC resources; and which recommendations should be archived. The Workgroup, with the assistance of CDC technical advisors and subject matter experts, conducted an

informal review of current CDC resources, guidance, and guidelines ([Appendix 2 \[PDF - 77 Pages\]](#) [PDF](#), Methods, Tables 1-10). The results of this review and any subsequent updates were vetted with CDC subject matter experts to ensure appropriate harmonization across CDC ([Appendix 2 \[PDF - 77 Pages\]](#) [PDF](#), Methods, Figures 1-5). Recommendations and supporting narratives were presented at public HICPAC meetings for review, input, and approval.

Updated recommendations and accompanying narratives for the Diphtheria, Meningococcal Disease, Pertussis, group A *Streptococcus*, and Rabies sections were presented at [HICPAC meetings](https://www.cdc.gov/hicpac/minutes.html) (<https://www.cdc.gov/hicpac/minutes.html>) in November 2017, February 2018, August 2018, November 2018, May 2019, August 2021, November 2022, June 2023, and November 2023. [\[6\]](#) Following further revisions, CDC submitted the updated sections to CDC clearance for subsequent posting to [Regulations.gov](http://www.regulations.gov) [\[7\]](#) (<http://www.regulations.gov>) for public comment. The received comments were compiled and reviewed at a public HICPAC meeting. Any subsequent revisions were incorporated into the updated sections for final review and approval at a public HICPAC meeting. The final documents will be posted on the Division of Healthcare Quality Promotion (DHQP) [Infection Control Guidelines and Guidance library](https://www.cdc.gov/infection-control/hcp/guidance/index.html) (<https://www.cdc.gov/infection-control/hcp/guidance/index.html>) website.

Background

OHS provides critical services to HCP as part of a multifaceted approach to prevent the transmission of infectious diseases in healthcare settings. OHS responsibilities include identifying and managing infectious exposures and illnesses in HCP. Each infectious disease that can be transmitted in healthcare settings has specific job-related risks for acquisition or transmission, clinical presentations, diagnostic testing, postexposure management strategies, and treatments. OHS staff must be familiar with these aspects of transmissible infectious diseases to maintain HCP safety in the workplace and prevent disease transmission.

Each section of the update provides narrative information about aspects of the pathogen or infection with which OHS staff need familiarity to identify exposures or illnesses and to offer appropriate postexposure management, including PEP and work restrictions, or treatment. General topics in the narrative for each pathogen or infection section include epidemiology of transmission in healthcare settings; referral to immunization guidance, when appropriate; defining occupational exposures; clinical features of disease; testing and diagnosis; and postexposure management and prophylaxis.

Occupational Exposures

OHS staff identify occupational exposures that pose risk for transmission of infection so that appropriate management may be implemented. Often, data that might allow for precisely defining an occupational exposure to an individual pathogen or parasite are limited. For example, precise distances and durations for an exposure that result in transmission of an infection may not be known. Hence, clearly defining when an exposure has occurred can be challenging and may require eliciting details about a sometimes-remote incident.

Establishing the occurrence of occupational exposures often requires understanding HCP adherence to recommended Standard and Transmission-based Precautions, including the use of personal protective equipment (PPE). When recommended infection control practices are correctly implemented, HCP are not considered "exposed" to a pathogen. However, for some highly contagious infectious diseases, monitoring of PPE-protected HCP who were in proximity to a contagious pathogen for development of disease may be recommended, as unrecognized exposure, development of disease, and subsequent transmission may pose public health risks. Determining if exposures among HCP have occurred may require collaboration with other services such as IPC, facility engineering, and others when, for example, exposure to contaminated air may require understanding airflow patterns between different areas in the healthcare setting and the rate of pathogen clearance from the air [\[8\]](#).

Occupational IPC Strategies for OHS

General strategies used for occupational IPC by OHS are discussed in [Infection Control in Healthcare Personnel: Infrastructure and Routine Practices for Occupational Infection Prevention and Control Services](https://www.cdc.gov/infectioncontrol/guidelines/healthcare-personnel/index.html) (<https://www.cdc.gov/infectioncontrol/guidelines/healthcare-personnel/index.html>). Pathogen-specific prevention strategies include ensuring HCP have received recommended immunizations and have evidence of immunity to vaccine-preventable diseases. Strategies used by OHS to prevent disease in exposed HCP, or transmission from infectious HCP, include providing postexposure prophylaxis and applying work restrictions. In addition, for selected pathogens, decolonization of HCP may be appropriate.

Work Restrictions

Work restrictions are implemented when HCP may be potentially infectious to others or when HCP are at increased risk for acquiring infection, such as restricting susceptible HCP contact with patients with varicella zoster when immune HCP are available. Exclusion can be based on a standardized timeframe or until the results of an evaluation determine clearance to return to work, depending on the infection. Reluctance to report exposures and illnesses and concerns regarding missed work can make work restrictions difficult to implement. Staffing limitations can also affect implementation of work restrictions. Alternative work options that minimize risk to others (e.g., telework for infectious workers), and utilizing paid sick leave days or job-protected leave (e.g., provided by the Family and Medical Leave Act of 1993 (FMLA)) may reduce the negative impacts of work restrictions.

Monitoring

OHS may monitor HCP for illness following a potentially infectious exposure or after caring for patients with highly infectious diseases. In addition to evaluating for development of signs and symptoms of disease, appropriate monitoring may include postexposure testing, ongoing postexposure counseling, and check-ins on tolerability of and adherence to PEP. Monitoring strategies can range from passive to active approaches. Passive approaches to HCP monitoring might include encouraging HCP self-reporting of signs or symptoms of disease to OHS, while active approaches might include OHS telephone and video calls to HCP for symptom and temperature check-ins or in-person presentation to OHS for regular assessments. Ultimately, the selected monitoring strategy is usually situation-specific, and depends on factors such as the infrastructure and support available for HCP monitoring, HCP job tasks and risks for transmission to others, the potential severity of illness and contagiousness of the infection, and the nature of the exposure.

Immunocompromised HCP

OHS also manage immunocompromised HCP (i.e., those with an immunodeficiency or altered immunocompetence) who may be at greater risk not only to acquire or transmit infections, but also for developing more severe disease if exposed. Immunocompromise may also decrease the accuracy of laboratory tests for infection, such as those used for baseline tuberculosis (TB) screening, and may affect the safety and effectiveness of recommended vaccines; the Advisory Committee on Immunization Practices ([ACIP website](https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/immunocompetence.html)) (<https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/immunocompetence.html>) provides information to define altered immunocompetence and how it may affect immunization practices [\[8\]](#).

Immunodeficiencies that may affect occupational infection prevention and control include primary (i.e., congenital) and secondary (i.e., acquired). Examples of primary immunodeficiencies include X-linked agammaglobulinemia and chronic granulomatous disease. Secondary immunodeficiencies are more common in HCP, and examples include immunodeficiency due to hematopoietic malignancies and treatment of conditions (e.g., solid organ transplantation, rheumatoid arthritis) with immunosuppressive drugs such as prednisone, monoclonal antibodies, and immunomodulatory agents. Often, data are limited to inform which immunodeficiencies should affect implementation of occupational IPC.

Some conditions, such as combined primary immunodeficiency syndromes, being on chemotherapy for cancer, untreated HIV infection with CD4 T lymphocyte count $<200\text{cells/mm}^3$, and receipt of prednisone $>20\text{mg/day}$ for more than 14 days, may cause a higher degree of immunocompromise and require actions such as lengthening the duration of HCP work restrictions for some infections to prevent transmission to from HCP to others. Other factors, such as advanced age, diabetes mellitus, or end-stage renal disease, may pose a much lower degree of immunocompromise and not clearly affect OHS actions to prevent disease transmission [\[9\]](#). Ultimately, the degree of immunocompromise for HCP is determined by the treating provider, and preventive actions are tailored to each individual and situation.

Abbreviations

- ACIP = Advisory Committee on Immunization Practices
- ACOEM = American College of Occupational and Environmental Medicine
- CDC = Centers for Disease Control and Prevention
- CLIA = Clinical Laboratory Improvement Amendments
- DHQP = Division of Healthcare Quality Promotion
- FMLA = Family and Medical Leave Act of 1993
- HCO = Healthcare Organization

- HCP = Healthcare Personnel
- HICPAC = Healthcare Infection Control Practices Advisory Committee
- HIV = Human Immunodeficiency Virus
- IDSA = Infectious Diseases Society of America
- IPC = Infection Prevention and Control
- NIOSH = National Institute of Occupational Safety and Health
- OHS = Occupational Health Services
- OSHA = Occupational Safety and Health Administration
- PEP = Postexposure Prophylaxis
- PPE = Personal Protective Equipment
- SHEA = Society for Healthcare Epidemiology of America
- TB = Tuberculosis

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Diphtheria



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