



Immunization of Health-Care Personnel (Hcp): A Brief Review

KEYWORDS

HCP, VPDs, occupational health

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ABSTRACT Healthcare personnel (HCP) are defined as all persons whose occupational activities involve contact with patients or contaminated material in a healthcare including body substances, contaminated medical supplies and equipment, contaminated environmental surfaces, or contaminated air, home healthcare, or clinical laboratory setting. Because of their contact with patients or infective material from patients, many HCP are at risk for exposure to (and possible transmission of) vaccine-preventable diseases. Ensuring that healthcare personnel (HCP) are protected against vaccine preventable diseases (VPDs) is an essential part of occupational health programs in a hospital. It is essential as it: Prevents transmission of VPDs and eliminates unnecessary work restrictions, safeguards the health of HCP and protects patients from exposure to infected HCP, reduces both number of susceptible HCP and risks for transmission of VPDs to other workers and patients.

Introduction:

On the basis of documented nosocomial transmission, HCP are considered to be at substantial risk for acquiring or transmitting hepatitis B, influenza, measles, mumps, rubella, pertussis, and varicella¹

Occupational health programs and others responsible for infection prevention and control should identify all staff whose work-related activities involve exposure to blood or other potentially infectious body fluids in a health-care, laboratory, public safety, or institutional setting (including employees, students, contractors, attending clinicians, emergency medical technicians, paramedics, and volunteers); provide education to staff to encourage vaccination; and implement active follow-up, with reminders to track completion of the vaccine series and post vaccination testing among persons receiving vaccination. HCP should be provided a copy of their vaccination records and encouraged to keep it with their personal health records so they can readily be made available to future employers. All HCP should adhere to all other recommended infection-control guidelines, whether or not they are individually determined to have immunity to a vaccine-preventable disease.

RATIONALE OF IMMUNIZATION OF HCP²:

1. Immunizing HCP against vaccine-preventable diseases protects both patients and HCP from illness and death associated with these diseases.
2. Immunizing HCP also prevents them from missing work during outbreaks, which would further negatively impact patient care.
4. Mandatory immunization programs are necessary where voluntary programs fail to maintain adequate HCP vaccination rates.
5. Recommended vaccines are proven to be safe, effective, and cost-saving.
6. Educational programs increase HCP compliance with vaccination programs, but standing alone do not consistently achieve adequate vaccine coverage levels.
7. The provision of immunizations at no cost in the occupational setting increases HCP immunization compliance.
8. Physicians and other health care providers are obligated

“to do good or to do no harm” when treating patients and they have an ethical moral obligation to prevent transmission of infectious diseases to their patients.

Diseases for Which Vaccination Is Recommended

On the basis of documented nosocomial transmission, HCP are considered to be at substantial risk for acquiring or transmitting hepatitis B, influenza, measles, mumps, rubella, pertussis, and varicella.

CDC recommends following vaccines of all HCP:

VACCINES	RECOMMENDATIONS IN BRIEF
Hepatitis B	If no documented evidence of a complete hepB vaccine series, or if no up-to-date blood test that shows immune status to hepatitis B (i.e., no serologic evidence of immunity or prior vaccination) then should Get the 3-dose series (dose #1 now, #2 in 1 month, #3 approximately 5 months after #2). Get anti-HBs serologic tested 1–2 months after dose #3.
Flu(influenza)	Single dose of influenza vaccine annually.
MMR(Measles,mumps,rubella)	If born 1957 or later and not had the MMR vaccine, or if don't have an up-to-date blood test that shows immunity to measles or mumps (i.e., no serologic evidence of immunity or prior vaccination), get 2 doses of MMR (1 dose now and the 2nd dose at least 28 days later).

Varicella(chickenpox)	If had no chickenpox (varicella), if haven't had varicella vaccine, or if don't have an up-to-date blood test that shows immunity to varicella (i.e., no serologic evidence of immunity or prior vaccination) get 2 doses of varicella vaccine, 4 weeks apart.
DPT/Tdap(diphtheria,pertussis ,tetanus)	One-time dose of Tdap as soon as possible if have not received Tdap previously (regardless of when previous dose of Td was received). Get Td boosters every 10 years thereafter. Pregnant HCWs need to get a dose of Tdap during each pregnancy.
Meningococcal	Those who are routinely exposed to isolates of <i>N. meningitidis</i> should get one dose. Give 1 dose to microbiologists who are routinely exposed to isolates of <i>Neisseria meningitidis</i> and boost every 5 years if risk continues. Give MCV4 IM; if necessary to use MPSV4, give SC.

The recommendations for vaccination of HCP by disease in two categories: 1) those diseases for which routine vaccination or documentation of immunity is recommended for HCP because of risks to HCP in their work settings and, should HCP become infected, to the patients they serve and 2) those diseases for which vaccination of HCP might be indicated in certain circumstances. Vaccines recommended in the first category are hepatitis B, seasonal influenza, measles, mumps, and rubella, pertussis, and varicella vaccines. Vaccines in the second category are meningococcal, typhoid, and polio vaccines. Except for influenza, all of the diseases prevented by these vaccines are notifiable at the national level ³

Recommendations for immunization of health-care personnel (HCP) ⁴:

Hepatitis B

- HCP and trainees in certain populations at high risk for chronic hepatitis B should be tested for HBsAg and anti-HBc/anti-HBs to determine infection status.

Influenza

- Emphasis that all HCP, not just those with direct patient care duties, should receive an annual influenza vaccination
- Comprehensive programs to increase vaccine coverage among HCP are needed; influenza vaccination rates among HCP within facilities should be measured and reported regularly.

Measles, mumps, and rubella (MMR)

- History of disease is no longer considered adequate presumptive evidence of measles or mumps immunity for HCP; History of disease has never been considered adequate evidence of immunity for rubella.

Pertussis

- HCP, regardless of age, should receive a single dose

of Tdap as soon as feasible if they have not previously received Tdap.

- Tdap can be administered regardless of interval since the last tetanus or diphtheria-containing vaccine.
- Hospitals and ambulatory-care facilities should provide Tdap for HCP and use approaches that maximize vaccination rates.

Varicella

For HCP who have no serologic proof of immunity, prior vaccination, or diagnosis or verification of a history of varicella or herpes zoster (shingles) by a healthcare provider, give 2 doses of varicella vaccine, 4 weeks apart. Give SC.

For HCP Criteria for evidence of immunity to varicella include:

- written documentation with 2 doses of vaccine,
- Laboratory evidence of immunity or laboratory confirmation of disease,
- Diagnosis of history of varicella disease by health-care provider, or diagnosis of history of herpes zoster by health-care provider.

Meningococcal

- HCP with anatomic or functional asplenia or persistent complement component deficiencies should receive a 2-dose series of meningococcal conjugate vaccine. HCP with HIV infection who are vaccinated should also receive a 2 dose series.
- Those HCP who remain in groups at high risk are recommended to be revaccinated every 5 years.

Vaccination with MCV4 is recommended for microbiologists who are routinely exposed to isolates of *N. meningitidis*.

Diseases for Which Vaccination Might Be Indicated in Certain Circumstances

Health-care facilities and other organizations should consider including in their vaccination programs vaccines to prevent meningococcal disease, typhoid fever, and polio for HCP who have certain health conditions or who work in laboratories or regions where the risk for work-related exposure exists.

Postexposure and HBs vaccination status:

The need for postexposure prophylaxis should be evaluated immediately after HCP experience any percutaneous, ocular, mucous-membrane or nonintact skin exposure to blood or body fluid in the workplace. Decisions to administer postexposure prophylaxis should be based on the HBsAg status of the source and the vaccination history and vaccine-response status of the exposed HCP⁵

Other Considerations

- Occupational health programs and others responsible for infection prevention and control should identify all whose work-related activities involve exposure to blood or other potentially infectious body fluids in a health-care, laboratory, public safety, or institutional setting; provide education to staff to encourage vaccination; and implement active follow-up, with reminders to track completion of the vaccine series and post vaccination testing among persons receiving vaccination ⁵
- HCP and trainees should be identified, tested, vaccinated (if indicated), and provided with counselling and referral for needed services, when appropriate.

Work Restrictions

Work restrictions for susceptible HCP (i.e., no history of vaccination or documented lack of immunity) exposed to or infected with certain vaccine-preventable diseases can

range from restricting individual HCP from patient contact to complete exclusion from duty.

Conclusion:

Nosocomial transmission and infection of HCP is considered to be a substantial risk for acquiring or transmitting hepatitis B, influenza, measles, mumps, rubella, pertussis, and varicella.

HCP vaccination records should be reviewed and strategy made to prevent outbreaks of vaccine-preventable diseases. Educational sessions, especially when combined with other interventions enhances the success of many vaccination programs.

Employers and HCP have a shared responsibility to prevent occupationally acquired infections and avoid causing harm to patients by taking reasonable precautions to prevent transmission of vaccine-preventable diseases.

REFERENCE

1. Immunization of Health-Care Personnel Recommendations of the Advisory Committee on Immunization Practices (ACIP), Morbidity and Mortality weekly report, nov.2011 | 2. IDSA, SHEA, and PIDS Joint Policy Statement on Mandatory Immunization of Health Care Personnel According to the ACIP-Recommended Vaccine Schedule dec-2013 | 3 CDC. Summary of notifiable diseases—United States, 2009. MMWR 2009;58(No.53). | 4. CDC. Immunization of health-care workers: recommendations of the Advisory Committee on Immunization Practices (ACIP) and the Hospital Infection Control Practices Advisory Committee (HICPAC). | 5. 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