Healthcare Personnel Vaccination Recommendations

ROUGH DRAFT

Eugene Livar MD
HAI Program Manager
Office of Infectious Disease Services
Arizona Department of Health Services
www.preventHAIaz.gov

What will we cover today?

- Recommended healthcare personnel vaccinations
  - Why?
  - Who?
  - Contraindications
  - Administration
  - Immunity
- Resources

Hepatitis B

- Why?
  - Transmitted through percutaneous or mucosal exposure to infectious blood or body fluids
  - Highly infectious for nonimmune persons
    - Disease transmission from HBeAg positive blood exposure needlestick is **100 times more likely** than HIV positive blood
  - Can survive on environmental surfaces for at least 7 days
  - A Federal Standard issued in December 1991
    - The Occupational Safety and Health Act mandates that hepatitis B vaccine be made available at the employer's expense to all health-care personnel who are exposed occupationally to blood or other potentially infectious materials

Who?

- Unvaccinated healthcare personnel (HCP)
- Lack documentation of vaccination of 3-dose series
  - 0, 1, and 6 months

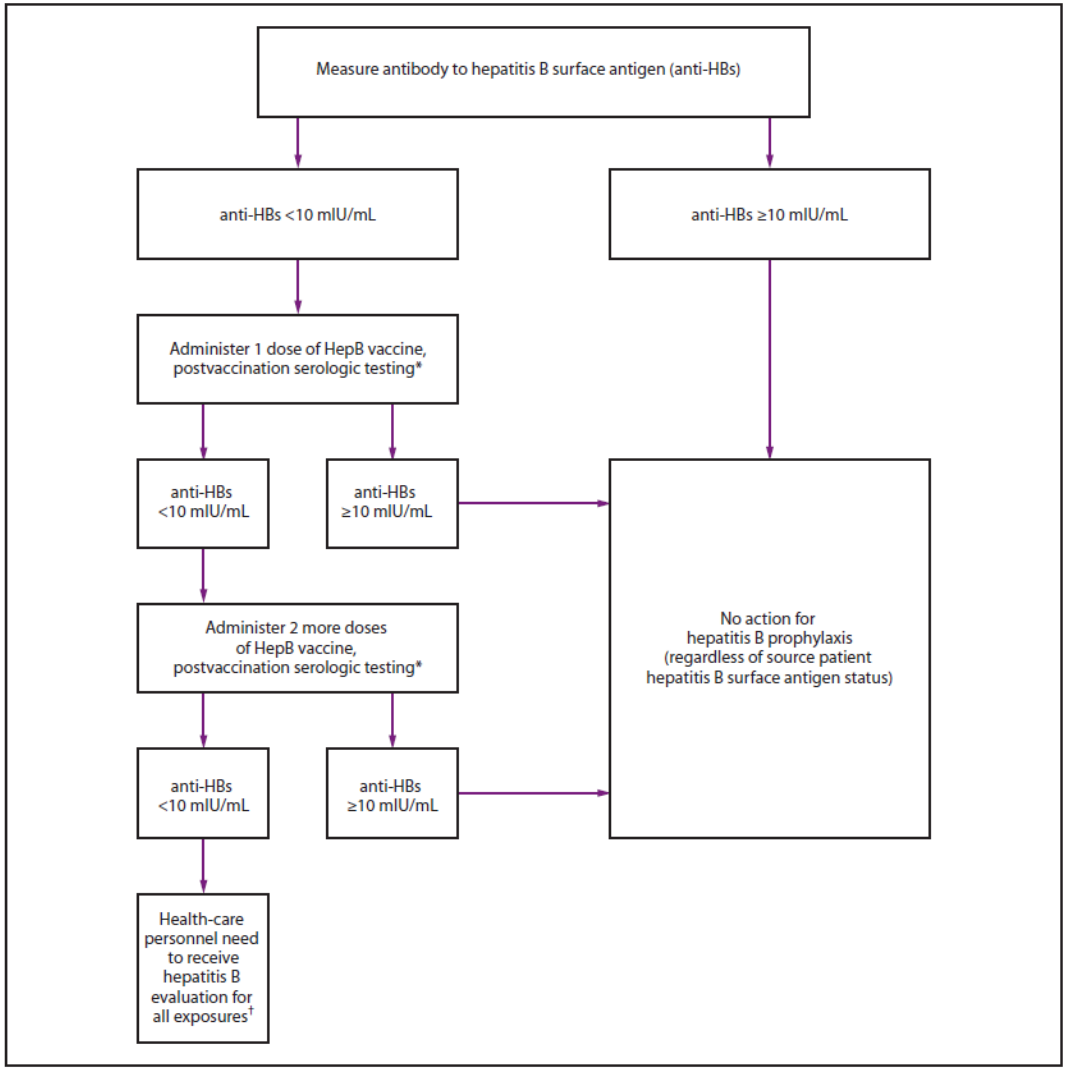
Contraindications

- Severe allergic reaction after a previous dose or to a vaccine component
  - e.g., anaphylaxis

Administration

- If previously unvaccinated, give 3-dose series
  - 0, 1, and 6 months
  - Give intramuscularly (IM)
- For HCP that may have exposure to blood or body fluids, obtain anti-HBs serologic testing 1–2 months after dose #3
  - If anti-HBs is ≥10 mIU/mL (positive) indicates immunity
    - No further serologic testing or vaccination is recommended
  - If anti-HBs is <10 mIU/mL (negative),the vaccinee is not protected
    - 3 additional doses of Hep B vaccine by the routine schedule
    - Followed by anti-HBs testing 1–2 months later
    - If anti-HBs remains less than 10 mIU/mL after 6 doses then a “non-responder.”

FIGURE 6. Pre-exposure evaluation for health-care personnel previously vaccinated with complete, ≥3-dose HepB vaccine series who have not had postvaccination serologic testing*



- HCP with documentation of 3 doses of hepatitis B vaccine, but no documentation of immunity may undergo anti-HBs testing upon hire or matriculation

http://www.cdc.gov/mmwr/PDF/rr/rr6210.pdf

Non-responders

- Considered susceptible to HBV
- Counseled regarding precautions to prevent HBV infection and the need to obtain
- It is also possible that non-responders are people who are HBsAg positive
  - HBsAg testing is recommended.
  - HCP found to be HBsAg positive should be counseled and medically evaluated
- HBIG prophylaxis for any known or probable parenteral exposure to
  - HBsAg-positive blood or
  - Blood with unknown HBsAg status

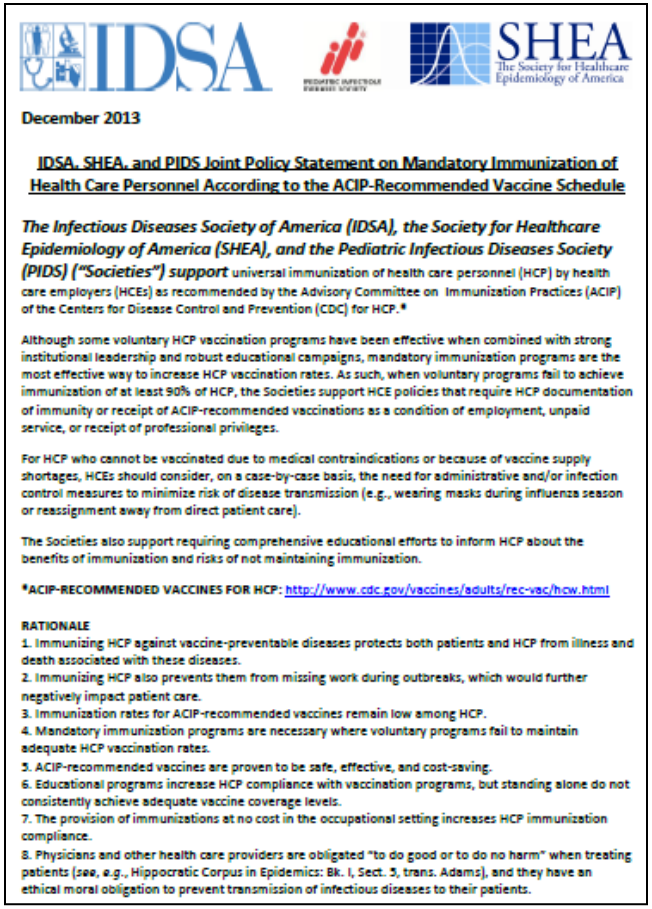
Immunity

- Immunologic memory remains intact for ≥20 years among healthy vaccinated individuals
- Long-term protection against clinical illness and chronic Hepatitis B virus infection
- Cellular immunity appears to persist even though antibody levels might become low or decline below detectable levels

Flu (Influenza)

- Why?
  - Reduce the risk that the HCP will become infected with influenza
  - Absenteeism leads to staffing issues
  - Serve as a vehicle for spread of flu
  - Frequent contact with high-risk patients
  - Infected HCP may shed virus before the development of clinical symptoms
  - Influenza vaccination of HCP reduces patient mortality
  - Set an example concerning the importance of vaccination for every person

Is there support for mandatory vaccination policy?



IDSA SHEA The Society for Healthcare Epidemiology of America

December 2013

IDSA, SHEA, and PIDS Joint Policy Statement on Mandatory Immunization of Health Care Personnel According to the ACIP-Recommended Vaccine Schedule

The Infectious Diseases Society of America (IDSA), the Society for Healthcare Epidemiology of America (SHEA), and the Pediatric Infectious Diseases Society (PIDS) ("Societies") support universal immunization of health care personnel (HCP) by health care employers (HCEs) as recommended by the Advisory Committee on Immunization Practices (ACIP) of the Centers for Disease Control and Prevention (CDC) for HCP.*

Although some voluntary HCP vaccination programs have been effective when combined with strong institutional leadership and robust educational campaigns, mandatory immunization programs are the most effective way to increase HCP vaccination rates. As such, when voluntary programs fail to achieve immunization of at least 90% of HCP, the Societies support HCE policies that require HCP documentation of immunity or receipt of ACIP-recommended vaccinations as a condition of employment, unpaid service, or receipt of professional privileges.

For HCP who cannot be vaccinated due to medical contraindications or because of vaccine supply shortages, HCEs should consider, on a case-by-case basis, the need for administrative and/or infection control measures to minimize risk of disease transmission (e.g., wearing masks during influenza season or reassignment away from direct patient care).

The Societies also support requiring comprehensive educational efforts to inform HCP about the benefits of immunization and risks of not maintaining immunization.

*ACIP-RECOMMENDED VACCINES FOR HCP: http://www.cdc.gov/vaccines/adults/rec-vac/hcw.html

RATIONALE

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.
3. Immunization rates for ACIP-recommended vaccines remain low among HCP.
4. Mandatory immunization programs are necessary where voluntary programs fail to maintain adequate HCP vaccination rates.
5. ACIP-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 (see, e.g., Hippocratic Corpus in Epidemics: Bk. I, Sect. 5, trans. Adams), and they have an ethical moral obligation to prevent transmission of infectious diseases to their patients.

- When voluntary programs fail to achieve immunization of at least 90% of HCP, the Societies support HCE policies that require HCP documentation of immunity or receipt of ACIP-recommended vaccinations as a condition of employment, unpaid service, or receipt of professional privileges.

http://www.idsociety.org/uploadedFiles/IDSA/Policy_and_Advocacy/Current_Topics_and_Issues/Immunizations_and_Vaccines/Health_Care_Worker_Immunization/Statements/IDSA_SHEA_PIDS%20Policy%20on%20Mandatory%20Immunization%20of%20HCP.pdf

Who?

- All HCP
  - Annual influenza vaccination is recommended for all persons aged ≥6 months who have no medical contraindication

Contraindications

- Severe allergic reaction (e.g., anaphylaxis)
  - After previous dose of any influenza vaccine
  - To a vaccine component, including egg protein
- Live attenuated influenza vaccine should not be used for
  - Pregnant women
  - Immunosuppressed adults
  - Adults with egg allergy of any severity
  - Adults who have taken influenza antiviral medications
    - Within the previous 48 hours
    - Avoid use of these antiviral drugs for 14 days after vaccination

Administration

- 1 dose of influenza vaccine annually.
  - Inactivated injectable vaccine is given IM, except when using the intradermal influenza vaccine.
  - Live attenuated influenza vaccine (LAIV) is given intranasally

Immunity

- Duration of immunity following inactivated influenza vaccination is less than 1 year
  - Waning of vaccine-induced antibody
  - Antigenic drift of circulating influenza viruses
- Influenza vaccine efficacy varies
  - Similarity of the vaccine strain(s) to the circulating strain
  - Age and health status of the recipient
- An annual flu vaccination is still the best tool currently available to protect you against the flu and its potentially serious complications

MMR (Measles, Mumps, & Rubella)

- Why?
  - Measles
    - Highly contagious viral rash illness transmitted by respiratory droplets and airborne spread
    - Severe complications, which might result in death, include pneumonia and encephalitis
  - Mumps
    - Acute viral infection transmitted by respiratory droplets
    - Complications ranges from
      - Subclinical infection
      - Nonspecific respiratory illness
      - Classic parotitis
      - Orchitis
      - Rarely meningitis, encephalitis, pancreatitis, and deafness
    - Severity increases with age
  - Rubella
    - Acute viral infection transmitted by respiratory droplets
    - Complications ranges from
      - Arthralgia or arthritis
      - Encehalitis
      - Hemorraghic manifestations
      - Rarely orchitis, neuritis, progressive panencephalitis
    - Severity increases with age

Who?

- All HCP
  - HCP born in 1957 or later can be considered immune to measles, mumps, or rubella only if they have documentation of
    - Laboratory confirmation of disease or immunity
    - Appropriate vaccination against measles, mumps, and rubella
  - For unvaccinated HCP born before 1957 that lack laboratory evidence of measles immunity or laboratory confirmation of disease
    - Consider vaccinating personnel with appropriate doses of MMR vaccine at the appropriate interval

Contraindications

- Severe allergic reaction after a previous dose or to a vaccine component
  - e.g., anaphylaxis
- Known severe immunodeficiency
  - e.g., from hematologic and solid tumors, receipt of chemotherapy, etc.
- Pregnancy

Administration

- For HCP born in 1957 or later without serologic evidence of immunity or prior vaccination
  - 2 doses of MMR
  - 4 weeks apart.
- For HCP born prior to 1957
  - 2 doses of MMR vaccine should be considered for unvaccinated HCP born before 1957 who do not have laboratory evidence of disease or immunity to measles and/or mumps.
  - 1 dose of MMR vaccine should be considered for HCP with no laboratory evidence of disease or immunity to rubella.
- Given subcutaneously (SC)

Immunity

- Measles
  - 99% of persons who receive two doses of measles vaccine develop serologic evidence of measles immunity
    - First dose administered no earlier than the first birthday
  - A study examining neutralizing antibody levels up to 10 years following the second dose of MMR vaccine in children
    - Indicates that antibodies remain above the level considered protective
- Mumps
  - One dose of mumps or MMR vaccine was 78% (49% to 92%) effective
  - Two dose mumps vaccine effectiveness is 88% (66% to 95%)
- Rubella
  - 95% or more of persons aged 12 months and older developed serologic evidence of rubella immunity after a single dose

Varicella (Chickenpox)

- Why?
  - Highly contagious acute viral infectious disease
  - Transmitted by airborne spread
  - Secondary attack rates among susceptible household contacts of persons with varicella are as high as 90%
    - e.g., 9 of 10 susceptible household contacts of persons with varicella will become infected

Who?

- For HCP who do not have one of the following
  - Documentation of 2 doses of varicella vaccine given at least 28 days apart
  - Verification of a history of varicella or herpes zoster (shingles) by a healthcare provider
  - Laboratory evidence of immunity or confirmation of disease
    - IgG

Contraindications

- Severe allergic reaction after a previous dose or to a vaccine component
  - e.g., anaphylaxis
- Known severe immunodeficiency
  - e.g., from hematologic and solid tumors, receipt of chemotherapy, etc.
- Pregnancy

Administration

- 2 doses of varicella vaccine
- 4 weeks apart
- Routine testing after 2 doses of vaccine is not recommended
- Given subcutaneous (SC)

Immunity

- 99% of persons are seropositive after the second dose

Tdap (Tetanus, Diphtheria, Pertussis)

- Why?
  - Pertussis is a highly contagious bacterial infection transmitted by respiratory droplets
  - Secondary attack rates among susceptible household contacts exceed 80%
  - Communicability starts with the onset of the catarrhal stage and extends into the paroxysmal stage
  - Immunity via vaccine or disease wanes over time

Who?

- All HCPs who have not or are unsure if they have previously received a dose of Tdap

Contraindications

- Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component
- For pertussis-containing vaccines:
  - Encephalopathy not attributable to another identifiable cause within 7 days of administration of a previous dose of Tdap
  - Diphtheria and tetanus toxoids and pertussis (DTP)
  - Diphtheria and tetanus toxoids and acellular pertussis (DTaP) vaccine

Administration

- 1 dose of Tdap as soon as feasible to all HCP who
  - have not received Tdap previously and
  - To pregnant HCP with each pregnancy
- Give Td boosters every 10 years thereafter
- Given IM

Immunity

- Recent studies of Tdap demonstrate vaccine effectiveness at 78% and 66%
- Duration of immunity from vaccination has yet to be evaluated

Thank You!

www.preventHAIaz.gov

Eugene Livar, MD
HAI Program Manager
Office of Infectious Disease Services
Arizona Department of Health Services
Eugene.Livar@azdhs.gov
(602) 364-3522

Resources

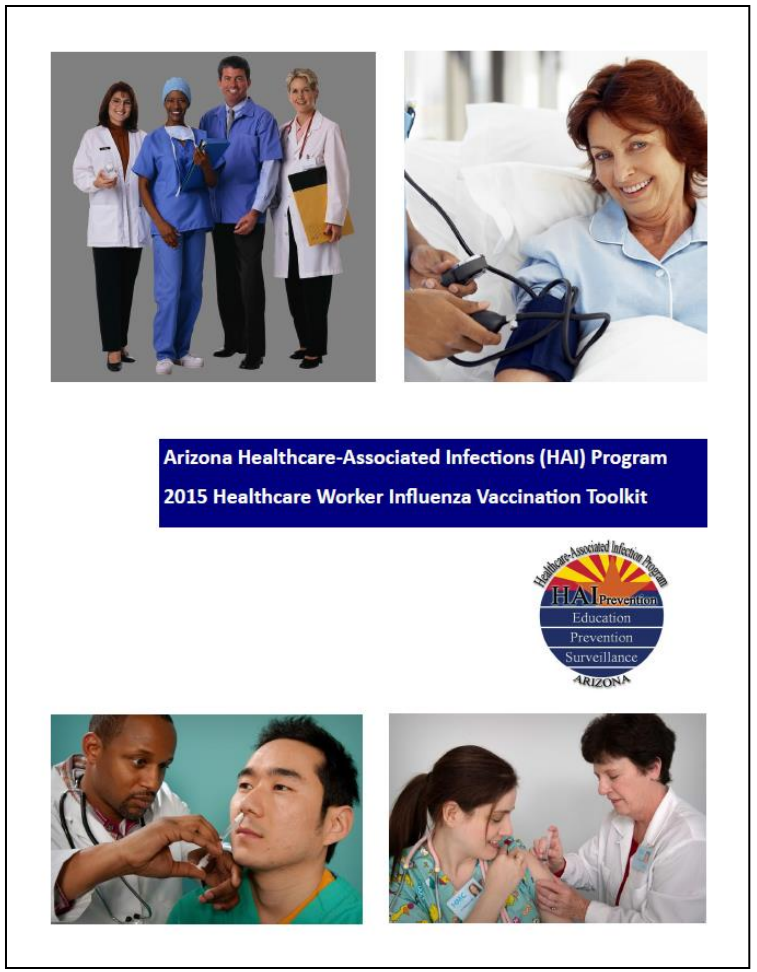
Immunization of Health-Care Personnel: Recommendations of the Advisory Committee on Immunization Practices (ACIP)

November 25, 2011

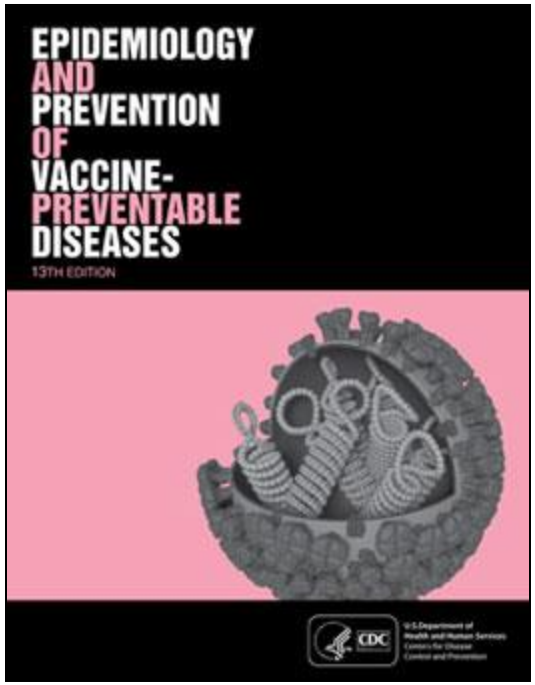
- The recommendations for vaccination of HCP are presented by disease
- Vaccine effectiveness and safety
- Pre and post-exposure management
- Special considerations
- Much more

Healthcare Worker Influenza Vaccination Toolkit

- Universal Influenza Vaccination for Arizona Healthcare Workers letter of recommendation from ADHS
- 2015 Influenza Vaccination of Healthcare Workers Survey Summary
- Educational influenza pages
- Healthcare worker influenza promotional flyers
- References and Resources

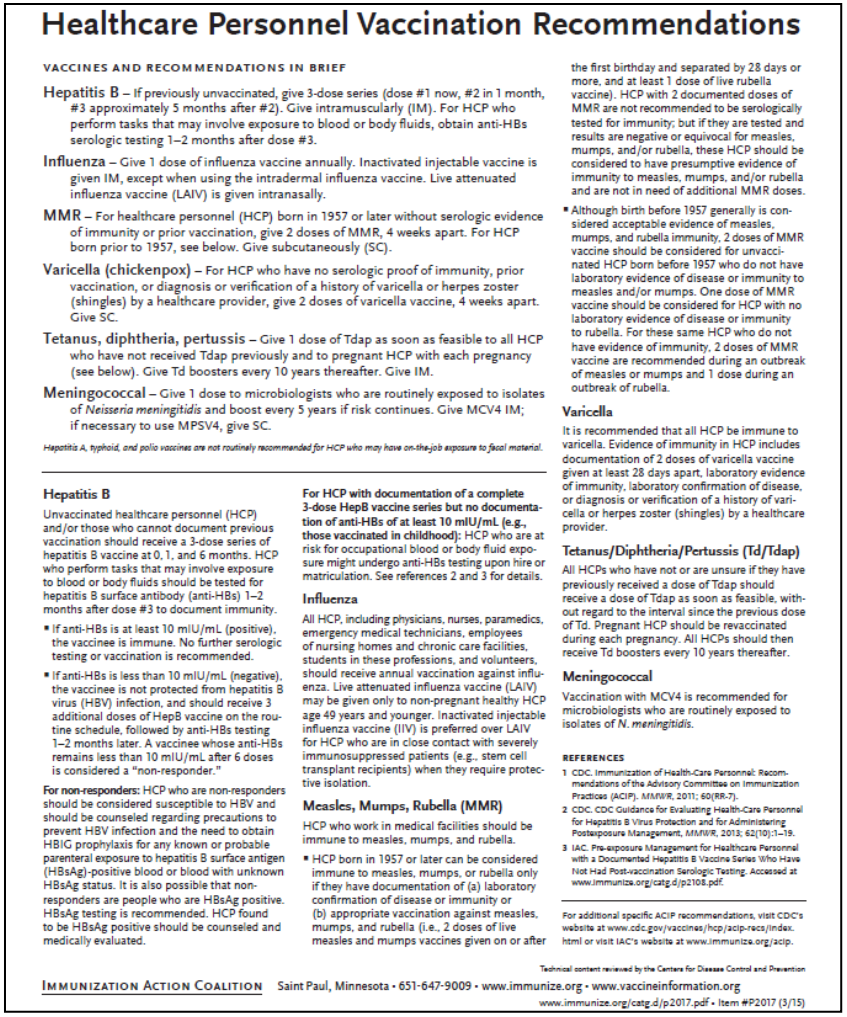


The Pink Book: Course Textbook



- 22 chapters and many appendices of robust vaccine information
- Includes principles, recommendations and strategies

Healthcare Personnel Vaccination Recommendations



Healthcare Personnel Vaccination Recommendations

VACCINES AND RECOMMENDATIONS IN BRIEF

Hepatitis B – If previously unvaccinated, give 3-dose series (dose #1 now, #2 in 1 month, #3 approximately 5 months after #2). Give intramuscularly (IM). For HCP who perform tasks that may involve exposure to blood or body fluids, obtain anti-HBs serologic testing 1–2 months after dose #3.

Influenza – Give 1 dose of influenza vaccine annually. Inactivated injectable vaccine is given IM, except when using the intradermal influenza vaccine. Live attenuated influenza vaccine (LAIV) is given intranasally.

MMR – For healthcare personnel (HCP) born in 1957 or later without serologic evidence of immunity or prior vaccination, give 2 doses of MMR, 4 weeks apart. For HCP born prior to 1957, see below. Give subcutaneously (SC).

Varicella (chickenpox) – 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.

Tetanus, diphtheria, pertussis – Give 1 dose of Tdap as soon as feasible to all HCP who have not received Tdap previously and to pregnant HCP with each pregnancy (see below). Give Td boosters every 10 years thereafter. Give IM.

Meningococcal – Give 1 dose to microbiologists who are routinely exposed to isolates of *Neisseria meningitidis* and boost every 5 years if risk continues. Give MCV4 IM; if necessary to use MPSV4, give SC.

Hepatitis A, typhoid, and polio vaccines are not routinely recommended for HCP who may have on-the-job exposure to fecal material.

Hepatitis B

Unvaccinated healthcare personnel (HCP) and/or those who cannot document previous vaccination should receive a 3-dose series of hepatitis B vaccine at 0, 1, and 6 months. HCP who perform tasks that may involve exposure to blood or body fluids should be tested for hepatitis B surface antibody (anti-HBs) 1–2 months after dose #3 to document immunity.

- If anti-HBs is at least 10 mIU/mL (positive), the vaccinee is immune. No further serologic testing or vaccination is recommended.
- If anti-HBs is less than 10 mIU/mL (negative), the vaccinee is not protected from hepatitis B virus (HBV) infection, and should receive 3 additional doses of HepB vaccine on the routine schedule, followed by anti-HBs testing 1–2 months later. A vaccinee whose anti-HBs remains less than 10 mIU/mL after 6 doses is considered a "non-responder."

For non-responders: HCP who are non-responders should be considered susceptible to HBV and should be counseled regarding precautions to prevent HBV infection and the need to obtain HBIG prophylaxis for any known or probable parenteral exposure to hepatitis B surface antigen (HBsAg)-positive blood or blood with unknown HBsAg status. It is also possible that non-responders are people who are HBsAg positive. HBsAg testing is recommended. HCP found to be HBsAg positive should be counseled and medically evaluated.

For HCP with documentation of a complete 3-dose HepB vaccine series but no documentation of anti-HBs of at least 10 mIU/mL (e.g., those vaccinated in childhood): HCP who are at risk for occupational blood or body fluid exposure might undergo anti-HBs testing upon hire or matriculation. See references 2 and 3 for details.

Influenza

All HCP, including physicians, nurses, paramedics, emergency medical technicians, employees of nursing homes and chronic care facilities, students in these professions, and volunteers, should receive annual vaccination against influenza. Live attenuated influenza vaccine (LAIV) may be given only to non-pregnant healthy HCP age 49 years and younger. Inactivated injectable influenza vaccine (IIV) is preferred over LAIV for HCP who are in close contact with severely immunosuppressed patients (e.g., stem cell transplant recipients) when they require protective isolation.

Measles, Mumps, Rubella (MMR)

HCP who work in medical facilities should be immune to measles, mumps, and rubella.

- HCP born in 1957 or later can be considered immune to measles, mumps, or rubella only if they have documentation of (a) laboratory confirmation of disease or immunity or (b) appropriate vaccination against measles, mumps, and rubella (i.e., 2 doses of live measles and mumps vaccines given on or after the first birthday and separated by 28 days or more, and at least 1 dose of live rubella vaccine). HCP with 2 documented doses of MMR are not recommended to be serologically tested for immunity; but if they are tested and results are negative or equivocal for measles, mumps, and/or rubella, these HCP should be considered to have presumptive evidence of immunity to measles, mumps, and/or rubella and are not in need of additional MMR doses.
- Although birth before 1957 generally is considered acceptable evidence of measles, mumps, and rubella immunity, 2 doses of MMR vaccine should be considered for unvaccinated HCP born before 1957 who do not have laboratory evidence of disease or immunity to measles and/or mumps. One dose of MMR vaccine should be considered for HCP with no laboratory evidence of disease or immunity to rubella. For these same HCP who do not have evidence of immunity, 2 doses of MMR vaccine are recommended during an outbreak of measles or mumps and 1 dose during an outbreak of rubella.

Varicella

It is recommended that all HCP be immune to varicella. Evidence of immunity in HCP includes documentation of 2 doses of varicella vaccine given at least 28 days apart, laboratory evidence of immunity, laboratory confirmation of disease, or diagnosis or verification of a history of varicella or herpes zoster (shingles) by a healthcare provider.

Tetanus/Diphtheria/Pertussis (Td/Tdap)

All HCPs who have not or are unsure if they have previously received a dose of Tdap should receive a dose of Tdap as soon as feasible, without regard to the interval since the previous dose of Td. Pregnant HCP should be revaccinated during each pregnancy. All HCPs should then receive Td boosters every 10 years thereafter.

Meningococcal

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

REFERENCES

1 CDC. Immunization of Health-Care Personnel: Recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR*, 2011; 60(RR-7).

2 CDC. CDC Guidance for Evaluating Health-Care Personnel for Hepatitis B Virus Protection and for Administering Postexposure Management, *MMWR*, 2013; 62(10);1–19.

3 IAC. Pre-exposure Management for Healthcare Personnel with a Documented Hepatitis B Vaccine Series Who Have Not Had Post-vaccination Serologic Testing. Accessed at www.immunize.org/catg.d/p2108.pdf.

For additional specific ACIP recommendations, visit CDC's website at www.cdc.gov/vaccines/hcp/acip-recs/index.html or visit IAC's website at www.immunize.org/acip.

Technical content reviewed by the Centers for Disease Control and Prevention

IMMUNIZATION ACTION COALITION Saint Paul, Minnesota • 651-647-9009 • www.immunize.org • www.vaccineinformation.org

www.immunize.org/catg.d/p2017.pdf • Item #P2017 (3/15)