Employee Occupational Health

Shannon Oriola, RN, BSN, CIC, FAPIC

Objectives

- State employee work restrictions and exposure risks.
- Understand vaccine preventable diseases
- Understand challenging organisms

Employee Exposure Risk

- Infectious Disease Exposure
  - Evaluate risk of transmission
  - Determine scope of exposure
  - Need for post-exposure follow-up
    - Post-exposure prophylaxis
    - Treatment for active disease

Prevention

- Hierarchy of controls
  - Administrative – policies, work assignment, immunization policies
  - Engineering – negative pressure, needleless devices
  - Work Practice Controls – personal protective equipment

Administrative Controls Prevention

- Policies and Procedures
  - Bloodborne Pathogen Exposure Control Plan
  - Tuberculosis Control Plan
  - Transmission Based Precautions
    - Airborne – TB, Measles
    - Droplet – Influenza, Meningitis
    - Contact – MRSA, Scabies, Norovirus

CDC guidance HICPAC

SPECIAL ARTICLE

Guideline for infection control in health care personnel, 1998

Elizabeth A. Bolyard, RN, MPH,[a] Ofelia C. Tablan, MD,[a] Walter W. Williams, MD,[b] Michele L. Pearson, MD,[a] Craig N. Shapiro, MD,[a] Scott D. Deitchman, MD,[c] and The Hospital Infection Control Practices Advisory Committee

Centers for Disease Control and Prevention
Public Health Service
U.S. Department of Health and Human Services

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Vaccine preventable diseases

- Influenza
- Pertussis
- Hepatitis B
- Hepatitis A
- Measles/Mumps/Rubella
- Varicella
- Meningococcal meningitis(?)

https://www.cdc.gov/vaccines/index.html

Vaccines and Immunizations ...

View Favorites Tools Help

AdultVaxView

Adult Vaccination Coverage Data

Read more about state and national vaccination coverage estimates for adults

PARENTS (BIRTH-18 YRS)

Learn about protecting your child from infectious diseases, vaccine requirements for day care and school..

More

ADULTS (19 AND OLDER)

Get vaccines you need which are determined by your age, lifestyle, health conditions, job, international travel...

More

PREGNANCY AND VACCINATION

Learn how staying up to date on your vaccinations is all part of a healthy pregnancy...

More

HEALTHCARE PROVIDERS

Find clinical resources, administrative tools, immunization training, and patient education resources...

More

For Specific Groups of People

- Travelers
- People With Specific Diseases/Conditions
- Racial & Ethnic Populations
- Refugees and Immigrants
- Spanish-speaking

Immunization Managers

- Price Lists & Vaccine Codes
- Vaccination Coverage
- Program Contacts
- Program Components
- Awardee Immunization Websites
- Guidelines and Publications

Immunization Partners

- Partners Home
- Childhood Immunization Resources
- Adolescent Immunization Resources
- Maternal Immunization Resources
- Adult Immunization Resources
- Flu Immunization Resources

News & Media

- Press Releases
- Media Contacts
- In the Spotlight
- Newsletters
- MMWRs

Get Email Updates

Review question

Which of the following statements is true regarding storage of vaccines?

a. Vaccines should be taken out of the original packaging.

b. Vaccines should be stored in a labeled container/bin on the middle shelf a few inches from the wall.

c. Vaccines should be packed tightly into the fridge.

d. Vaccines should be stored in the top of the refrigerator.

Answer

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Aerosol Transmissible Disease Standard - California

- Must offer with in 10 days of assignment/hire
- Mandatory ATD Vaccinations offerings
  - Influenza Annually
  - MMR – Two doses, a month apart
  - Varicella – Two doses, a month apart
  - Tdap – One dose, booster
  - Hepatitis B vaccine, Three doses

Influenza vaccine

- Influenza vaccine
  - 30,000 people die each year in the U.S. from influenza
  - Inactivated
  - Live attenuated
  - Annual single dose vaccine for all healthcare providers – higher dose available for older healthcare providers
  - Contraindications – allergy to vaccine component, including egg protein (others for LAIV)

Review question

Which of the following is the primary method to prevent influenza?

a. Annual vaccination
b. Hand washing
c. Droplet Precautions
d. Promotion of respiratory hygiene/cough etiquette

Answer

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b. Hand washing
c. Droplet Precautions
d. Promotion of respiratory hygiene/cough etiquette

Pertussis

- CDPH recommends all health care personnel, particularly those who have direct contact with infants and pregnant women receive the Tdap vaccine.
  - Recommended for pregnant women
- CalOSHA Aerosol Transmissible Disease Standard requires all hospitals offer Tdap immunization to their employees.
  - declination

Pertussis

- HICPAC guideline on Healthcare personnel currently under revision.
- 2010 – outbreak in California with almost 10,000 cases reported.
  - Majority were infants, 10 deaths
- 2011 – disease activity is still at relatively increased levels in the state.
- Work restriction post exposure – until completion of antibiotic treatment.
  - (Erythromycin, trimethoprim-sulfamethoxazole).

Review question

An employee has experienced an accidental needlestick injury while providing care to a patient. All of the following lab tests would be appropriate for the source patient except:

a. Human immunodeficiency virus (HIV)

b. Hepatitis B antibody

c. Hepatitis B surface antigen

d. Hepatitis C surface antigen

Answer

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TABLE 1. Interpretation of serologic test results for hepatitis B virus infection

Serologic Markers				Interpretation
HBsAg*	Total Anti-HBc†	IgM§ Anti-HBc	Anti-HBs¶	
–	–	–	–	Susceptible, never infected
+	–	–	–	Acute infection, early incubation**
+	+	+	–	Acute infection
–	+	+	–	Acute resolving infection
–	+	–	+	Past infection, recovered and immune
+	+	–	–	Chronic infection
–	+	–	–	False positive (i.e., susceptible), past infection, or "low-level" chronic infection
–	–	–	+	Immune if titer is ≥10 mIU/mL

* Hepatitis B surface antigen.
† Antibody to hepatitis B core antigen.
§ Immunoglobulin M.
¶ Antibody to hepatitis B surface antigen.
** Transient HBsAg positivity (lasting ≤18 days) might be detected in some patients during vaccination.

Table 1. Recommendations for preventing transmission of infections among chronic hemodialysis patients. *MMWR Recomm Rep 2001* Apr 26:50(no RR-05):1-43

Hepatitis B

- Prior to the Hepatitis B vaccine 30,000 healthcare workers would acquire the disease each year.
- CDC recommends vaccine to newborns.

Hepatitis B vaccine

- Two doses 4 weeks apart, followed by a third dose 5 months from first dose.
  - Obtain HBsAb titer post completion of series.
- Booster doses are not recommended.
- OSHA Bloodborne Pathogen Standard
- Offer vaccine or obtain declination
- Post exposure
  - Unvaccinated (Hepatitis B Immune globulin, HBIG).

Hepatitis B Risk of Transmission

- HbsAg+ source : Risk ~ 1 in 100 of transmission to unvaccinated staff from needlestick
- HbeAg+ source: Risk ~ 1 in 3 of transmission to unvaccinated staff from needlestick.
  - HBeAg surgeons should not practice (HBsAg+ and HIV+ may practice according to SHEA guidelines)

Hepatitis A

- Generally not considered a healthcare occupationally acquired disease*.
- Two doses – 6 months apart

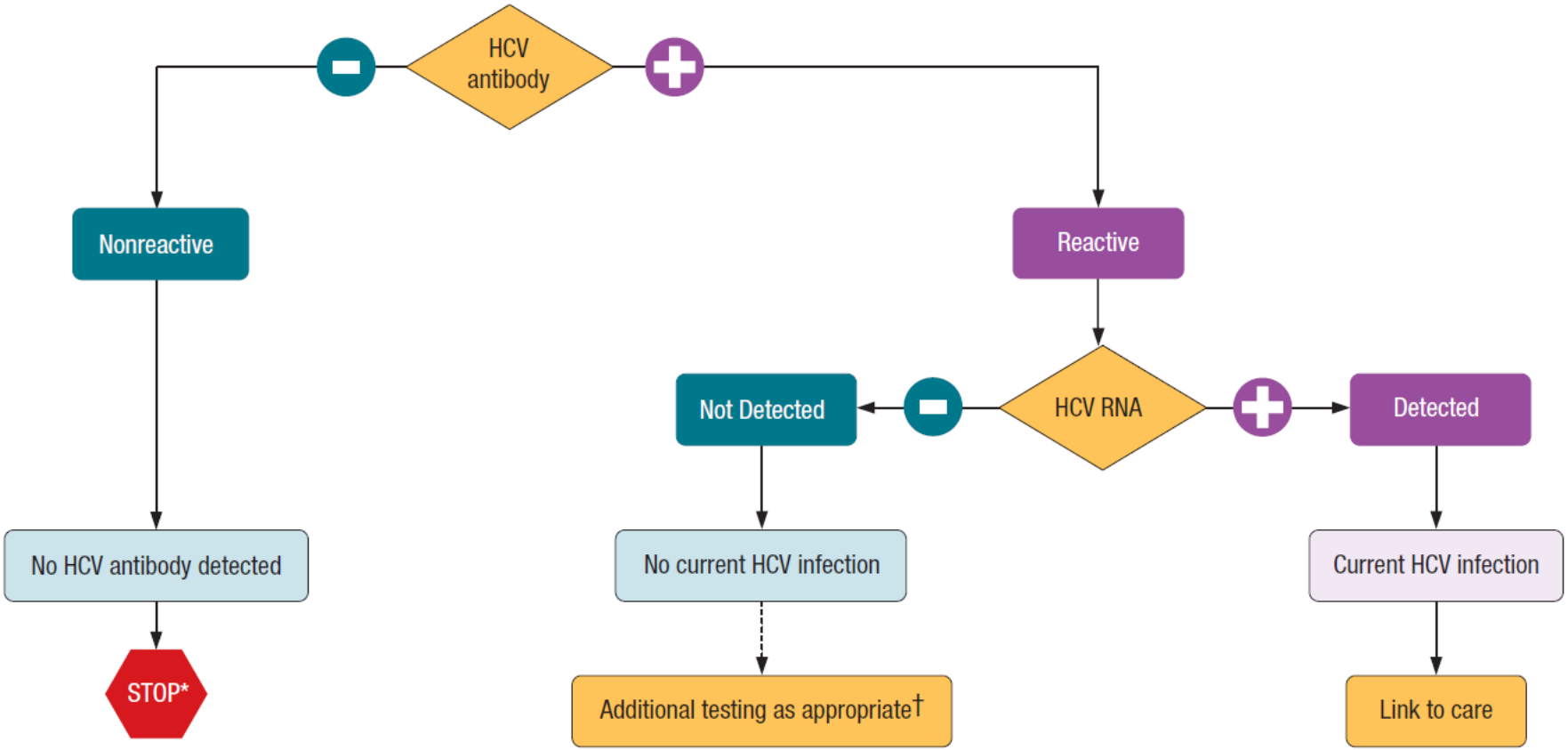
- * of course unless your county is experiencing an outbreak.

Hepatitis C

- Exposure risk
  - 1 – 2% risk of conversion
- Baseline testing
  - Follow-up 6 weeks, 3 months, 6 months
- Treatment

Recommended Testing Sequence for Identifying Current Hepatitis C Virus (HCV) Infection

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention



* For persons who might have been exposed to HCV within the past 6 months, testing for HCV RNA or follow-up testing for HCV antibody is recommended. For persons who are immunocompromised, testing for HCV RNA can be considered.

† To differentiate past, resolved HCV infection from biologic false positivity for HCV antibody, testing with another HCV antibody assay can be considered. Repeat HCV RNA testing if the person tested is suspected to have had HCV exposure within the past 6 months or has clinical evidence of HCV disease, or if there is concern regarding the handling or storage of the test specimen.

Source: CDC. Testing for HCV infection: An update of guidance for clinicians and laboratorians. MMWR 2013;62(18).

Hepatitis C Treatments

Prescribing Information, Clinical Studies, and Slide Decks
All materials are available for download in their original formats as PDF or PowerPoint.

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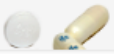

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AASLD
AMERICAN ASSOCIATION FOR THE STUDY OF LIVER DISEASES

HCV Guidance: Recommendations for Testing, Managing, and Treating Hepatitis C

IDSA
Infectious Diseases Society of America

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This version of the guidance has been updated to reflect several important developments, including... read more

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Start Here: Choose a patient profile from the menu above.

Welcome to HCVGuidelines.org

The AASLD and IDSA in partnership with the panel have created an updated web experience to facilitate easier and faster access to this important resource. Please select a patient profile from the menu above, click on a Guidance section below, or use the search box to begin.

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- **Retreatment of Persons in Whom Prior Therapy Has Failed** - *Choose Patient Genotype*
- **Management of Unique Populations** - *Review Recommendations*

Using the Guidance on Your Mobile Device

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Measles Mumps and Rubella

- Healthcare personnel born after 1957 without documentation of receipt of two doses of live vaccine or laboratory evidence of immunity.
- Usually given as MMR; two doses, 2nd dose at least 1 month later.
- Contraindicated for pregnancy, immunocompromised state, history of anaphylactic reactions after gelatin ingestion, receipt of neomycin, or recent receipt of immune globulin.

Review question

The IP is reviewing the immunization records of healthcare personnel at their facility and discovers that employees born before 1957 do not have any record of receiving MMR vaccine. What should she recommend to the Human Resources Director regarding employees born before 1957?

a. They are considered immune and do not require follow-up.
b. They should receive two doses of the vaccine 4 weeks apart.
c. They are only required to provide proof of immunity to measles.
d. They are required to provide proof of immunity to measles, mumps, and rubella.

Answer

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Varicella vaccine

- Varicella-zoster live virus vaccine
  - Two doses 4 – 8 weeks apart
  - Recommended for healthcare personnel without a reliable history of varicella, laboratory evidence of varicella immunity, or receipt of vaccine.
- Contraindications – pregnancy, immunocompromised state, anaphylactic reaction after receipt of neomycin or gelatin.

Varicella

- Post-exposure
  - Varicella zoster immune globulin (VZIG) for persons not immune
  - Work restriction
    - Exclude from work 10th – 21st day from first day of exposure (day 28 for healthcare provider that received VZIG).

Review question

An employee who is not immune to varicella-zoster was exposed to a patient with active chickenpox. How long must the employee remain on work restrictions?

a. Until evaluated by a physician
b. From day 10 after exposure to day 21 after exposure
c. No work restriction is necessary if no signs and symptoms are present.
d. At the discretion of the hospital infectious disease physician.

Answer

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Herpes zoster- Shingles

- Disseminated shingles or shingles in a severely immunocompromised patient can cause an occupational exposure in varicella naive individuals
- Localized shingles is generally not considered an occupational exposure as standard precautions would interrupt transmission

Neiserria meningiditis

- Meningococcal polysaccharide vaccine
  - One dose, generally not recommended for healthcare providers with the exception of microbiologists.
- Post exposure – personnel with direct contact with respiratory secretions.
  - Treated with Rifampin, Ceftriaxone, Ciprofloxacin.
- Exposure is only those within 3 feet of the patient's mouth (the employee pushing the foot end of the gurney is not exposed).
- Prophylaxis should not begin until at least a definitive gram stain is available (GNR) as the vast majority of meningitis cases are viral and the majority of bacterial meningitis are Streptococcal

Review question

A patient in the Emergency Room is diagnosed with bacterial meningitis due to *Neiserria meningitidis.* The patient was not properly isolated, and a number of employees entered her room without wearing a mask. Which employee should receive PEP?

a. The phlebotomist who drew blood on the patient.
b. The respiratory therapist who intubated the patient.
c. The radiology technician that performed the chest radiograph.
d. The employee from admissions that registered the patient.

Answer

A patient in the Emergency Room is diagnosed with bacterial meningitis due to *Neiserria meningitidis.* The patient was not properly isolated, and a number of employees entered her room without wearing a mask. Which employee should receive PEP?

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Challenging Infectious Diseases

- Scabies
- Enteric pathogens – Norovirus, Salmonella
- Tuberculosis
- Bloodborne pathogens

Scabies

- Period till symptomatic if previously infected 1-4 days up till 4-6 weeks if not previously infected
- Generally not treated until symptoms appear for work related exposure without adequate personal protective equipment.
  - Exception: outbreak, Norwegian scabies
- Treatment – Permethrin, Lindane cream
- Work restriction – restrict from direct patient contact until 24 hours after effective treatment.

Enteric pathogens

- Generally community acquired disease
- Salmonella, other foodborne pathogens
  - Restrict from work until cleared by public health department.
- Norovirus
  - Restrict from work until 48 hours after resolution of diarrhea.
  - http://www.cdc.gov/hicpac/norovirus/002_norovirus-toc.html HICPAC guideline, 2011

Tuberculosis

- Caused by *Mycobacterium tuberculosis*
- AFB (Acid Fast Bacilli) – stained slide
- Historical cause of ‘Consumption’
- Serious chronic illness
- Can be fatal if untreated

Risk of TB

- At risk of developing disease
  - Recent infection with TB
  - IV drug use
  - History inadequate treatment
  - Immunocompromised: HIV, cancer, elderly
- At risk of acquiring disease
- Immunocompromised
- Healthcare workers
- Medically underserved
- Foreign born
- Close contact with suspect/known TB

Tuberculosis

- New hire and annual screening requirement.
  - Two step testing if using TST and no skin TST in previous year
- Tuberculin skin test (TST)
  - Negative, repeat annually
  - Positive, baseline chest xray – annual symptom questionnaire.
- Quantiferon – Blood assay MTB
- Treatment for latent Tuberculosis.
- For active disease restrict from work until cleared by public health department.

Risk of Employee Exposure

- Risk is affected by
  - Infectiousness of patient
  - Environmental conditions
  - Duration of exposure
- Most persons exposed do not become infected.

Review question

Several HCP have been exposed to a patient with untreated, active pulmonary TB. Which is the best option for follow-up after this exposure?

a. TSTs should be administered at the time of exposure; if these are negative, then no further follow-up is needed.

b. TSTs should be administered at the time of exposure and repeated at 12 weeks postexposure; converters without symptoms should be excluded from work and treated immediately.

c. TSTs should be administered at the time of exposure and repeated at 12 weeks postexposure; converters with symptoms should follow up with a chest x-ray.

d. TSTs and chest x-rays should be administered at the time of exposure and repeated at 12 weeks postexposure.

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d. TSTs and chest x-rays should be administered at the time of exposure and repeated at 12 weeks postexposure.

Engineering Controls

- Negative pressure isolation room
- Direct source control – booths
- UV lights

Work Practice Controls

- Personal Protective Equipment
  - National Institute Occupational Safety and Health (NIOSH) certified respirator
    - N95, TB hood
  - Fit testing required for N95 respirator

Tuberculosis exposure

- Exposure – baseline, 10 – 12 week repeat testing. For positive TST/Quantiferon employees obtain symptom questionnaire.
  - BCG
- Conversion – negative to positive test.
  - Offer treatment: INH
  - Monitor liver enzyes

CDC PEP – HBsAG positive patient

- Employee positive for HBsAB
  - No treatment

- No history of Hepatitis B vaccine

HBIG X 1 – begin vaccine series

Non-responder HBIG X 2

Review question

An employee has sustained a needlestick injury from a blood contaminated needle. The source patient was Hepatitis B virus (HBV) positive, and the employee had completed one of three vaccinations in the Hepatitis B series. Which of the following is the correct postexposure prophylaxis (PEP) for this patient?

a. Complete the Hepatitis B vaccine series
b. Complete the Hepatitis B vaccine series and provide Hepatitis B immunoglobulin.
c. Provide Hepaitits B immunoglobulin and begin interferon therapy.
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PEP Hepatitis C positive patient

- Post-exposure prophylaxis not recommended.
- Antivirals such as Interferon may be effective only on acquired infection

PEP HIV positive patient

- Receive medical evaluation as soon as possible.
- Baseline laboratory work and Prophylaxis (if warranted) within hours
  - Mucous membrane vs. percutaneous
  - Status known vs. unknown (risk factors)
  - Known viral load