**Employee Health**

**Health Care Personnel**

“...all paid and unpaid persons working in healthcare settings who have the potential for exposure to infectious materials, including body substances, contaminated medical supplies and equipment, contaminated environmental surfaces, or contaminated air.”

*Guidelines for Infection Control In Healthcare Personnel. CDC 1998*
Elements of an Employee Health Program

- Medical evaluations – pre placement
- Employee health guidelines
- Health and safety education
- Exposure/illness analysis & trending
- Confidential employee health records

Pre-Employment/Placement

Health History:

- Immunization Status
- Communicable disease history
- Immunodeficient conditions
- Screening for vaccine preventable disease (e.g. Hepatitis B, Measles, Mumps, Chicken Pox)
- Tuberculin Skin Test (TST)
- Presence of infection (e.g. dermatitis, wounds) or disability

Immunization Recommendations for HCW

- Hepatitis B vaccine
- Influenza vaccine
- Measles
- Mumps
- Rubella
- Varicella
- Tetanus
- Rabies (in select settings)
- Pertussis
Exposure Evaluation

- Definition of exposure
- Infectious agent
- Mode of transmission
- Degree of contact/duration
- Use of barriers
- Susceptibility of HCW or Patients

Post Exposure Counseling

- Risk of infection
- Signs & symptoms of infection
- Prophylaxis
- Testing
- Side effects of medications
- Interim precautions
- Risk reduction measures
- Work restrictions

Conjunctivitis

- Emphasis on infectivity – adenovirus primary cause
- Outbreaks by other organisms rare
- Standard precautions, handwashing, disinfection of environment
- Restrict infected HCW from patient care for duration of symptoms
Varicella (Chickenpox)
- Incubation: 10 - 21 days, often 14
- Communicable: 1 - 2 days before symptoms & until lesions crusted
- Vaccine: Recommended (2 doses 0.5 ml, SC, 4-8 wk. apart)
- Screening: May be cost effective; no post vaccine screening; accept history of disease
- Shingles: reactivation of VZV, localized needs no isolation

Measles, Mumps, Rubella
- Screening can be done if cost effective
- Vaccinate non-immune or unvaccinated personnel
- Do not administer the vaccine to pregnant personnel or those who might become pregnant in the next 30 days
- Work restrictions.

Scabies
- Transmission: Skin to skin contact, ? contact with infested linens, clothing
- Communicable: Until adequately treated
- Work Restrictions: None unless infested, then off work until treated and no s/s
- Do not treat exposed employees unless symptoms develop or outbreak situation
Lice (Pediculosis)

- Standard Precautions
- Head lice: don’t jump or fly. Don’t share brushes, combs. OTC or Rx treatment
  - MUST comb out ALL the nits, or don’t bother
- Pubic lice (crabs) not an occupational risk
- Body lice: extremely rare, hide in seams of clothing

Bordetella Pertussis

- Transmission: Droplet, contact with aerosols or respiratory secretions
- Communicable: Onset of catarrhal stage and up to 3 weeks after symptoms
- PEP: Erythromycin, Sulfa, or Azithromycin
- Tetanus Toxoid, Reduced Diphtheria Toxoid and Acellular Pertussis (Tdap) recommended for adults

MRSA Infection and Colonization

- Epidemiology of MRSA no different from MSSA
- Culture only personnel implicated in transmission
- Remove from direct pt care MRSA carrier or infected personnel linked to transmission
Herpes Simplex
- Standard Precautions
- Infection of fingers most common transmission to HCW (herpetic whitlow)
- PEP not recommended

Work Restrictions:
- Hands – exclude from patient contact
- Orofacial - case by case basis, use good hand hygiene

Influenza
- Health Education
- Appropriate PPE
- Effective vaccination program
- Work Restrictions
  - Symptomatic HCWs need to stay home
  - 24 hours afebrile without medication for seasonal influenza
  - CDC Guidelines for HINI + diagnosis HCW include 7 days after onset of symptoms or 24 hours afebrile without medication but probably will be modified

Tuberculosis
Guidelines for Preventing the Transmission of *Mycobacterium tuberculosis* in Health-Care Settings

*Morbidity and Mortality Weekly Report (MMWR)*
Recommendations and Reports
December 30, 2005

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**Tuberculosis**
- Caused by *Mycobacterium tuberculosis* (*M.Tb*)
- There are other Mycobacteria species but they are **not transmissible from person-to-person**, e.g., *Mycobacterium Avium Complex (MAC)*; *Mycobacterium Other Than Tuberculosis (MOTT)*; *Non-tuberculous Mycobacteria (NTM)*; *M. intracellulare, cheloneae, kansasii*, etc.
- Standard Precautions
- No exposure issues with the MOTTs

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**Signs and Symptoms of TB**

<table>
<thead>
<tr>
<th>Initial:</th>
<th>Advanced:</th>
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<tbody>
<tr>
<td>Fever</td>
<td>Cough</td>
</tr>
<tr>
<td>Fatigue</td>
<td>Chest pain</td>
</tr>
<tr>
<td>Weight loss</td>
<td>Coughing blood</td>
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<tr>
<td>Night sweats</td>
<td>Hoarseness</td>
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</tbody>
</table>
Transmission of TB

Tiny TB particles are released by:
- Coughing
- Sneezing
- Speaking
- Singing

- Affected by:
  - Infectiousness of patient (e.g. cough, cavity)
  - Environmental conditions (e.g. room air changes, size of room)
  - Duration of exposure (e.g. minutes, hours, days)

Factors That May Increase Communicability Of Tuberculosis

- Presence of cavitation on chest radiograph
- Inappropriate or short duration of TB therapy
- Administration of cough-inducing or aerosol-generating procedures
  - Sputum induction
  - Aerosolized medication administration
  - Intubation, open suctioning

TB: Infection vs. Disease

- A person may be exposed to and infected with TB (+ PPD/BAMT) without having active TB, and is not infectious
- A person is infectious when active lung or throat TB is present, with release of infected secretions
Strong Indicators of Active TB

- Acid fast bacilli (AFB) in sputum smear
- X-ray or chest CT suggestive of TB
- Symptoms

Drug Treatment

- Isoniazid (INH)
- Rifampin (RIF)
- Ethambutol (EMB)
- Streptomycin (SM)
- Pyrazinamide (PZA)
- Directly Observed Therapy (DOT)

Multi-Drug Resistant TB (MDRTB)

TB resistant to 2 or more drugs

- Some strains resistant to 7 drugs
- Treatment time increases to 18-36 months or more (instead of 12)
- Cure rate 60% or less
Ambulatory Facilities & TB
Care of TB patients requires specific policies, engineering controls, work practices, personal protective equipment, education, by law
• Negative pressure room(s) with $\geq 6$ (old) or 12 (new) air exchanges per hour
• Exhausted directly from facility, no communication with other rooms, or must be HEPA filtered
• TB Exposure Control Plan and Respiratory Protection Program
• Is it worth it? Can elect not to provide care

Isolation Engineering Controls
• Single-patient Airborne Infection Isolation (AII) room
• Keep door, windows closed
• Negative pressure (monitored daily)
  • $\geq 6$ air changes per hour for existing rooms
  • $\geq 12$ air changes per hour whenever feasible and for new construction

Tuberculosis Isolation
Personal Respiratory Protection
• N95 particulate respirator
  – Medical questionnaire & evaluation
  – Fit test, initial and annual
  – Seal check at time of use
  – Training
PAPR- Powered Air Pressured Respirator
  - Fit testing not required
  - Pressure check before each use
Facility TB Risk Assessment

- Number of cases of active TB seen in facility previous year
- Level of risk in the community (health dept)
  - Number of cases
  - Demographics of cases prevalent in your ASC patients?
  - Risk factors
- Number of PPD/BAMT conversions in employees previous year

Tuberculosis Skin Testing (TST)

Screening HCWs for Latent TB Infection (LTBI)

- Everyone on hire
- Low Risk (< 3 TB patients annually)
  - Additional TB screening not necessary unless exposure occurs
- Medium Risk (≥ 3 TB patients or transmission)
  - Annual TB screening
  - Ongoing transmission…
TST

Booster Phenomenon
• Ability to react to TST may wane over time
• Test “boosts” ability to react to subsequent tests
• Positive reaction to a second test (boosted reaction) may be misinterpreted as a new infection (conversion) if only one test is done

Two-Step Testing
• Perform on newly employed HCWs
  • Initial negative TST result, and
  • Do not have a documented negative TST results the preceding 12 mo
• Second TST should be administered at least one week after the first negative TST

Blood Assay M. Tb (BAMT)
• Checks for TB using one blood draw – eliminates need to “read” PPD
• Can be cost prohibitive

Screening HCWs for Active TB Disease
• Annual symptom screen for + employees
• Evaluate HCWs with TB symptoms promptly
• Restrict symptomatic HCWs from the workplace until infectiousness is ruled out
• Investigate new ‘converters’!

Tuberculosis Post-Exposure Management
• TST or BAMT ASAP at time of exposure
• Repeat 8-10 weeks later
• If positive, obtain chest X-ray, check for signs and symptoms, refer to MD
• Obtain chest X-ray only on those with prior positive TST/BAMT who are symptomatic
Prevention and Control

- Annual Facility TB Risk Assessment
- Employee screening program
- Annual TB education for HCW
- Early identification and effective treatment- THINK TB!
- Isolation for suspected or diagnosed cases
- Precautions for cough-producing procedures
- Respiratory Protection Program-TB Plan in place
- Place a surgical mask on the patient for transport

Any Questions?

Hepatitis

- Hepatitis is defined as "inflammation of the liver"
- Can be caused by chemical exposure
  - Acetaminophen, other drugs
- Can be caused by a group of viruses, called the Hepatitis Viruses
- There are a lot of Hepatitis Viruses! We can only test for a few of these
**Viral Hepatitis**

Clinical features
- Malaise
- Fatigue
- Anorexia
- Nausea/vomiting
- Abdominal discomfort
- Arthralgia/myalgia
- Fever
- Jaundice (varies with age)

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**Viral Hepatitis A-E**

- Hepatitis A and E
  - Fecal-oral route
  - Occasional healthcare infection control issue (e.g. HAV-infected dietary HCW)
- Hepatitis B, C and D
  - Bloodborne pathogens
  - Healthcare transmission
  - Healthcare occupational exposure → needlestick

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**Bloodborne Pathogens**

- Most exposures are needlesticks
- Sprays to face, blood or OPIM on open cuts
- OPIM- semen; vaginal secretions; synovial, amniotic, cerebrospinal, pleural, pericardial and peritoneal fluids
- Does NOT include urine, stool, tears, sweat unless visibly bloody
- Written Exposure Control Plan
OSHA'S BBP Rule Revisions
1-18-2001

- Sharps - safety devices required
- Solicitation of employee input
- OSHA 300 log
  - Device
  - Location
  - Circumstances

Hepatitis B

- Worldwide distribution
- Causes 80% of liver cancer worldwide
- Transmission
  - Blood or blood products
  - Sharing needles
  - Sexual contact
  - Perinatal/vertical
- Incubation 1-6 months

Hepatitis B Prevention and Control

- Standard Precautions
- Hepatitis B vaccine (HBV)
- Counseling
- Safer medical devices
Hepatitis B Post-exposure

- Test for anti-HBs if person has been vaccinated, but vaccine response is unknown
- Baseline testing not necessary if exposed person has not been vaccinated or vaccine response is known
- Hepatitis B immune globulin (HBIG) for persons not immune to HBV exposed to HBsAg positive source

Hepatitis C

- Most common cause of post-transfusion non-A, non-B viral hepatitis until 1990s
- Worldwide distribution
- Transmission
  - Parentally (needles)
  - Organ transplantation
  - Transfusions
- Incubation: 2-26 weeks
- Often asymptomatic
- Leading cause of liver transplants in U.S.

Hepatitis C

- Prevention
  - Screening blood donors, IDUs, tattoos?
  - Behavior modification
  - Standard Precautions
- Post Exposure
  - No prophylaxis available
  - Anti-HCV and ALT at 4-6 months; ALT is a liver damage marker
  - HCV RNA at 4-6 weeks (earlier detection)
Human Immunodeficiency Virus (HIV)
- Viral infection of CD4 cells compromising the natural immune system
- Primarily sexually transmitted disease (75%)

Post Exposure Management
- If source HIV +, test at 6 weeks, 3 & 6 months
- Extend to 12 months if HCP infected w/ HCV
- Baseline and 2 weeks after starting PEP
  - CBC
  - renal and hepatic profiles
- If on protease inhibitor
  - monitor for hypoglycemia
  - monitor for crystalluria, hematuria, hemolytic anemia, and hepatitis if on indinavir

HIV PEP and Counseling
- Start PEP & counseling ASAP after exposure
  - 1-2 Hours rather than days
  - Urgent medical concern
- Consider re-evaluation of the exposed person within 72 hours
  - Additional info about the source?
  - If source HIV-negative, stop PEP
HIV
• Prevention and Control
  – Education
  – Standard Precautions
    • Appropriate use of personal protective equipment
    • Cleaning and reprocessing
  – Safer medical devices
  – Safe work practices

Any Questions?