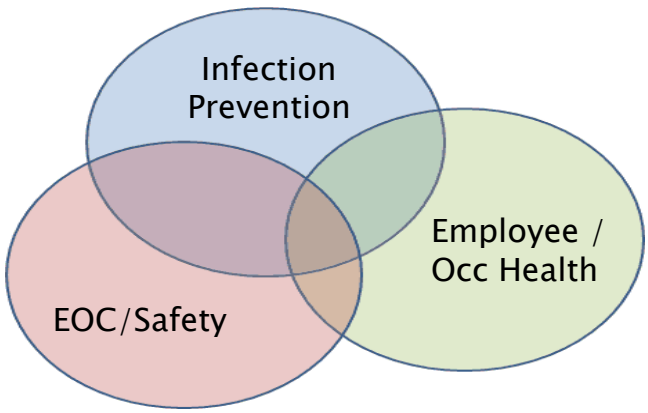
Nebraska Infection Control Network

Infection Prevention in Health Care Providers

Richard Starlin MD
Assistant Professor Division of Infectious Diseases, UNMC
Associate Medical Director Employee Health, Nebraska Medicine

1

Overview of the Relationship



2

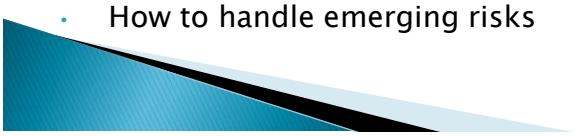
When we say employee…

- People paid by you PLUS
- Students
- Volunteers
- Licensed Independent Practitioners (MD, PA, NP)
- Contracted workers
- Vendors (in some cases)

3

Basics of the Program

- What should the program include?
- Pre-employment health assessment in relation to work risks
- Vaccination & immunity- Pre-employment and ongoing during employment
- Fit testing
- What should employee do if sick
- Return to work after illness- when? Process?
- Management of possible/known exposures
- Colleague health conditions- pregnancy, immune compromise
- How to handle emerging risks



4

Pre-employment Assessment

- Health care providers are at risk for exposure to and acquisition of vaccine preventable diseases. This risk can be minimized by:
  - Strict adherence to handwashing
  - Rapid institution of appropriate isolation for patients with known or suspected communicable diseases
  - Maintaining up to date immunizations in health care providers
- Health status as pertains to risk of illness in employment role
  - Health issues and potential exposure to patients infected with or lab work with special pathogens
  - Risk of vaccination with health conditions (ie ACAM vaccine)

5

Assessment of Immunity against vaccine preventable illness

- All medical facilities that provide direct patient care are encouraged to formulate and implement a comprehensive immunization policy for all health care providers
- This policy should describe exactly what the risk of exposure to vaccine preventable diseases is, according to job description
- Recommendations for immunization should be based upon the risk of exposure
- All new employees should receive a prompt review of their immunization status prior to starting to care for patients

6

Assessment of Immunity against vaccine preventable illness

- All health care providers should be immune to measles, mumps, rubella, and varicella.
- All health care providers with potential exposure to blood or body fluids should be immune to hepatitis B.
- All health care providers should be offered annual immunization with influenza vaccine.
- All health care workers should receive a one-time dose of Tdap as soon as possible, unless they are certain that they have received Tdap.

7

Assessment of Immunity against vaccine preventable illness

- At-risk health care providers and laboratory personnel should be offered the following vaccines: polio, meningococcal, rabies, plague, typhoid, and hepatitis A.

8

Assessment of Immunity against vaccine preventable illness

- Offer vaccination free of charge?
- Define what will count as immunity
  - Documented infection? Titers? Vaccination?
- Define your requirements and consequences of refusal
- Approach to non-responders

9

Assessment of Immunity against vaccine preventable illness

- Hepatitis B: Documented proof of a positive Hepatitis B antibody titer post vaccination series. Value >10
- Rubeola (Measles): Documentation of 2 MMR vaccinations administered at least 28 days apart OR documented proof of a positive Rubeola titer at >12 months of age
- Mumps: Documentation of 2 MMR vaccinations administered at least 28 days apart OR documented proof of a positive Mumps titer at >12 months of age
- Rubella: Documentation of 1 MMR vaccination OR documented proof of a positive Rubella titer at >12 months of age.
- Varicella: Documentation of 2 Varicella vaccinations administered at least 28 days apart OR documented proof of a positive Varicella titer.

10

Influenza Vaccination

- HCP
  - Mandate for vaccine?
  - Mandate for vaccine or declination?
  - Simply offer vaccine?

11

COVID Vaccination

- There are many benefits of getting vaccinated against COVID-19
  - Vaccines available in the United States are safe and effective at protecting people from getting seriously ill, being hospitalized, and even dying
  - COVID-19 vaccines can offer added protection to people who had COVID-19, including protection against being hospitalized from a new infection, especially as variants continue to emerge
  - As with vaccines for other diseases, people are protected best when they stay up to date with the recommended number of doses and boosters, when eligible

12

COVID-19 Vaccination

- Vaccination with one of the available vaccines is indicated for all health care workers unless there is a contraindication (which is quite rare)
- Have to keep up with changes in requirements and recommendations
- Staying up to date with latest boosters

13

TB Assessment

- Plan depends on facility TB risk assessment
  - Work closely with IP
- In regions with low TB incidence rate, HCWs should undergo initial TB screening with individual risk assessment and symptom evaluation
  - For individuals without documented prior TB disease or LTBI, baseline TB testing with an IGRA or a TST should be performed
  - In the absence of a known exposure or ongoing transmission, no routine serial TB testing at any interval after baseline is warranted
  - Serial TB screening may be reasonable for HCWs at increased risk for occupational exposure to TB (such as pulmonologists or respiratory therapists) or for HCWs in certain settings (such as emergency departments)
- TST vs IGRA
  - Interpreting results
  - CXR and Referral if positive?

14

TB Assessment- PPE

- Fit testing
  - The Occupational Safety and Health Administration (OSHA) requires annual fit testing
  - HCWs should wear respiratory protection in the following circumstances:
    - While in the room of a patient with known or suspected active infectious TB
    - While accompanying a patient with known or suspected active infectious TB, such as during transit
    - While present during a procedure for a patient with known or suspected active infectious TB that induce coughing or aerosolization, such as:
      - Endotracheal intubation
      - Bronchoscopy
      - Sputum induction
      - Chest physical therapy
      - Administration of aerosolized drugs
      - Irrigation of a tuberculous abscess
      - Autopsy on a cadaver with untreated TB disease

HCWs who are unable to use an N95 mask due to poor fit (for example, individuals with beards or those whose facial structure precludes a tight seal) should use a PAPR

15

Colleague Illness

- Employee illness and symptoms
  - Generally febrile colleagues should not report to work
    - Certain conditions, e.g., boils, weeping dermatitis, infected wounds or sores, acute gastroenteritis, uncontrolled cough, profuse sneezing or runny nose require removal from work
  - Duration out and RTW depends on syndrome, diagnosis and recovery
    - What is required for RTW?
- Exposure to contagious pathogen- very pathogen and situation dependent
  - Can colleague work?
  - Any PEP?

16

Return to Work – Respiratory

Illness	Work Restrictions	Duration
COVID 19	Exclude from work	Protocol managed by Employee Health.
Influenza	Exclude from work Upon return, exclude from working in departments with known "high-risk" patient contact* for a minimum of 7 days starting from day of symptom onset	Until the following criteria have been met (typically 3-5 days): • Fever free (<100 F) for 24 hours without the use of fever-reducing medication • Improvement of symptoms for 24 hours • Symptoms mild enough to be tolerable to work with, do not interfere with the ability to perform one's job duties, and confinable by donning an appropriate mask
RSV and Other Upper Respiratory Infections (RSV, Bronchitis, Common Cold, Rhinovirus, etc.)	Exclude from work	Until the following criteria have been met: • Fever free (<100 F) for 24 hours without the use of fever-reducing medication • Improvement of symptoms for 24 hours • Symptoms mild enough to be tolerable to work with, do not interfere with the ability to perform one's job duties, and confinable by donning an appropriate mask

*High risk departments primarily consist of immunocompromised patients including neonatal patients, and/or patients undergoing cancer treatment or organ transplant. If the employee can be reassigned to a department that does not have "high-risk" patient contact and has met all other listed criteria, then the employee may RTW in the reassigned department while waiting to get full clearance to RTW in departments with "high-risk" patient contact.

17

Return to Work – Diarrheal Diseases

Illness	Work Restrictions	Duration
Gastroenteritis	Exclude from work	Until the following criteria have been met: • Until symptoms (vomiting, diarrhea) have resolved without the use of anti-diarrheal medications for **24** hours • Fever free (<100 F) for 24 hours without the use of fever-reducing medication
Norovirus	Exclude from work	Until the following criteria have been met: • Until symptoms (vomiting, diarrhea) have resolved without the use of anti-diarrheal medications for **48** hours • Fever free (<100 F) for 24 hours without the use of fever-reducing medication
Clostridium difficile (C-diff)	Exclude from work	Until the following criteria have been met: • Until symptoms (vomiting, diarrhea) have resolved without the use of anti-diarrheal medications for **72** hours • Fever free (<100 F) for 24 hours without the use of fever-reducing medication

18

Surveillance for Infection in HCPs

- Ongoing – close coordination with your local Health Department
  - What's going around?
  - Seasonal
- Investigation of hospital acquired infection
  - Risk to colleagues?
- Accidental Exposure to Communicable Disease

19

Post-Exposure Assessment

For ***all*** Communicable Diseases, define "exposure"

- Route of Transmission
- Type of Contact
- Duration of Exposure
- Period of Communicability
- Incubation period
- Exposed population
  - Goes beyond employees during care
  - May include pre-hospitalization as well

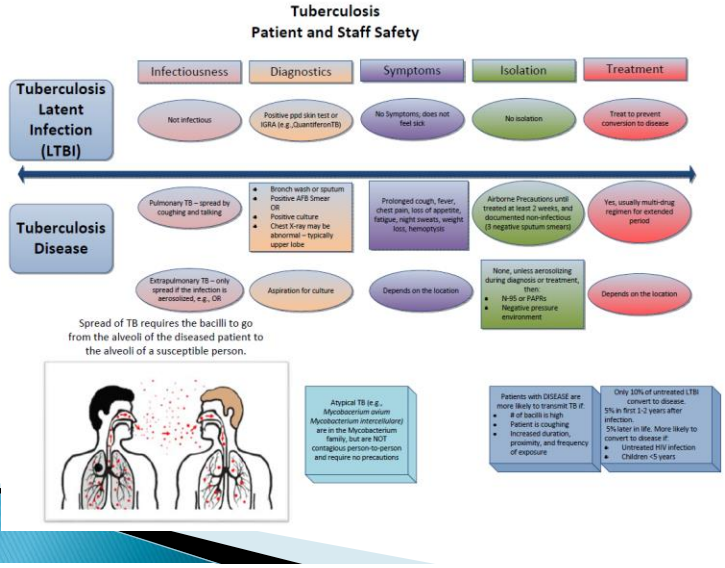
20

Tuberculosis

- Patient with Tuberculosis
  - Were precautions used?
  - When were they started?
  - Who was in the closest proximity?
    - Low rate of infection
    - Concentric circle
- Exposed
  - Baseline skin test
  - Retest

21

Differentiating Latent TB from Tuberculosis Disease



22

Blood Borne Pathogens

- Bloodborne Pathogens- HIV, HBV, HCV
  - Define based on significant exposure AND significant route
    - The pathogen involved.
    - The type and severity of exposure
    - The amount of blood involved in the exposure
    - The amount of pathogen in the patient's blood at the time of exposure.

23

Blood Borne Pathogens

- Bloodborne Pathogens- HIV, HBV, HCV
  - What is the risk?
    - HIV
      - The estimated risk of HIV infection from a sharps injury is about 0.3 percent (1 in 300)
      - The risk appears to be greater than 0.3% for exposure to HIV (+) patients involving deep injury, visible blood on the device causing the injury or a device previously placed in the source patient's vein or artery. Lower for mucocutaneous exposure
    - HBV
      - The chance of becoming infected with hepatitis B from a sharps injury is estimated to be between 6 and 30%
    - HCV
      - The risk of infection after percutaneous exposure to HCV-infected blood is 1.8% (between 0.8 and 3%)

24

Blood Borne Pathogens

- What should you do if you have a blood occupational exposure?
  - Wash the site of the needlestick or cut with soap and water.
  - Flush splashes to the nose, mouth, or skin with water.
  - Irrigate eyes with clean water, saline, or sterile irrigants.
  - Report the incident to your supervisor or the person in your practice responsible for managing exposures.
  - Immediately seek medical evaluation from a qualified health care professional because, in some cases, postexposure treatment may be recommended and should be started as soon as possible.

25

Blood Borne Pathogens

- Health care professionals who evaluate the exposures of health care personnel (HCP) should be:
  - Selected before HCPs are placed at risk of exposure.
  - Experienced in providing antiretroviral therapy.
  - Familiar with the unique nature of dental injuries so they can provide appropriate guidance on the need for antiretroviral prophylaxis.
  - Because not all exposure assessors are experienced in antiretroviral therapy, it may be necessary to identify more than one health care professional to perform these tasks.

26

Blood Borne Pathogens

- Baseline testing of the source and the recipient
  - Could be an employee or other patient
- What to do if something positive
  - Reporting results
  - PEP
  - Referral?

27

Fetal Protection & Infections

- Concern is with HCW and the fetus
- Isolation Policies – designed to isolate the organism and/or the patient to protect employees and other patients in the hospital (pregnant and non-pregnant).
  - The need for further restriction is unusual.
- Responsibility of pregnant employees
  - be especially aware of identified and unidentified infectious conditions in a hospital
  - use extra caution in hygiene measures and appropriate isolation/precaution procedures
  - talk with the Employee/Occupational Health Nurse and/or the Infection Control Preventionist to understand the risks.

28

Fetal Protection

Agent	Special Precautions or Restrictions due to Pregnancy
Cytomegalovirus (CMV)	None; Use Standard precautions.
Hepatitis B	None; Use Standard precautions.
Hepatitis C	None; Use Standard precautions.
Herpes simplex	None; Use Standard precautions.
Human immunodeficiency virus	None; Use Standard precautions. Consider postexposure prophylaxis after high-risk needlestick exposure.
Influenza	None; Use Droplet precautions. Receive Vaccine (safe during pregnancy)
Measles	None; Use airborne precautions. Receive Vaccine**
Methicillin Resistant Staph aureus (MRSA)	None; Use contact precautions if infected.
Parvovirus B19	None; Use Droplet precautions.
Rubella	None; Use droplet precautions for acute infection; Contact precautions for Congenital Rubella. Receive vaccine**
Tuberculosis	None; Use airborne precautions.
Varicella-zoster	None; Use airborne and contact precautions. Receive Vaccine**; VZIG within 96 hours of exposure if susceptible.

* ** Live vaccines are given routinely before pregnancy

Reference: Guidelines for Infection Control in Health Care Personnel, 1998

29

Special Situations – Emerging Diseases

- MPox
- Ebola
- Maarburg
- Polio
- Pandemic Influenza
- Others?

<u>Be able to speak to the difference and calm the fears.</u>

30

Nebraska Infection Control Network

Questions?

Richard Starlin MD
Assistant Professor Division of Infectious Diseases, UNMC
Associate Medical Director Employee Health, Nebraska Medicine

31

References

- Guideline for infection control in health care personnel, 1998. Personal Author(s) : Bolyard, Elizabeth A.;Deitchman, Scott;Pearson, Michele L.;Shapiro, Craig N.;Tablan, Ofelia C.;Williams, Walter W.; Corporate Authors(s) : Hospital Infection Control Practices Advisory Committee (U.S.);National Center for Infectious Diseases (U.S.);National Immunization Program (Centers for Disease Control and Prevention);National Institute for Occupational Safety and Health.; Published Date : June 1998 Series : American journal of infection control ; v. 23, no. 3, p. 289-354;Infection control and hospital epidemiology ; v. 19, no. 6, p. 407-63; URL : https://stacks.cdc.gov/view/cdc/11563

32