Basics of TB Infection Control in a Clinic Setting

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June 5, 2024

Comprehensive TB Nurse Case Management
June 5 – June 6, 2024
San Antonio, Texas

Steven C. Trevino, FNP-C has the following disclosures to make:

- No conflict of interests
- No relevant financial relationships with any commercial companies pertaining to this educational activity

Adrienne Villareal, FNP-C has the following disclosures to make:

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Importance of this training

- Prevent the spread of infectiousness
- Protecting the patient and the healthcare staff
- Choosing appropriate PPE (masks)
- Recognize clinical characteristics
- Positive outcome for both patients and staff

TERMINAL PERFORMANCE OBJECTIVES

- Students will learn basics of TB infection control in a clinical setting. Controlling tuberculosis (TB) infection in a clinical setting is crucial to prevent the spread of the disease among patients and healthcare workers.

ENABLING PERFORMANCE OBJECTIVES

EPO 1: Choose the proper PPE (N95 or Surgical mask) for staff and patient.

EPO 2: Prevent the transmission of tuberculosis with engineering and administrative controls.

EPO 3: Describe the clinical characteristics of tuberculosis.

EPO 4: Describe the difference with Extrapulmonary and pulmonary tuberculosis.

EPO 5: Describe factors with infectiousness of children vs adults.

Importance

By implementing measures, clinics can effectively control TB transmission and ensure the safety of patients and healthcare workers. Regular review and updates to infection control practices are essential to adapt to changing circumstances and emerging evidence.

Controlling tuberculosis (TB) infection in a clinic setting is crucial to prevent the spread of the disease among patients and healthcare workers.

EPO 1: Choose the proper PPE (N95 or Surgical mask) for staff and patient

- When it comes to tuberculosis (TB), which is an airborne infectious disease, the type of mask chosen is crucial for both patient and healthcare personnel safety.

Differences – Surgical Mask vs. N95 Respirators

Surgical Masks: These masks are loose-fitting and primarily designed to provide a physical barrier to protect against large droplets, splashes, and sprays. They are not effective at filtering out small airborne particles. TB patients should be wearing surgical masks, NOT N95 respirators. N95 masks may exacerbate respiratory distress.

N95 Respirators: These are tight-fitting face masks designed to achieve a close facial fit and efficient filtration of airborne particles. The "95" in N95 refers to the mask's ability to filter out at least 95% of airborne particles, including very small particles such as those carrying TB bacteria. N95 respirators are recommended for healthcare personnel during procedures that may generate aerosols or when caring for patients with confirmed or suspected infectious TB.

Best Option for Healthcare Workers

- For healthcare personnel, the best option for protection against TB transmission is the N95 respirator. These masks offer a higher level of filtration efficiency compared to surgical masks, particularly for small airborne particles like those carrying TB bacteria. It's essential for healthcare facilities to provide appropriate respiratory protection and ensure proper fit testing and training for healthcare personnel who may be exposed to TB patients.

EPO 2: Prevent the transmission of tuberculosis with engineering and administrative controls.

Engineering Controls:

Ensure proper ventilation in waiting areas and patient care areas. Ideally, use negative pressure rooms for patients with suspected or confirmed TB.

Use ultraviolet germicidal irradiation (UVGI) in conjunction with ventilation systems to reduce the risk of TB transmission.

Administrative Controls:

Implement administrative measures to minimize the risk of TB transmission, such as triaging patients with respiratory symptoms promptly and separating them from other patients.

Develop and implement protocols for TB screening, diagnosis, treatment, and follow-up.

Ventilation

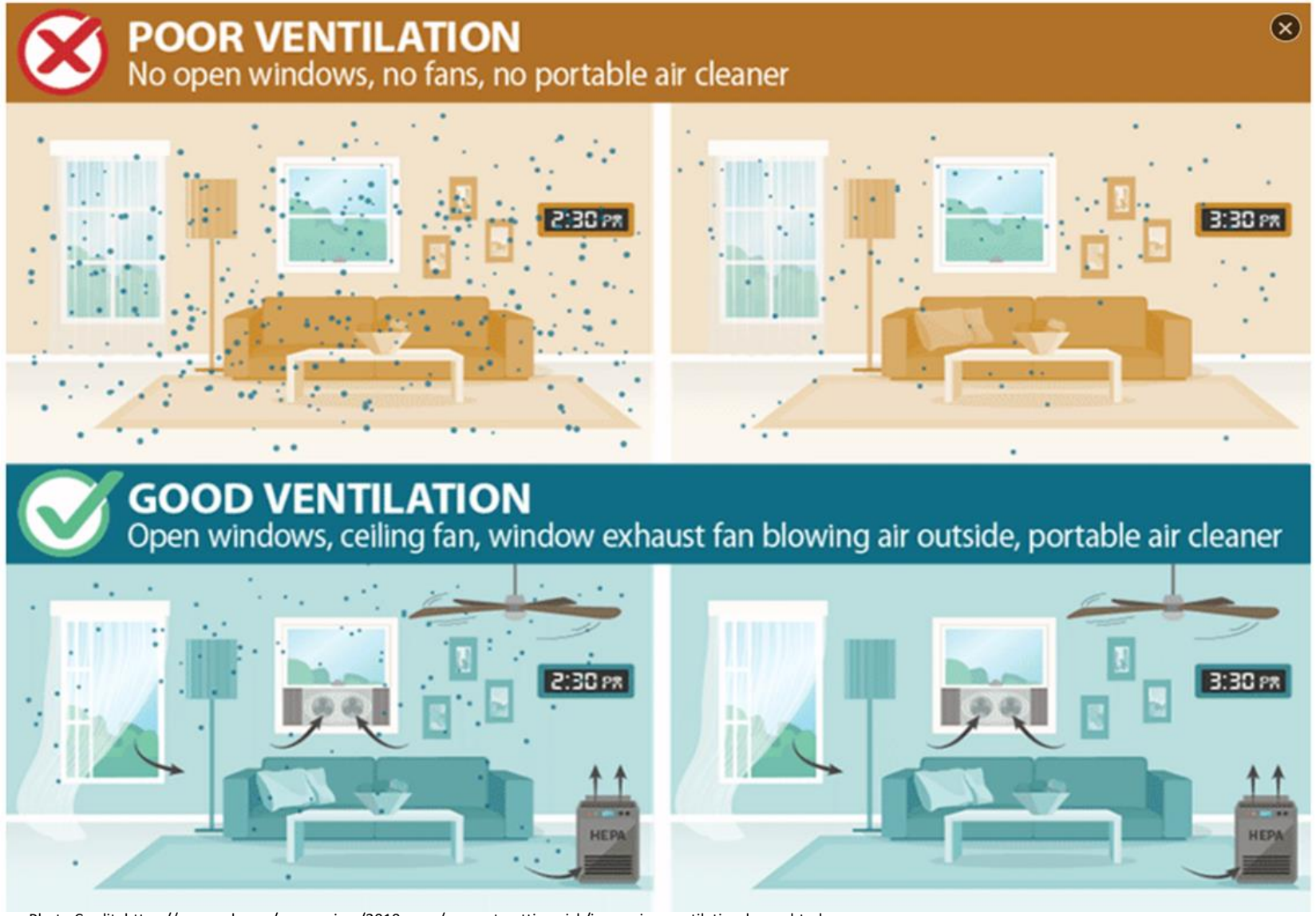
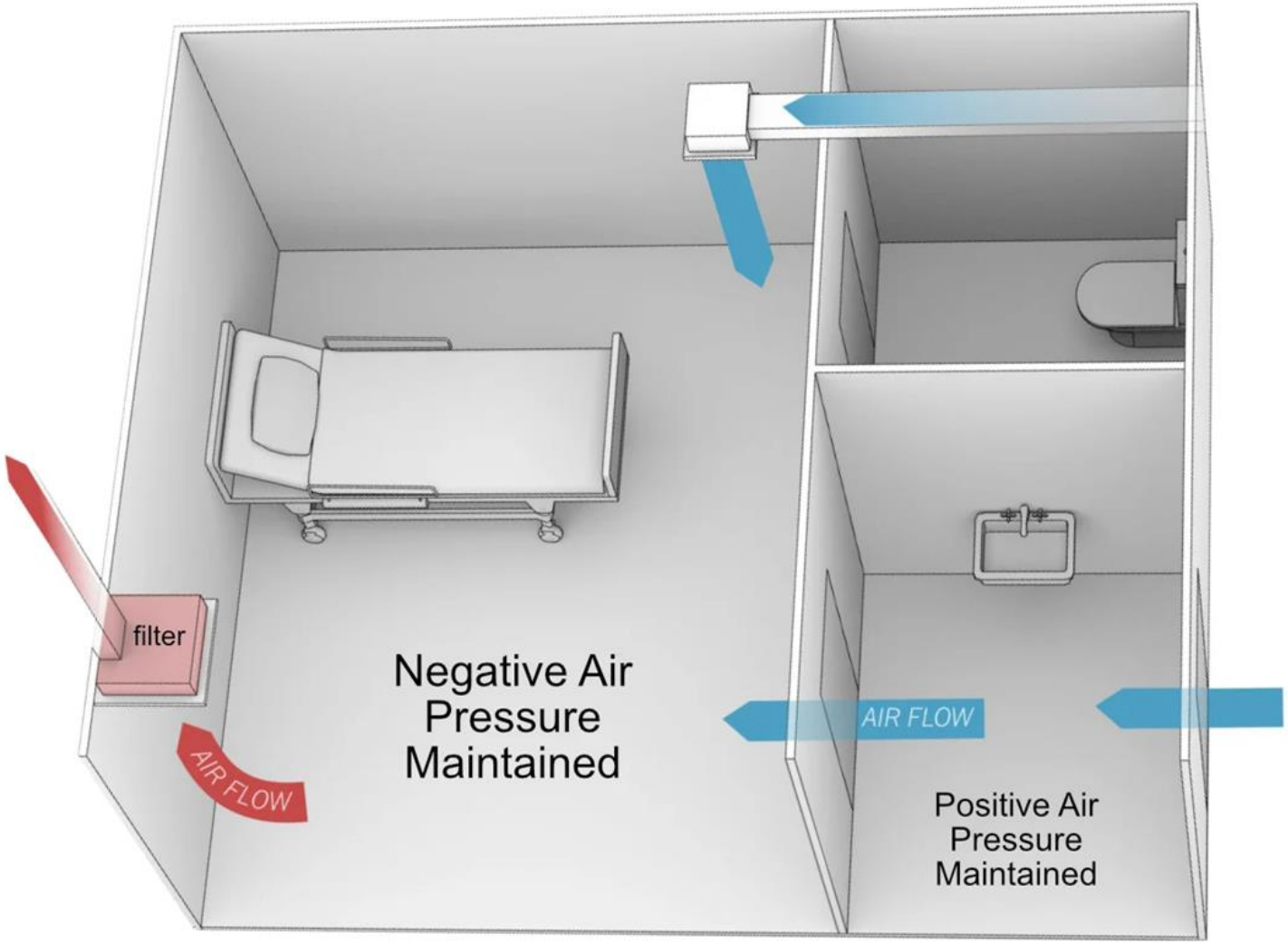


Photo Credit: https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/improving-ventilation-home.html

Airborne Infection Isolation Room



https://www.sonicu.com/blog/a-comparison-of-room-pressure-monitoring-systems-for-hospitals

EPO 3: Describe the clinical characteristics of tuberculosis.

- Tuberculosis (TB) is a bacterial infection caused by Mycobacterium tuberculosis. It primarily affects the lungs but can also affect other parts of the body. The clinical characteristics of tuberculosis can vary depending on whether it is latent TB infection or active TB disease.

Types of TB

Latent TB Infection (LTBI)

Usually asymptomatic: Most people with latent TB infection do not have symptoms.

Positive TB skin test or blood test (IGRA): Indicates exposure to TB bacteria.

Normal chest X-ray and physical examination: There are usually no signs of active disease.

Not contagious: People with latent TB infection cannot spread TB bacteria to others.

Types of TB continued

Active TB Disease Symptoms:

- Persistent cough: Often with sputum (phlegm) production, which may be bloody.
- Chest pain: Pain while breathing or coughing.
- Fatigue: Feeling tired or weak.
- Weight loss: Unintentional weight loss.
- Fever: Low-grade fever, especially in the afternoon or evening.
- Night sweats: Profuse sweating, particularly at night.
- Loss of appetite: Decreased appetite and possible nausea.

EPO 4: Describe the difference with Extrapulmonary and pulmonary tuberculosis.

- Pulmonary TB:

Cough with sputum: Productive cough lasting more than three weeks.

Hemoptysis: Coughing up blood or blood-streaked sputum.

Chest X-ray abnormalities: May show infiltrates, cavities, or other changes.

- Extra-pulmonary TB:

TB affecting organs other than the lungs, such as lymph nodes, bones, joints, kidneys, spine, or meninges (covering of the brain and spinal cord).

Symptoms depend on the affected organ system. For example, TB meningitis may cause headache, neck stiffness, confusion, and altered consciousness.

Other Clinical Characteristics

Granulomas: TB infection often forms granulomas in affected tissues, which are collections of immune cells.

Reactivation TB: Latent TB infection can reactivate years later, especially in people with weakened immune systems.

HIV Coinfection: TB and HIV often occur together, leading to more severe disease and complications.

Early detection and treatment are crucial for managing tuberculosis and preventing its spread.

EPO 5: Describe factors with infectiousness of children vs adults.

- Children and adults can both transmit tuberculosis (TB), but there are some differences in their infectiousness and susceptibility to the disease.

Children and TB

- Children are generally considered less infectious than adults when they have TB. This is partly because they often have paucibacillary (low bacterial load) forms of the disease, which means there are fewer bacteria in their sputum compared to adults with active TB. Additionally, children may not cough as forcefully or as frequently as adults, which reduces the likelihood of spreading TB bacteria into the air.
- However, despite being less infectious, children are still susceptible to TB infection, particularly if they are in close contact with someone who has active TB disease. Their immune systems may also be less developed, making them more vulnerable to developing active TB if they become infected.

Adults and TB

- On the other hand, adults with active TB tend to have higher bacterial loads and are more likely to cough, thereby increasing the risk of transmitting TB to others, especially if they are not receiving appropriate treatment.

Children and Adults with TB Summary

- In summary, while both children and adults can transmit TB, children are generally considered to be less infectious than adults due to lower bacterial loads and less frequent coughing. However, both groups can contribute to the spread of TB if they have active disease and are not receiving proper treatment.

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Questions?