IPC Topic: Environmental Controls-Using infection control actions to keep germs from being breathed in.

Intro: Infections and "superbugs" (antibiotic-resistant bacteria) continue to make headlines. Consider using infection control actions to fight the spread of infectious illnesses. If we can identify the pathway of how germs are being spread, we can use of the proper infection control actions to reduce the spread of germs through the air. (1,2,3)

What is the Risk? Germs live in the respiratory system. Germs spread through droplets in the air from talking, breathing, coughing, and sneezing. As germs go through the air, they are spread and land on objects like tables, bed rails where germs can be touched with our hands. Germs also live in dust and dirt and can be swept up into the air. Actions taken to reduce germs from getting into the air (like ventilation systems, vacuum filters, cough etiquette etc.) can prevent germs from being breathed in. Germs can also spread through the air and enter the respiratory system causing infection. (1,2,6)

Highlights:

- Many things that we do in health care (like oral cares, nebulizer treatments) increased risk of spreading the droplets and germs into the air.
- **Reduce respiratory droplets** by:
    - **Clean hands** prevent the spread of germs from respiratory droplets through touch.
    - **Good source control**-mask if you have a cough or if you are going to be around someone who coughs. Wear **PPE** when needed or there is a risk.
    - Promote **cough etiquette.** (1,2,4)
- Good ventilation removes things from the air that should not be inhaled, like viruses and other germs. (5)
- Healthcare is required to have **ventilation systems** which are often referred to as HVAC systems. While the maintenance of the system (the changing of the filters and preventing air leaks and dust overloads of the air handling systems) is often done by designated staff, ALL staff can do things to help the spread of germs through air. (1,2)
- **Understanding Ventilation Systems**:
    - HVAC (Heating, Ventilation and Air Conditioning System)
        - **The purpose of HVAC is** generally the heating or cooling of spaces. The HVAC also adjusts air humidity, provides directional airflow, filters and dilutes recycled air and flushes contaminants (including germs) in the air from enclosed spaces. (4)
        - **HVAC's role in infection control** is important. It provides continuous airflow to spread out germs, filters air to remove contaminants, can remove air and germs, and can create pressure changes in air that

affects the flow of air (the flow of air from the hall into the room or from the room into the hall). (4)

- You may have heard the words: **HEPA (High-Efficiency Particulate Air) filtration** which uses filters to capture at least 99.97% of airborne contaminants or germs. Sometimes the air that is cleaned is cleaner than the fresh outside air. There are portable HEPA units that are used in healthcare facilities. These units are helpful for use in isolation rooms to reduce staff risk when germs may be in the air. These units are helpful for use in isolation rooms to reduce germs and staff exposure to them when germs may be in the air. (4)

➢ Steps to help prevent the spread of germs through the air (1,4,5):

- **Do not block** vents or air intakes; let supervisor know of any sited bird nest etc. located near air vents. Report any concerns of any air vents being blocked inside or outside the building. (e.g., Trees, bird nests etc.)
- **Good general cleaning** is key: keeping room portable fans clean, change bags and filters in vacuums, floor cleaners if have fans; cleaning air vents and return vents in rooms.
- **Wear proper PPE-** refer back to CDC recommendations.
- **Keep doors** to rooms **closed** as per any isolation precautions.
- **Keep windows closed** so air system can work properly.

Summary: Germs live in the respiratory system and can spread through the air. If we can identify the pathway and how germs are being spread, the use of the proper infection control actions can reduce the spread of germs through the air pathway. (1,2,3)

References:

1. CDC Environmental Infection Control Guidelines: https://www.cdc.gov/infectioncontrol/guidelines/environmental/index.html#d
2. CDC: Project Firstline: https://www.cdc.gov/infection control/projectfirstline/index.html
3. CDC: Project Firstline: Infection Control: Germs Live in the Environment: Infection Control in Health Care: An Overview | Project Firstline | CDC
4. ASHE: Ventilation Quick Guides: https://www.ashe.org/project-firstline/ventilation-quick-guide#:~:text=As%20part%20of%20the%20Project%20Firstline%20initiative%2C%20ASHE%2C,infection%20from%20diseases%20that%20spread%20through%20the%20air.
5. CDC: Germs can live in the respiratory PDF/poster: Germs can live in the respiratory system
6. CDC: Infection Control: Project Firstline: https://www.cdc.gov/infectioncontrol/projectfirstline/index.html

Other Resources:

Guidelines for environmental infection control in health-care facilities: recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC): Guidelines for environmental infection control in health-care facilities; recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC): https://stacks.cdc.gov/view/cdc/45796

Environmental Reservoir Posters - Dirt Dust, Dry Surfaces: Infection Control in Health Care: An Overview | Project Firstline | CDC

CDC: Infection Control: Guidelines and Guidance Library: https://www.cdc.gov/infectioncontrol/guidelines/index.html