

Chain of Infection

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Back to Basics

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This presentation is produced and presented by Carilion Clinic through the Virginia Long-Term Care Infrastructure Pilot Project (VLIPP)

Carilion VLIPP (2022-2024) is funded by the Virginia Department of Health to support long-term care facilities in Southwest Virginia with their infection prevention and control programs.

Disclaimer

- For educational purposes only
- No endorsement of products, software, or tools

Target Audience

Administrator

Director of
Nursing

Assistant
Director of
Nursing

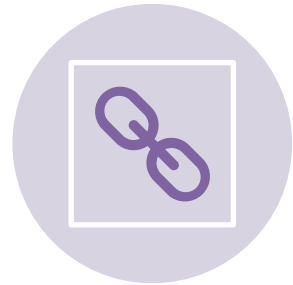
Infection
Preventionist

Clinical Staff

Kitchen/Food
Service Staff

Housekeeping/
Environmental
Services

Objectives



Define the elements of the chain of infection



Discuss the principals of breaking the chain of infection



Illustrate how breaking the chain of infection aligns to standard infection prevention & control practices

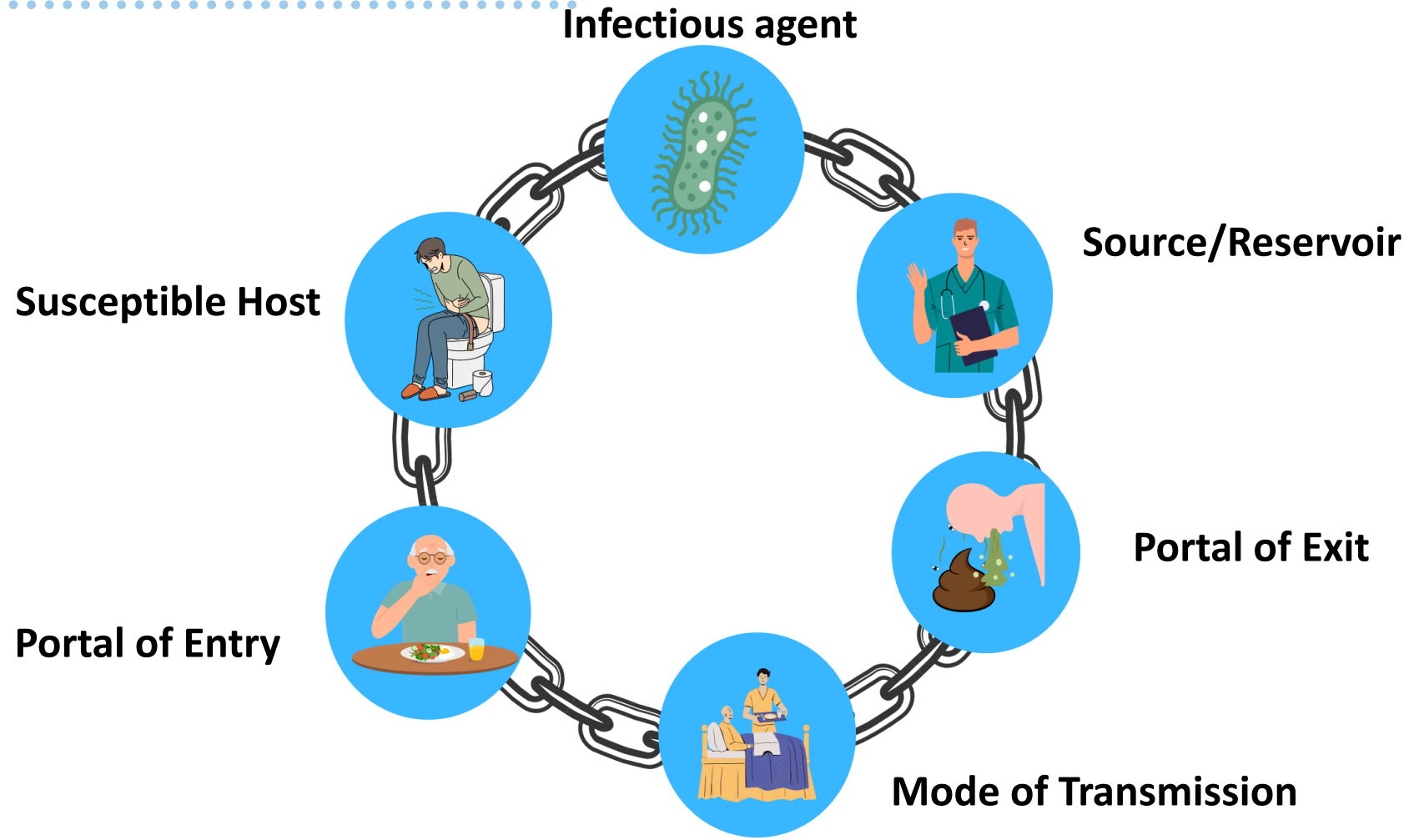


Describe strategies to overcome barriers in adhering to infection prevention and control standards in nursing facilities

Introduction

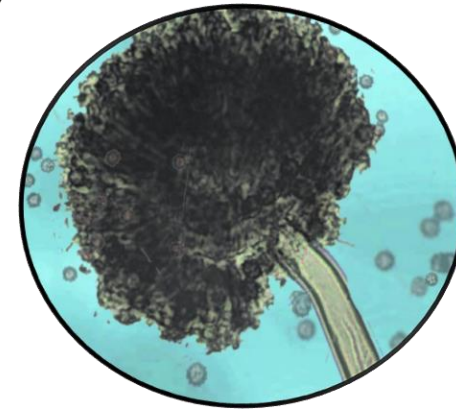
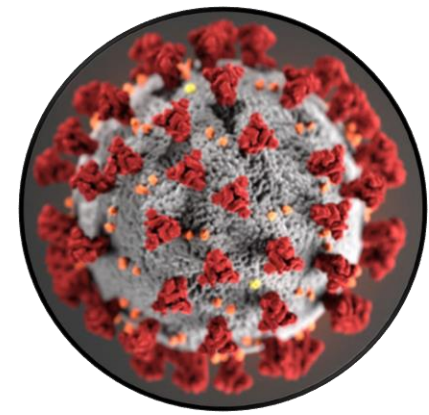
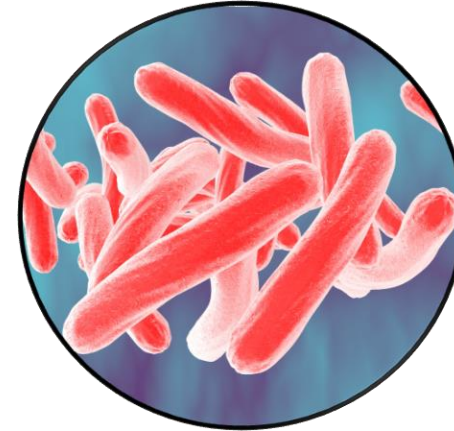
- Residents in nursing facilities are at risk of MDROs with an estimated 50% or more already colonized with an MDRO
- Resident-to-resident transfer is possible, but healthcare workers are likely to spread pathogens from contaminated hands and clothes
- Study on hand hygiene in a hospital in the Netherlands identified hand hygiene compliance dropped to 25% when workload increased
- Proper hand hygiene prevents up to 50% of preventable infections

Chain of Infection



Chain of Infection - Agent

- Definition:
 - Pathogenic microorganism
- Agents:
 - Virus
 - Bacteria
 - Fungi
 - Parasite



Chain of Infection – Source/Reservoir



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- Definition:
 - “Environment/habitat where a pathogen can live and multiply”
- Sources:
 - People
 - Surfaces/Equipment
 - Bodily fluids
 - Food/water
 - Soil

Chain of Infection – Portal of Exit

- Definition:
 - How the pathogenic organism leaves the source/reservoir/host
- Portal of Exit:
 - Oral/gastric contents
 - Respiratory (Sneezing, talking)
 - Urinary
 - Defecation
 - Open wounds



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Chain of Infection – Mode of Transmission



- Definition:
 - How the pathogenic organism moves from source / reservoir / host to another host
- Transmission:
 - Contact (Direct or Indirect)
 - Ingestion
 - Inhalation

Chain of Infection – Portal of Entry

- Definition:
 - The way the pathogenic organism enters the new source/reservoir/host
- Portals of Entry
 - Wounds
 - Mucous membranes
 - Indwelling device

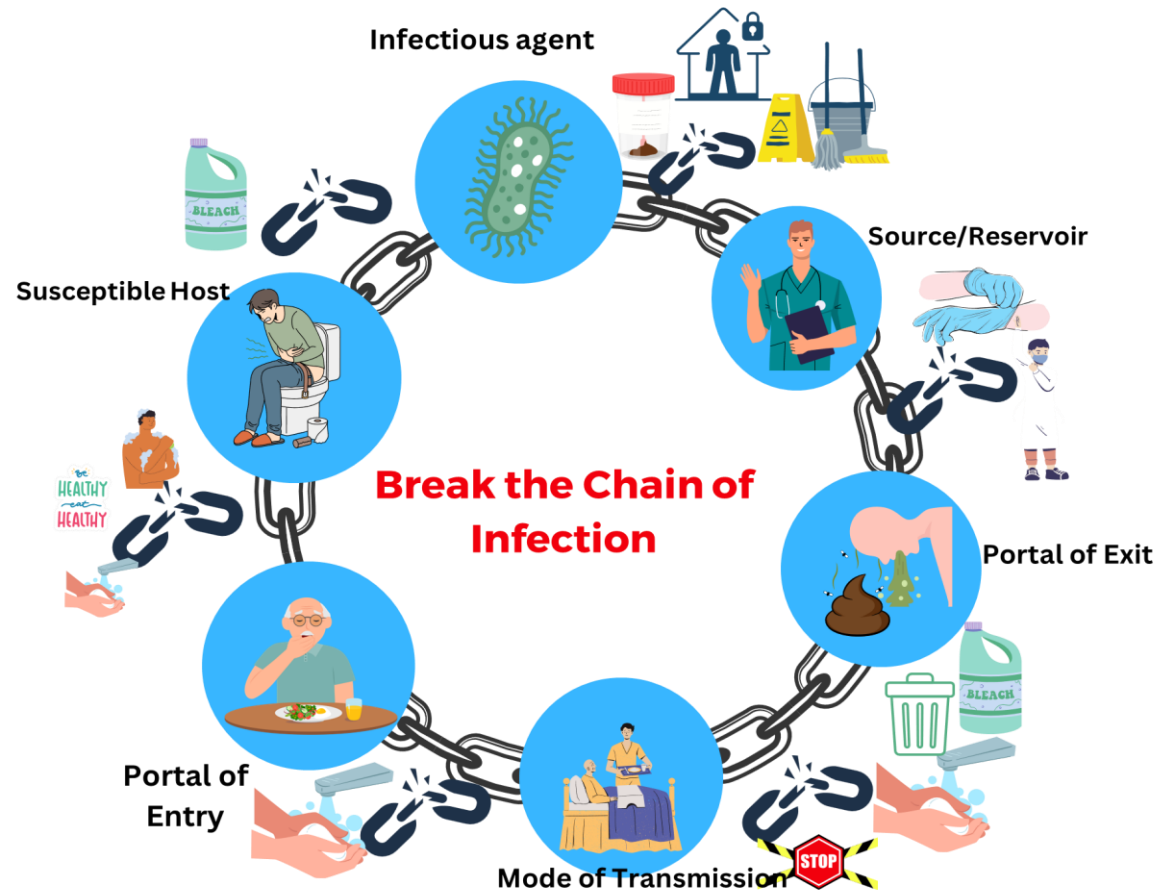


Chain of Infection – Susceptible Host



- Definition:
 - Any person
- Susceptible Host
 - Immunocompromised
 - Hospitalized
 - Nursing facility residents
 - Invasive medical devices

Breaking the Chain



- Stop the source
- Interrupt the portal of exit
- Interrupt the mode of transmission
- Protect the portal of entry
- Increase the host's defense

Source: Dr. Sylvia Abbeyquaye, NSDxpert Education and Consulting Services LLC.

APIC (n.d.) Break the Chain of Infection. Retrieved from: <https://infectionpreventionandyou.org/protect-your-patients/break-the-chain-of-infection/>

Breaking the Chain - Strategies

Standard Precautions

- Hand hygiene
- Don/Doff PPE
- Environmental Cleaning & Disinfection
- Injection Safety
- Respiratory Hygiene

Transmission Based Precautions

- Airborne
- Contact
- Droplet
- Enhanced/Special Droplet

Strategies to Overcoming Barriers

Educating Staff

- Incorporating mindfulness in training

Improving Workload Burden

- Time management
- Reorganize workspace to improve workflow

Having good IPC surveillance program

Encouraging Peer Support

Promote Vaccination

Strategies for Overcoming Barriers Cont.

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Cutting costs while remaining compliant

Having QAPI program

Recognize and reward good behavior

Include residents & family in IPC education

Update & revise facility policy & procedures

- Clear and concise
- Easy to understand
- Align with current CDC and CMS guidelines

Review Questions

A resident has MRSA in a diabetic foot ulcer. A nurse is performing wound care and a dressing change on the resident.

1. What would be the agent?
2. What would be a possible portal of exit?
 - a. How could they prevent pathogens leaving the portal of exit?
3. What would be the modes of transport?
 - a. How can we prevent pathogen transfer?
4. What would be the portal of entry?
 - a. How can we prevent pathogens entering the portal of entry?
5. Who is the susceptible host?
 - a. How can we prevent at-risk people from developing infections?

“Time isn’t precious at all, because it is an illusion. What you perceive as precious is not time but the one point that is out of time: the Now. That is precious indeed. The more you are focused on time — past and future — the more you miss the Now, the most precious thing there is.”

- Eckhart Tolle



Summary

- Understanding the chain of infection helps with compliance of standard precaution measures and transmission-based precautions
- Utilizing strategies outlined may improve compliance in IPC practices in nursing facilities
- Everyone must be deliberate in practice to minimize the spread of germs

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