

HOSPITAL-ACQUIRED INFECTIONS; CHAIN OF INFECTION

The three ingredients for nosocomial/hospital-acquired infections are:

- 1) Microorganisms in the Hospital (generally opportunistic bacteria that thrive the absence of normal soil and water bacteria or other normal human flora);
- 2) Compromised Host (broken skin and/or suppressed immune system)—pregnancy, elderly, children, sick adults, adults that have had their normal flora eliminated by antibiotics or other treatments
- 3) Chain of Transmission (such as direct contact from staff to patient or indirect contact via fomites such as contaminated catheters)

Most common pathogens responsible for nosocomial/hospital-associated infections:

**S. aureus*, *Enterococci* (Gram positive cocci); *C. dif* (Gram positive endospore-forming rod)

**E. Coli*, *P. auruginosa*, *Enterobacter*, *K. pneumoniae* (Gram neg. rods)

~40% of nosocomial infections are caused by biofilms. This is because biofilms are harder to eradicate; many species of bacteria may live in layers together, protecting one another from antibiotics or cleansing agents.

UTIs: from **urinary catheters** (silver alloy catheters discourage some bacterial growth to thwart this). The Gram negative bacteria that frequently cause UTIs may enter the bloodstream.

Skin and blood infections from

- **Surgical site infections**
- **Central Lines** (in right Subclavian Vein)
- **IVs**

Pneumonia: from breathing devices

Control of Hospital-associated Infections (HAIs) by Staff:

1. Hand-washing makes the biggest difference in protecting patients
 - a. A surprisingly LOW number of staff follow guidelines for hand-washing.
 - b. Friction between hands and fingers is critical to appropriate hand-washing.
 - c. Sing Twinkle-Twinkle little star or the ABCs to gauge appropriate time.
 - d. Hand-dryers are awful for cleanliness; they just blow bacteria around the room and in your face. Paper towels are much better.
 - e. Dry hands!!! Moist hands transfer bacteria much more easily.
2. Sterilize or disinfect all devices, equipment, etc. before use.