

Infection Control for Respiratory Care

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This Presentation is Approved for
1 CRCE Credit Hour

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Learning Objectives

- Classify types of Microorganisms
- Discuss pathogenicity vs. non-pathogenicity as pertaining to microorganisms
- Locate sources of infection encountered in general patient care
- Describe routes of transmission of infections in general patient care

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Learning Objectives

- Select methods to prevent infections in general patient care
- Locate sources of infection encountered in critical care areas
- Explain routes of transmission of infections
- Select methods to prevent infections in critical care areas

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Introductory Information

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Microorganisms

- Ubiquitous: they are everywhere, including harsh environments
 - ❖ Bubbling tar
 - ❖ Radioactive waste
 - ❖ Boiling water
 - ❖ 'Clean rooms'
 - ❖ Dead Sea
 - ❖ Antarctica
 - ❖ Mars?

FYI see links below for article on microbes & harsh environment

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Microorganisms

- Ecological functions
 - ❖ Nutrient recycling of primary compounds
 - ❖ Nutrient production: photosynthesis
 - ❖ Biodegradation: breakdown of organic materials

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Microorganisms

- Ecological functions
 - ❖ Nitrogen fixation: purple roots (clover)
 - ❖ Oxygen photosynthesis: produces 50% of available O₂
 - ❖ Cyanobacterium Synechococcus: marine habitats
 - Primary production
 - Nitrogen fixation
 - O₂ photosynthesis

FYI see links below for chapter on microbes & the environment

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Types of Infectious Organisms

- Bacteria
- Algae: birdbath blight
 - ❖ Protothecosis (rare)
 - ❖ Blue-green algae blooms produce saxitoxins that affect animals & humans
- Fungi
 - ❖ Unicellular: yeasts
 - ❖ Multicellular: moulds

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Types of Infectious Organisms

- Protozoa: malaria, amebiasis
- Viruses: HIV, HPV
- Helminths: unicellular & multicellular
- Prions: infectious proteins
 - ❖ Transmissible spongiform encephalopathies (TSEs)
 - Mad cow dx
 - Kuru - cannibals
 - Creutzfeldt-Jakob dx

FYI see links below for article on prions

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Terms

- Pathogenicity: capability for causing infectious disease
- Virulence: the extent of an organism's pathogenicity
- Normal flora: normal bacterial habitation of a tissue

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Normally Sterile Sites

- Blood
- Cerebrospinal fluid (CSF)
- Pleural fluid
- Peritoneal fluid
- Pericardial fluid
- Bone
- Joint fluid
- Internal body sites

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Normally Sterile Sites

- Specimen obtained from surgery or aspirate from one of the following
 - ❖ Lymph node
 - ❖ Brain
 - ❖ Heart
 - ❖ Liver
 - ❖ Spleen
 - ❖ Vitreous fluid
 - ❖ Kidney
 - ❖ Pancreas
 - ❖ Ovary

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Normal Flora

- > Bacteria perform
 - ❖ Physiological
 - ❖ Nutritional and
 - ❖ Protective functions in the human body
- > Maintaining a balance is crucial
- > Normal flora consists of communities of bacteria that function as microbial ecosystems

See links below for diagram showing normal flora & locations

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Normal Flora

- > If these ecosystems are disrupted the consequences can be unpredictable
- > Disruptive mechanisms
 - ❖ Antibiotics
 - Wrong antibiotic
 - Inadequate potency of antibiotic
 - Cessation of medication before dosage schedule is completed

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Normal Flora

- > If these ecosystems are disrupted the consequences can be unpredictable
- > Disruptive mechanisms
 - ❖ Antibiotics
 - ❖ Tissue damage
 - Provides pathway for invasion
 - Deprives tissue of oxygen, encouraging anaerobic bacterial growth

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Normal Flora

- > If these ecosystems are disrupted the consequences can be unpredictable
- > Disruptive mechanisms
 - ❖ Antibiotics
 - ❖ Tissue damage
 - ❖ Medical procedures: tissue contamination
 - ❖ Changes in diet: disruption of gastrointestinal flora
 - ❖ Introduction of new pathogens by various routes

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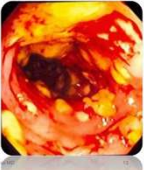
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Normal Flora

- > Consequences of disruption:
 - ❖ Colon – mucosal injury, diarrhea

Pathogenesis

- Disruption of normal colonic flora
- Colonisation with *C. difficile*
- Production of toxin A +/- B
- Mucosal injury and inflammation



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Normal Flora

- > Consequences of disruption:
 - ❖ Colon – mucosal injury, diarrhea
 - ❖ Epidermis, mucosa – opportunistic yeast, fungal infections
 - ❖ Mutation of bacteria to resistant strains; e.g., *c difficile*, MRSA, VRE
 - ❖ Sepsis from resistant or opportunistic microbes

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Sources of HAI

- Contaminated hospital environment
 - ❖ Instruments
 - ❖ Fluid
 - ❖ Food
 - ❖ Air
 - ❖ Medication

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Sources of HAI

- Contaminated hospital environment
 - ❖ Instruments
 - ❖ Fluid
 - ❖ Food
 - ❖ Air
- Patient flora
 - ❖ Cutaneous
 - ❖ Gastrointestinal
 - ❖ Genitourinary
 - ❖ Respiratory

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Sources of HAI

- Contaminated hospital environment
- Patient flora
- Invasive devices
 - ❖ Urinary catheters
 - ❖ Vascular catheters
 - ❖ Endotracheal tubes
 - ❖ Endoscopes

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Sources of HAI

- Contaminated hospital environment
- Patient flora
- Invasive devices
- Medical personnel
 - ❖ Colonized
 - ❖ Transient
 - ❖ Infected
 - ❖ Carriers

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Sources of HAI

- Urinary tract infections (UTI)
- Surgical wound infections (SWI)
- Lower respiratory infections
- Traumatic wounds & burns infections
- Primary bacteremia
- Gastrointestinal tract infections
- Central nervous system infections

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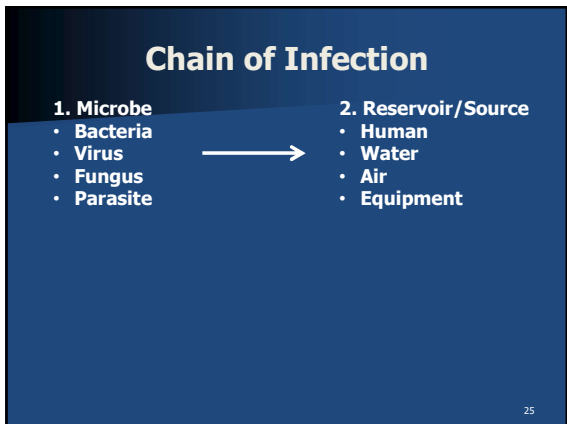
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Transmission Mechanisms for HAI

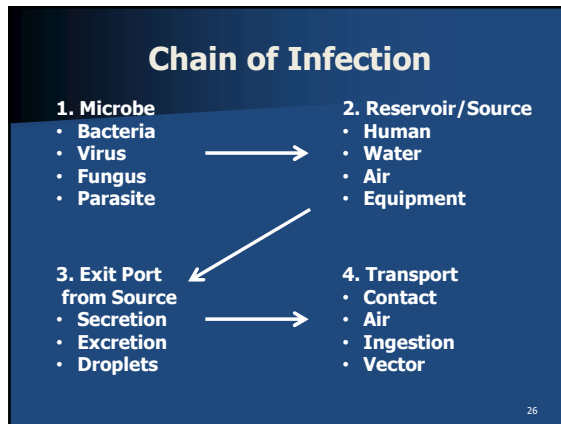
- Contact: direct, indirect
- Droplet transmission
- Common vehicle transmission: reservoir for microbes
- Vector borne transmission: flies, mosquitoes, lice
- Blood borne
- Self-infections & cross infections: spread to other tissues, organs

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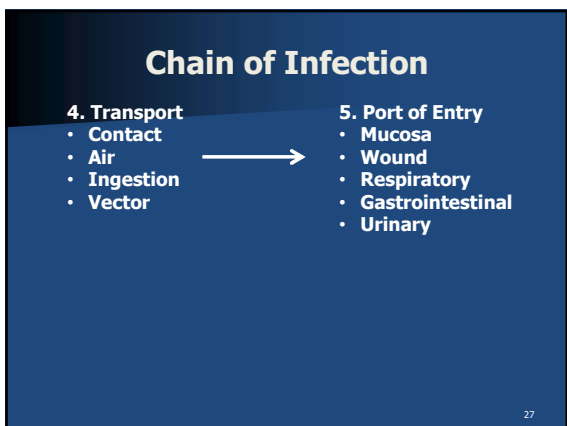
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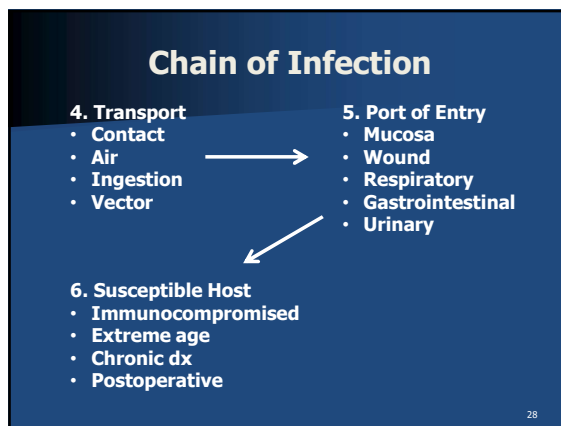
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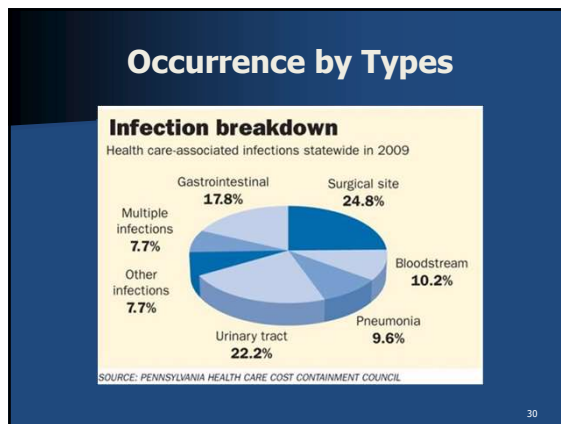
Epidemiology of HAI

➤ Survey of 11,282 patients from 183 acute care hospitals (2014)

- ❖ 452 patients (4.0%) had at least 1 healthcare-associated infection (504 total infections)
- ❖ Device-associated 25.6%
- ❖ Surgical-site & pneumonia 21.8%
- ❖ Gastrointestinal 17.1%

(C difficile most common pathogen)

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Costs of HAI

Burden of healthcare-associated infections.

Infection type	Annual infections (n)	Mean hospital cost per infection (US\$)	Mean deaths per year
Surgical-site infection	290,485	25,546	13,088
Ventilator-associated pneumonia	250,205	9,966	35,967
Central-line-associated bloodstream infection	248,678	36,441	30,655
Catheter-associated urinary tract infection	561,677	1006	8205

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General Precautions

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- ### Basic Infection Prevention & Control
- > Disinfection & sterilization
 - > Environmental infection control
 - > Hand hygiene
 - > Isolation precautions
- See links below for 2016 CDC guidelines for infection control

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- ### Disinfection & Sterilization
- > Levels of clean
 - ❖ Vacuum: absence of everything
 - ❖ Sterile: Absence of microorganisms
 - ❖ Disinfected, aseptic: absence of pathogens
 - ❖ Sanitary: decreased number of microbes
 - ❖ Clean: absence of dirt, debris
 - ❖ Dirty: presence of dirt, debris
 - ❖ Contaminated: presence of pathogens
 - ❖ Filthy, McNasty: pigpen environment, politics

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- ### Occupational Health & Safety
- > Inform each worker of the possible health effects of his or her exposure to infectious agents
 - > Educate personnel in selection & use of personal protective equipment (PPE)

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- ### Occupational Health & Safety
- > Ensure that workers wear appropriate PPE to preclude exposure to infectious agents or chemicals
 - > Monitor occupational exposure to regulated chemicals
 - > Exclude healthcare workers with weeping dermatitis of hands from direct contact with patient-care equipment

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Patient Care Devices

- Clean patient-care items with high-level disinfection or sterilization procedures
- Clean devices as soon as practical after use (e.g. at the point of use) because soiled materials become dried onto the instruments
- Ensure that the rinse step is adequate for removing residues to levels that will not interfere with disinfection/sterilization
- Inspect equipment surfaces for breaks in integrity that would impair cleaning or disinfection/sterilization

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Indications for Sterilization/Disinfection

- Sterilize critical medical & surgical devices & instruments that enter normally sterile tissue
- Provide, at a minimum, high-level disinfection for semicritical patient-care equipment
 - ❖ Gastrointestinal endoscopes
 - ❖ Endotracheal tubes
 - ❖ Anesthesia breathing circuits
 - ❖ Respiratory therapy equipment
- Perform low-level disinfection for noncritical patient-care surfaces

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High Level Disinfection for Endoscopes

- Test each flexible endoscope for leaks as part of each reprocessing cycle. Remove from clinical use any instrument that fails the leak test.
- Meticulously clean the endoscope with an enzymatic cleaner
- Disconnect & disassemble endoscopic components (e.g. suction valves) as completely as possible & completely immerse all components in the enzymatic cleaner. Steam sterilize those components if they are heat stable.

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High Level Disinfection for Endoscopes

- Flush & brush all accessible channels to remove all organic material (e.g. blood, tissue) & other residue
- Process endoscopes & accessories that contact mucous membranes as semi-critical items, & use at least high-level disinfection after use on each patient

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Hand Hygiene

- When to clean hands
 - ❖ Before eating
 - ❖ Before & after having direct contact with a patient's intact skin
 - ❖ After contact with blood, body fluids, or excretions
 - ❖ After contact with inanimate objects in the immediate vicinity of the patient

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Hand Hygiene

- When to clean hands
 - ❖ When hands will be moving from a contaminated-body site to a clean-body site during patient care
 - ❖ After glove removal
 - ❖ After using a restroom

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Hand Hygiene

- When hands are not visibly dirty, alcohol-based hand sanitizer is the preferred method for cleaning your hands in the healthcare setting
- Soap & water are recommended for cleaning visibly dirty hands

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Hand Hygiene

- Alcohol-based hand sanitizers are the most effective products for reducing the number of germs on the hands of healthcare providers
- Antiseptic soaps & detergents are the next most effective & non-antimicrobial soaps are the least effective

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Hand Hygiene Techniques

- Hand sanitizer
 - ❖ Put product on hands & rub hands together
 - ❖ Cover all surfaces until hands feel dry
 - ❖ 20 seconds contact time

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Hand Hygiene Techniques

- Hand washing
 - ❖ Wet hands, apply soap
 - ❖ Rub hands together vigorously for at least 15 seconds, covering all surfaces of the hands & fingers
 - ❖ Rinse hands with water
 - ❖ Use disposable towels to dry
 - ❖ Use towel to turn off the faucet
 - ❖ Avoid using hot water to prevent drying of skin

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Wearing Gloves

- Wearing gloves is not a substitute for hand hygiene
- Dirty gloves can soil hands
- Always clean hands after removing gloves

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Wearing Gloves

- Steps for glove use
 - ❖ Choose the right size & type of gloves for the task
 - ❖ Put on gloves before touching a patient
 - ❖ Change gloves during patient care if the hands will move from a contaminated body-site to a clean body-site

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Wearing Gloves

- Steps for glove use
 - ❖ Remove gloves after contact using proper technique to prevent hand contamination
 - ❖ Failure to remove gloves may lead to the spread of potentially deadly germs from one patient to another
 - ❖ Do not wear the same pair of gloves for the care of more than one patient

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Fingernails, Jewelry

- Microbes live under artificial fingernails despite alcohol-based hand sanitizer & handwashing
- Do not wear artificial fingernails or extensions during patient contact
- Keep natural nail tips less than ¼ inch long
- Rings may foster microbial activity

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Personal Protective Equipment

- General guidelines
 - ❖ Wear PPE when anticipated patient interaction indicates contact with blood or body fluids
 - ❖ Prevent contamination of clothing & skin during the process of removing PPE
 - ❖ Remove & discard PPE before leaving the patient's room or cubicle

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Personal Protective Equipment

- Wear gloves for all patient contact
- Wear a gown when contact with blood, body fluids, secretions, or excretions is anticipated
- Do not reuse gowns
- Remove gown & perform hand hygiene before leaving patient's room
- Routine donning of gowns upon entrance into a high risk unit (e.g. ICU, NICU) is not indicated

See links below for illustrations of PPE wear

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Personal Protective Equipment

- Use PPE to protect the mucous membranes during procedures likely to generate splashes or sprays of body fluids
- During aerosol-generating procedures in patients wear one of the following
 - ❖ Face shield that fully covers the front & sides of the face
 - ❖ Mask with attached shield, or a mask & goggles

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Isolation Procedures

- Disease based – different germ, different isolation type
- Visitors educated and regulated
- Standard precautions
 - ❖ Wearing the appropriate PPEs, handwashing
 - ❖ Safe injection practices
 - ❖ Masks for insertion of catheters and spinal punctures
 - ❖ Cough etiquette – containment of respiratory secretions

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Transmission Precautions

- Transmission based precautions – in addition to standard precautions for patients with documented or suspected highly transmissible infections
 - ❖ Contact precautions
 - ❖ Droplet precautions
 - ❖ Airborne precautions
- Limit patient transports to medically necessary

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Isolation Precautions

- Transmission based precautions
 - ❖ Droplet precautions – large particle sizes; e.g., flu, pertussis
 - Single patient room
 - Masks for caregivers
 - ❖ Airborne precautions – small particles; e.g., measles, varicella, TB
 - Special air handling
 - N95 or higher level respirator for caregivers and patients when not in isolation room

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Recommended Vaccinations

- Hepatitis B: series of 3 (required)
- Influenza: annually (employer may require)
- Not required, but recommended
 - ❖ Measles, mumps, rubella (MMR)
 - ❖ Chickenpox (varicella)
 - ❖ Tetanus, diphtheria, pertussis (Tdap)
 - ❖ Meningococcal (if exposure is likely)

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Critical Care

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Emergency Department

- More detail: "Respiratory Care Emergency Preparedness for Mass Casualty Events"
- Infectious hazards to caregivers
- Can spread to caregivers, patients

See links below for OSHA information on ER safety & infection control

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Emergency Department

- Naturally-occurring
 - ❖ Influenza, e.g. swine influenza A (H1N1)
 - ❖ Severe acute respiratory syndrome (SARS) - coronavirus infection
 - ❖ Avian (bird) flu
- Bioterrorist threats
 - ❖ Pulmonary anthrax
 - ❖ Smallpox
 - ❖ Plague
 - ❖ Tularemia

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Emergency Department

- > Childhood diseases
 - ❖ Measles
 - ❖ Whooping cough
 - ❖ Chicken pox
- > Miscellaneous infections
 - ❖ HIV
 - ❖ Hepatitis
 - ❖ Meningitis
 - ❖ MRSA
 - ❖ C difficile

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Emergency Department

- > Nursing home patient conditions
 - ❖ Can bring cutaneous infections due to poor hygiene
- > Homeless patients
 - ❖ Can bring cutaneous infections due to poor hygiene
- > Creepy crawlies
 - ❖ Lice
 - ❖ Scabies

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Emergency Department



Scabies Mite



Crabs at work



Scabies Rash



Body Louse



Crab Louse

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Emergency Department

- > Prevention of infection to caregivers
 - ❖ Vigilance
 - ❖ Appropriate PPE
 - ❖ Index of suspicion
 - ❖ Vaccination
 - ❖ Antiviral agents
 - ❖ Minimization of high-risk procedures
 - ❖ Communication to & between caregivers of actual or suspected risks

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Intensive Care Units

- > Elevated risk of HAI for ICU patients
 - ❖ Increased morbidity
 - ❖ Immunosuppression
 - Comorbidities
 - Antibiotics
 - Immunosuppressive medications
 - Malnutrition
 - ❖ Greater quantity of indwelling lines & catheters

FYI see links below for article on nosocomial infections in ICU

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Intensive Care Units

- > Major risk factors for HAI in ICU
 - ❖ Urinary catheter > 10 days
 - ❖ Endotracheal intubation
 - ❖ ICU confinement > 3 days
 - ❖ ICP monitor
 - ❖ Arterial line
 - ❖ Shock

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Intensive Care Units

- > Common microbes
 - ❖ Aerobic gram negative bacilli
 - Pseudomonas aeruginosa
 - Escherichia coli
 - Klebsiella pneumonia
 - ❖ Gram positive cocci
 - Coagulase negative staphylococci
 - Staphylococcus aureus

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Intensive Care Units

- > Common microbes
 - Candida species
 - ❖ Fungi
 - ❖ Aspergillus
 - Zygomycetes
 - ❖ Legionella (pneumonia)

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Intensive Care Units

- > HAI prevention for respiratory therapists
 - ❖ Adherence to institutional policies & procedures pertaining to infection control
 - ❖ Special attention to infection control associated with
 - Artificial airways
 - Mechanical ventilation devices
 - ❖ Monitoring RT devices for risk of contamination

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Exhaled Aerosols

- > Exhaled aerosols must be isolated
 - ❖ Avoid unnecessary aerosol treatments
 - ❖ Avoid treatments by aerosol masks
 - ❖ Use devices to trap exhaled particles
 - ❖ Monitoring RT devices for risk of contamination

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Intensive Care Units

- > See "Preventing Ventilator Associated Pneumonia"

FYI see links below for CDC progress report on HAI

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Intensive Care Units

- > Good news! Current research finds that the incidence of HAI is declining
 - ❖ Organizational cultures that promote preventive measures
 - ❖ Greater attention & adherence of caregivers to infectious control protocols & procedures

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Intensive Care Units

- Good news! Current research finds that the incidence of HAI is declining
 - ❖ Organizational cultures that promote preventive measures
 - ❖ Greater attention & adherence of caregivers to infectious control protocols & procedures
 - ❖ Improved facility design
 - Air handling
 - Isolation areas
 - Increased accessibility of handwashing stations

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Specific Agents

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Specific Agents

- Acinetobacter
 - ❖ Cause variety of infections
 - Pneumonia, blood or wound infection
 - ❖ May colonize in trachs or open wounds
 - ❖ Little risk to healthy people
 - Found in healthcare facilities
 - Especially vent patients
 - Weakened immune systems
 - DM
 - Chronic lung dx
 - ❖ Transmission/Prevention
 - ❖ Treatment

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Specific Agents

- Clostridioides difficile - used to be called Clostridium difficile
 - ❖ Life-threatening diarrhea
 - ❖ Usually caused by antibiotics
 - Over 65, take antibiotics, and receive medical care
 - Long term hospital or nursing home patients
 - Previous *C. diff* infection
 - ❖ Transmission/Prevention

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Specific Agents

- CRE- Carbapenems Resistant Enterobacteriaceae
 - ❖ Klebsiella
 - ❖ E-coli
 - ❖ Patient in healthcare settings
 - Vents
 - Urinary or I.V. catheters
 - Long courses of certain antibiotics
 - ❖ Healthy people generally safe
 - ❖ Difficult to treat
 - ❖ One study claimed 50% contribution to death

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Specific Agents

- Gram-positive/negative bacteria
 - ❖ Hans Christian Gram
 - 1884 developed the Gram Stain Method
 - ❖ Primary stain of crystal violet and a counterstain of safranin
 - Purple = gram positive
 - Red when counter stained = gram negative
 - ❖ Remains a standard procedure in microbiology

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Specific Agents

- > Gram-negative bacteria
 - ❖ Examples
 - Klebsiella
 - Acinetobacter
 - E-coli
 - Pseudomonas aeruginosa
 - ❖ Cause
 - Pneumonia
 - Bloodstream infections
 - Wound or surgical site infections
 - Meningitis
 - ❖ Difficult to treat
 - Resistant to many drugs and antibiotics

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Specific Agents

- > Gram-positive bacilli
 - ❖ Examples
 - Anthrax
 - Diphtheria
 - Enterococcal
 - > Gram-positive cocci
 - ❖ Examples
 - Pneumococcal
 - Staphylococcal aureus
 - Streptococcal
 - > Treatment
 - ❖ Penicillin
 - > MRSA
 - ❖ Methicillin resistant

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Specific Agents

- > Hepatitis
 - > A
 - Fecal-oral route
 - Healthcare associated infections are infrequent
 - > B
 - ❖ Blood or other body fluids enter a non-infected person
 - Needle sticks
 - Other sharps
 - > C
 - ❖ Blood or other body fluids enter a non-infected person
 - Needle sticks
 - Other sharps
 - > B & C
 - ❖ Can cause lifelong infections

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Specific Agents

- > HIV – Human immunodeficiency virus
 - ❖ Causes AIDS – Acquired immune immunodeficiency syndrome
 - ❖ Transmission in healthcare settings possible – very rare

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Specific Agents

- > Klebsiella
 - ❖ Gram negative bacteria
 - Hard to kill
 - Not airborne
 - Contact iso
 - Must get into airway to cause pneumonia

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Specific Agents

- > MRSA
 - ❖ Methicillin-resistant Staphylococcus aureus
 - methicillin
 - oxacillin
 - penicillin
 - amoxicillin
 - ❖ Most community infections are skin

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Specific Agents

- **Norovirus**
 - ❖ Causes gastroenteritis
 - Severe vomiting
 - Severe diarrhea

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Specific Agents

- **Pseudomonas aeruginosa**
 - ❖ Causes severe illness and death
 - Blood infections
 - Pneumonia
 - Skin rashes
 - Ear infections
 - ❖ Contact
 - Spread on the hands
 - Improperly cleaned equipment
 - ❖ Killed by antibiotics
 - Becoming resistant

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Specific Agents

- **Staphylococcus aureus**
 - ❖ 30% of people carry in their nose
 - Blood infections – bacteremia or sepsis
 - Pneumonia
 - Endocarditis
 - Osteomyelitis

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Specific Agents

- **Mycobacterium tuberculosis**
 - ❖ Airborne
 - N-95 mask
 - Can travel long distance
 - Undiagnosed patients
 - ❖ Testing
 - Sputum sample
 - Mantoux TB-tine skin test
 - QuantiFERON®-TB Gold
 - T-Spot
 - ❖ Treatment
 - Isoniazid and rifampin

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Specific Agents

- **VRE**
 - ❖ Vancomycin-resistant enterococci
 - GI tract
 - Female genital tract
 - Environment
 - ❖ Infections
 - Bloodstream
 - Urinary tract
 - Wounds
 - ❖ Spread
 - Contact

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Summary & Review

- **Introductory information about microbiology**
 - ❖ Microbes are everywhere and serve important functions like producing O₂, converting CO₂, fixing N₂
 - ❖ On the other hand, all categories of microbes can cause infectious disease
 - ❖ These range from algae and bacteria to viruses and prions

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Summary & Review

- Much of the body is sterile; there are also sites such as the GI tract and skin inhabited by bacteria that play a commensalistic role
- These are normal flora and crucial to health. Disruption of these by various interventions can cause superinfections and opportunistic infections
- HAIs can arise from numerous sources in the hospital
- Among these are the hospital environment, patients, caregivers and medical devices

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Summary & Review

- Transmission of HAIs can be through contact, droplets, contaminated reservoirs, body fluids, and self infections
- Survey of 11,000 patients found 452, or 4% had at least 1 HAI
- The mortality rate for HAIs can be 14%
- Dollar cost of about \$1000-\$36,000 per infection

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Preventative Measures for HAIs

- Environmental infection control
- Hygiene
- Isolation Precautions
- OSHA regulates practices to prevent people from acquiring infections in the workplace
 - ❖ Education of workers of safe practices
 - ❖ Ensuring proper use of PPE
- Sterilization and disinfection procedures
 - Cleaning of all devices thoroughly
 - Sterilization or high level disinfection as indicated

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Hand Hygiene

- Critical to prevention of HAIs
- Wash before and after all contact
- Sanitize per facility protocol
- Gloves are indicated for all patient contact, but are not a substitute for hand sanitation
- Other PPE include gowns, caps, shoe covers, masks or respirators per facility protocol
- Caregivers should also protect themselves for being vaccinated for Hep B and Flu
- In regards to PPE, if it's on the door AKA if there's a sign that says you should wear something, then it's on me and you should do the same

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Special Requirements for Critical Care Areas

- Emergency Departments (ED)
 - ❖ Especially important in inner-city EDs, where you never know what will walk in the door
 - ❖ Patients from all socioeconomic classes and foreign countries can arrive with many types of infections and infestations
- ICU patients are more susceptible to infections for many reasons, such as immunosuppression, antibiotics, and indwelling lines
- Indwelling lines – if the patient didn't already have the line in, would you put it in today? If the answer is no, perhaps you should take it out

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VAP & Exhaled Aerosol

- VAP – Prevention of Ventilator Associated Pneumonia is important to RTs
- Avoidance of exhaled aerosol particles that can transmit all kinds of infections, as well as medications to the practitioner

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Good News for HAIs

- > Incidence of HAIs is declining due to improved organizational cultures, facility design and the efforts of caregivers
- > It is incumbent upon you to keep your patients and yourself safe
- > Foremost thing you can do is maintain hand hygiene
- > Gel in and out of every patient room

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Specific Agents

- > Acinetobacter
- > C-Diff
- > CRE
- > Gram negative/positive
- > Hepatitis
- > HIV
- > Klebsiella
- > MRSA
- > Norovirus
- > Pseudomonas
- > Staph
- > TB
- > VRE

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References

- > Haidee T Custodio, MD; Chief Editor: Russell W Steele, MD. Hospital-Acquired Infections Medscape. Updated: Dec 08, 2016. <http://emedicine.medscape.com/article/967022-overview#a8>

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