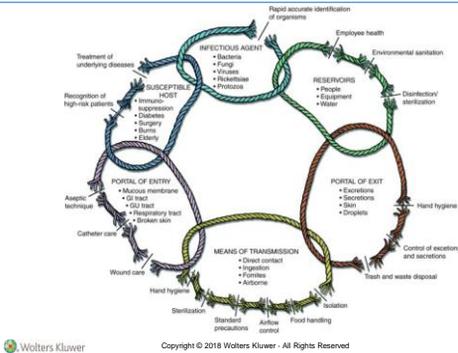


Infectious Diseases

Dr. Rexi Thomas

Chain of Infection



Infection Control and Prevention

- ❖ World Health Organization (WHO)
- ❖ Centers for Disease Control and Prevention (CDC)
 - CDC publications, guidelines, and website
- ❖ Occupational safety and health administration (OSHA)
 - Mandatory regulations and guidelines
- ❖ Local agencies
- ❖ Hospital and facility infection control specialists and facility policies

Isolation Precautions

- ❖ Guidelines to prevent the transmission of microorganisms in hospitals
- ❖ Two tiers:
 - ❖ **Standard precautions** used for all patients
 - The primary strategy for preventing HAIs
 - ❖ **Transmission-based precautions** are for patients with known infectious diseases spread by airborne, droplet, or contact routes

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Elements of Standard Precautions

- ❖ Hand hygiene
- ❖ Use of gloves and other barriers
- ❖ Proper handling of patient care equipment and linen
- ❖ Environmental control
- ❖ Prevention of injury from sharp devices and needles
- ❖ Patient placement

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Transmission-Based Precautions #1

- ❖ Airborne precautions
 - TB, varicella, other airborne pathogens
 - Hospitalized patient should be in a negative pressure room with the door closed; health care providers should wear an N-95 respirator (mask) at all times when in the room
- ❖ Droplet precautions
 - Used for organisms transmitted by close contact with respiratory or pharyngeal secretions: influenza, meningococcus
 - Wear a face mask but door may remain open; transmission is limited to close contact

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Transmission-Based Precautions #2

- ❖ Contact precautions
 - Use for organisms spread by skin-to-skin contact, such as antibiotic-resistant organisms or *Clostridium difficile*
 - Use of barriers to prevent transmission
 - Emphasize cautious technique because organisms are easily transmitted by contact between the health care worker and the patient
 - Masks not needed



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Organisms of HAI Infection Potential

- ❖ *C. difficile*
 - Most common cause of HAIs
- ❖ Methicillin-resistant *S. aureus* (MRSA)
 - Healthcare-associated MRSA
 - Community-associated MRSA
- ❖ Vancomycin-resistant enterococcus (VRE)
- ❖ Multidrug-resistant organisms (MDROs)



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Prevention of Infection

- ❖ HAI bloodstream infections; CLABSI
 - Bundle approach: (1) Hand hygiene; (2) maximal barrier precaution; (3) chlorhexidine skin antiseptics; (4) optimal catheter site selection; (5) daily review of line necessity with prompt removal of unnecessary lines
- ❖ Community-acquired infections
 - Collaborate effort of CDC, state, and local public health departments
 - Methods: sanitation techniques, regulated health practices, food preparation, immunization program



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Diarrheal Diseases

- Etiologies- bacterial, viral, parasitic
- History
- Hydration status
- Examples
 - Campylobacter
 - Salmonella
 - Shigella
 - Escherichia coli
 - Calicivirus (Norwalklike; Norovirus)
 - Giardia lamblia
 - Vibrio cholerae

Nursing Process: The Care of the Patient With Infectious Diarrhea—Assessment

- ❖ History: recent travel, use of antibiotics, food intake,
- ❖ Hydration status:
 - Thirst
 - Dry mucous membranes
 - Weak pulse
 - Loss of skin turgor
 - Sunken eyes
 - I&O



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Nursing Process: The Care of the Patient With Infectious Diarrhea—Diagnoses

- ❖ Deficient fluid volume related to fluid lost through diarrhea
- ❖ Deficient knowledge about the infection and the risk of transmission to others
- ❖ Collaborative problems and potential complications:
 - Bacteremia
 - Hypovolemic shock



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Nursing Process: The Care of the Patient With Infectious Diarrhea—Planning

- ❖ Maintenance of fluid and electrolyte balance
- ❖ Increase knowledge about disease and risk for transmission
- ❖ Absence of complications

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Correction of Dehydration #1

- ❖ Oral rehydration
 - ORS solution
- ❖ Mild
 - Dry oral mucous membranes of the mouth and increased thirst
 - Rehydration goal 50 mL/kg per 1 kg ORS over 4 hours

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Correction of Dehydration #2

- ❖ Moderate
 - Sunken eyes, loss of skin turgor, increased thirst, and dry oral mucous membranes
 - Rehydration goal 100 mL/kg of ORS over 4 hours
- ❖ Severe
 - Signs of shock (i.e., rapid thready pulse, cyanosis, cold extremities, rapid breathing, lethargy, or coma)
 - IV replacement until hemodynamic and mental status return to normal then treat with ORS

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Increasing Knowledge and Prevention of Spread

- ❖ Food preparation
- ❖ Hygiene
- ❖ Standard precautions

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Sexually Transmitted Infections

- Syphilis
- Chlamydia trachomatis/ neisseria gonorrhoea
- HIV/ AIDS
- HPV

Nursing Process: The Care of the Patient With Sexually Transmitted Infection—Assessment

- ❖ Protect confidentiality
 - "Five P's": partners, prevention of pregnancy, protection from STIs, practices, and past history of STIs
- ❖ Communication needs to be culturally and emotionally sensitive and clarification of terms may be necessary
- ❖ Physical examination
 - Rashes, lesions, drainage, inguinal nodes, genitalis, rectal, mouth and throat; women need abdominal and uterine exam

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Nursing Process: The Care of the Patient With Sexually Transmitted Infection—Diagnoses

- ❖ Knowledge deficit about the disease and risk for spread of infection and reinfection
- ❖ Anxiety related to anticipated stigmatization and to prognosis and complications
- ❖ Noncompliance with treatment

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Collaborative Problems and Potential Complications

- ❖ Ectopic pregnancy
- ❖ Infertility
- ❖ Transmission of infection to fetus
- ❖ Neurosyphilis
- ❖ Gonococcal meningitis
- ❖ Gonococcal arthritis
- ❖ Syphilitic aortitis
- ❖ HIV-related complications

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Interventions

- ❖ Education about STDs and the spread of infection
- ❖ Reducing anxiety
 - Encourage patient to discuss anxieties and fears
 - Provide factual information and individualized education
 - Assistance in planning discussion with partners
 - Referral to a social worker or other specialists
- ❖ Increasing adherence
 - Patient education in group or individual settings
 - Referral to appropriate agencies

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Home-Based Care of Infectious Disease

- ❖ Reduction of risk to patients
 - Care of equipment
 - Patient education
- ❖ Reduction of risk to household members
 - Prevention of transmission
 - Education
 - Fever and comfort

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Home-Based Care Measures to Reduce the Risk of Infection

- ❖ Health care workers should follow standard precautions in the home setting
- ❖ Patient and family education
 - Establish an environment that facilitates hand hygiene and aseptic technique
 - Family caregivers should receive annual influenza vaccine
 - Equipment care
 - "Common-sense cleanliness"
 - Food preparation and personal hygiene
 - Establishment of reasonable barriers to protect family members

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Nursing Process: The Care of the Patient With Sexually Transmitted Infection—Planning

- ❖ Major goals may include:
 - Increased patient understanding of the natural history and treatment of the infection
 - Reduction in anxiety
 - Increased compliance with therapeutic and preventive goals
 - Absence of complications

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Interventions

- ❖ Preventing spread of infection
 - Handwashing
 - Standard precautions
 - Recognition of mode of transmission and establishment of transmission-based precautions as indicated
- ❖ Education about infectious process and the prevention of the spread of infections
- ❖ Assessment and treatment of fever

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Collaborative Problems and Potential Complications

- ❖ Septicemia, bacteremia, or sepsis
- ❖ Septic shock
- ❖ Dehydration
- ❖ Abscess formation
- ❖ Endocarditis
- ❖ Infectious disease-related cancers
- ❖ Infertility
- ❖ Congenital abnormalities

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Emerging Infectious Disease

- ❖ Zika virus
- ❖ West Nile virus
- ❖ Ebola viral disease
- ❖ Legionnaires disease
- ❖ Pertussis

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Controls to Address Emerging Infectious Disease

- ❖ Vaccination programs
 - More than 50 vaccines licensed in the United States
 - MMR, varicella, influenza, HPV
- ❖ Planning for a pandemic
 - Global outbreak of disease
 - H1N1, Asian avian influenza (HPAI)

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Novel Coronavirus (Covid-19)/ SARS-CoV-2 Infection

- Epidemiology
- March 20th 2020
 - United States
 - Total cases: 15,219
 - Total deaths: 201
- Global
 - Week of March 30, 2021
 - 3.8 million new cases
 - 64,000 new deaths
- [Coronavirus Disease \(COVID-19\) Situation Reports \(who.int\)](#)
- [CDC COVID Data Tracker](#)

CDC, WHO

Novel Coronavirus (Covid-19)/ SARS-CoV-2 Infection

- Clinical Presentation
- PUI
 - Risk Assessment
 - Travel history
 - Contact with known + COVID-19
- Diagnostic Testing
- Prevention
 - Hand hygiene, face mask
 - Vaccine



Clinical Spectrum

- Asymptomatic
- Mild illness
- Moderate illness
 - SpO2 >94%
- Severe illness
 - SpO2 <94%, RR >30
- Critical illness
 - Respiratory failure, septic shock, and or MODS

Treatment/ Care COVID

- Infection control measures
 - Isolate
 - PPE
- Oxygenate/ ventilate
- Hemodynamics
 - Crystalloids, vasopressor (levo), dopamine only if renal protection, dobutamine if cardiac dysfunction with vasopressor, corticosteroid therapy
- Acute kidney injury
- Sepsis
- Extracorporeal Membrane oxygenation- no evidence

Con't Treatment/Care

- Antiviral
 - Remdesivir
- Antithrombotic therapy
- Convalescent plasma
 - Donor plasma from recovered COVID-19 infection
- Monoclonal antibodies
- Supplements
