

Vanderbilt University Medical Center
Emergency General Surgery Service
Surgical Residency Rotation and Curriculum

UNIT 7 SURGICAL INFECTIONS

UNIT OBJECTIVES:

1. Demonstrate an understanding of the principles of infection, acquisition, diagnosis, and treatment.
2. Demonstrate an understanding of the typical presentation and treatment of common surgical infections.
3. Demonstrate an understanding of methods used to minimize infectious complications in surgical patients.
4. Demonstrate an understanding of techniques to minimize risk of viral infection spread, including hepatitis and HIV/AIDS.

COMPETENCY-BASED KNOWLEDGE OBJECTIVES:

Section One: Mechanisms of Infection, Surgical Hazards, and Epidemiology

1. Discuss the mechanisms of infection acquisition in surgical patients, to include:
 - 1) mode of transmission, 2) patient risk factors, and 3) methods of prevention:
 - a. Community--acquired
 - b. Procedure--related
 - c. Nosocomial
2. Explain the role of bacterial inoculum and virulence as well as local and systemic adjuvant factors that contribute to infection and abscess formation.
3. Discuss and differentiate between primary and secondary peritonitis, methods of transmission, diagnosis, and treatment.
4. Demonstrate an understanding of and correct technique for handwashing as the single most important method for preventing infectious disease transmission.
5. Demonstrate an understanding of the importance of using meticulous surgical technique in the handling and repair of tissues of the gastrointestinal tract in reducing the incidence of anastomotic disruption and subsequent intra-abdominal sepsis.
6. When elderly persons mount a “significant fever” of 38.5°C (101°F) or greater, severe life-threatening bacterial infection is likely to be present. Summarize the factors involved in and frequency of occurrence of the following factors in the febrile elderly patient:
 - a. Altered mental status e. Respiratory rate
 - b. Leukocytosis f. Serum glucose
 - c. Rapid change in functional status g. Serum sodium
 - d. Appetite
7. Explain the older adult’s susceptibility to pneumonia, summarizing effects of the following factors:
 - a. Age-related changes in pulmonary reserve (e.g., alterations in lung volumes, elasticity, and compliance ventilation)
 - b. Diminished cough

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- c. Airway collapse
 - d. Comorbid conditions (interfering with gag reflexes and ciliary transport)
 - e. Aspiration of oropharyngeal flora
 - f. Hematogenous spread of microbes
8. Assess the importance of patient age as a factor in the frequent complications post-appendectomy because at least 50% of all deaths attributed to appendicitis occur in those 65 and older.

Section Two: Surgical Infections

1. Suggest common sources of postoperative fever; outline a diagnostic approach and proposed plan of intervention.
2. Demonstrate an understanding of intra-abdominal abscesses, paying particular attention to:
 - a. Etiology
 - b. Bacterial participation
 - c. Surgical management
 - d. Therapy failure
3. Discuss the pathophysiology, diagnosis, and treatment of necrotizing fasciitis with special attention to risk factors and physical examination findings.

Section Three: Use of Antibiotics in Surgery

1. Summarize indications for prescribing prophylactic antibiotics associated with:
 - a. Gastrointestinal surgery
 - b. Implantable devices
 - (1) Hernia surgery implants and synthetic reinforcements
2. Analyze situations where prophylactic antibiotics are discouraged:
 - a. Post-splenectomized patient
 - b. Early aspiration
 - c. Abdominal irrigants
3. Discuss the importance of timing and dosing for prophylactic antibiotic use; explain the use of single versus multiple drug therapy; analyze antibiotic use in the elderly, and analyze potentially adverse consequences of their use.
4. Justify the empirical approach to antibiotic use in the treatment of surgical wounds (clean and contaminated) and early intra-abdominal infection.

COMPETENCY-BASED PERFORMANCE OBJECTIVES:

1. Appropriately diagnose and treat common infections seen in surgical patients.
2. Make an appropriate and timely diagnosis for simple and complex infections in the postoperative patient; alter therapy as dictated by clinical, radiologic, and microbiologic response.
3. Competently diagnose and treat synergistic gangrene, necrotizing fasciitis, and

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Clostridium perfringens infections.

4. Prepare patients for elective surgery by providing effective parenteral and enteral prophylactic antibiotics when indicated.
5. Coordinate the treatment of aggressive soft tissue infections to include:
 - a. Early operative debridement
 - b. Urinary and fecal diversion
 - c. Re-operation
 - d. Antibiotic management
 - e. Postoperative critical care, including fluid and nutrition management
6. Identify sources of implantable device infection (such as mesh); confirm diagnosis; and appropriately treat such infections.
7. Practice the effective use of universal precautions, including meticulous handwashing to minimize infection transmission risk from health care professional (HCP) to patient, and vice versa.