Introduction

- Surgery, trauma, non-trauma local invasion can lead to bacterial insult.
- Once present, bacteria, initiate the host defense processes.
- Inflammatory mediators (kinins, histamine, etc.) are released, compliment and plasma proteins are released, PMN’s arrive, etc.
Introduction

- Surgical infections may arise in the surgical wound itself or in other systems in the patient.
- They can be initiated not only by “damage” to the host but also by changes in the host’s physiologic state.
Many established factors have a role in infection.

These can be either surgical factors or patient-specific factors.

Patient-specific factors can be further defined as either local or systemic.
Surgical Risk Factors

- Type of procedure
- Degree of contamination
- Duration of operation
- Urgency of operation
## Wound Classification

<table>
<thead>
<tr>
<th>Wound class</th>
<th>Definition</th>
<th>Example</th>
<th>Infection rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean</td>
<td>Nontraumatic, elective surgery. GI tract, respiratory tract, GU tract not entered</td>
<td>Mastectomy Vascular Hernias</td>
<td>2%</td>
</tr>
<tr>
<td>Clean-contaminated</td>
<td>Respiratory, GI, GU tract entered with minimal contamination</td>
<td>Gastrectomy Hysterectomy</td>
<td>≤ 10%</td>
</tr>
<tr>
<td>Contaminated</td>
<td>Open, fresh, traumatic wounds, uncontrolled spillage, minor break in sterile technique</td>
<td>Rupture appy Emergent bowel resect.</td>
<td>20%</td>
</tr>
<tr>
<td>Dirty</td>
<td>Open, traumatic, dirty wounds; traumatic perforation of hollow viscus, frank pus in the field</td>
<td>Intestinal fistula resection</td>
<td>28-70%</td>
</tr>
</tbody>
</table>
Patient Factors

- **Local:**
  - High bacterial load
  - Wound hematoma
  - Necrotic tissue
  - Foreign body
  - Obesity

- **Systemic:**
  - Advanced age
  - Shock
  - Diabetes
  - Malnutrition
  - Alcoholism
  - Steroids
  - Chemotherapy
  - Immuno-compromise
Antibiotics

- Prophylactic
  - Order sets
  - SCIP

- Therapeutic
Infections

- Two main types
  - Community-Acquired
  - Hospital-Acquired
Community-Acquired

- Skin/soft tissue
  - Cellulitis: Group A strep
  - Abcess/furuncle: Staph aureus
  - Necrotizing: Mixed
  - Hiradenitis suppurativa: Staph aureus
  - Lymphangitis: Staph aureus
Cellulitis
Furuncle
Necrotizing
Hiradenitis
Lymphangitis
Community-Acquired

- **Breast Abscess**
  - Staphylococcal infection
  - Usually post-partum
  - Treatment
  - MRSA is uncommon
Breast Abscess
Community-Acquired

- Peri-rectal abcess
  - Results from infection of the anal crypts
  - Can be extensive
  - Can result in bacteremia
  - Treatment
Peri-rectal abscess
Community-Acquired

- Gas-Gangrene
  - Cause?
  - Infection includes both cellulitis and myonecrosis
- Exam
- Treatment
Gas Gangrene
Community-Acquired

- Tetanus
  - C. tetani infection
  - "lock-jaw"
  - Caused by exotoxin
  - Treatment
Community-Acquired

- Hand Infections
  - Paronychia
    - Usually staph
    - Where?
    - Treatment
  - Felon
    - Where?
    - Treatment

- Both can lead to tenosynovitis
Paronychia
Felon
Community-Acquired

- Foot infections
- Diabetics.
Diabetic foot infection
Community-Acquired

- **Biliary Tract**
  - Usually result from obstruction
  - Usual suspects:
    - E. coli, Klebsiella, Enterococci
  - Acute Cholecystitis
    - GB empyema
  - Ascending cholangitis
    - Diagnosis
    - Treatment
Community-Acquired

- Peritonitis
  - Causes
  - Diagnosis
  - Treatment
Community-Acquired

- Viral
  - Hepatitis
  - HIV/AIDS
Hospital-Acquired

- Post-operative
- The “5 W’s” (of fever)
Hospital-Acquired

- **Pulmonary**
  - **Pneumonia**
    - Non-ventilator associated
      - Cause
      - Treatment
    - Ventilator associated
      - Cause
      - Treatment
  - **Aspiration**
    - Actually more a pneumonitis
    - Cause(s)
    - Treatment
Hospital-Acquired

- Urinary Tract
  - Diagnosis
  - Usual suspects
    - Pseudomonas, Serratia, other GM-
  - Prevention?
  - Treatment
Hospital-Acquired

- Wound infection
  - Self-explanatory
  - Diagnosis
  - Treatment
Hospital-Acquired

- Intra-abdominal
  - Usually post-op
  - Causes?
  - Diagnosis
  - Treatment
Hospital-Acquired

- Empyema
  - Infection-related
  - Iatrogenic

- 3 phases
  - Acute:
  - Fibrinopurulent:
  - Organizing:

- Treatment(s)
Hospital-Acquired

- Foreign-body associated
  - Sites
    - Catheters
    - Lines
    - Prosthetics/grafts
  - Treatment
Hospital-Acquired

- C-Diff
Hospital-Acquired

SEPSIS
Sepsis Defined

- **Sepsis:** Commonly called a "blood stream infection." The presence of bacteria (bacteremia) or other infectious organisms or their toxins in the blood (septicemia) or in other tissue of the body. Sepsis may be associated with clinical symptoms of systemic (bodywide) illness, such as fever, chills, malaise (generally feeling "rotten"), low blood pressure, and mental status changes. Sepsis can be a serious situation, a life threatening disease calling for urgent and comprehensive care.
Sepsis, Septic shock, MOF

- Signs of:
  - Increased C.O.
  - Decreased SVR
  - Altered $O_2$ usage
  - Metabolic acidosis (usually)
- Can lead to MOF---Death.
- Treatment
Questions??????