

HCAP Summary

- **Pneumonia**

- It is an infection of the pulmonary parenchyma.
- It has two types:
 - 1- Community Acquired Pneumonia (CAP)
Acquired in the community. Caused by: **Streptococcus Pneumoniae**. It is usually susceptible (**sensitive**) to antibiotics.
 - 2- Healthcare Associated Pneumonia (HCAP)
HCAP or Hospital Associated Pneumonia or nosocomial pneumonia.
Acquired 48-72 hours **after admission** to hospital.
Caused by **Pseudomonas Aeruginosa** , usually **resistant** to antibiotics.

- **HAP or nosocomial pneumonia**

- **Second** most common HAP , the **First is urinary tract infection**
- The incidence of nosocomial pneumonia is at its highest in the ICU
- There are two types of nosocomial pneumonia:
 - 1- Early onset nosocomial pneumonia:
Occurs during the **first 4 days** of admission. Usually due to Streptococcus Pneumoniae, MSSA, Haemophilus influenzae.
 - 2- Late onset nosocomial pneumonia:
Occurs after **more than 4 days** of admission. Usually due to MRSA, or Gram negative organisms, especially(Pseudomonas Aeruginosa,Acinetobacter,Enterobacteriaceae).

- **Causative agents**

- Enteric Gram negative bacilli (Enterobacteriaceae) : Isolated particularly in patients with late onset disease and in patients with serious underlying disease who are often already on broad spectrum antibiotics . The use of broad spectrum antibiotics, in addition to an immunocompromised state make Gram negative organisms more resistant.
- **Pseudomonas Aeruginosa and Acinetobacter : Common causes of late onset pneumonia particularly in the ventilated patients.**
- Staphylococcus Aureus : Isolated in about 20- 40% of cases, common in:
 - 1) Ventilated patients after head trauma, neurosurgery, and wound infection.
 - 2) Patients who received prior antibiotics or prolonged care in ICU.
- **MRSA:**
 - Received corticosteroids.
 - Undergone mechanical ventilation >5 days.
 - Chronic lung disease (Like TB).
- Anaerobes : in patients predisposed to aspiration.

- **VAP**

- VAP is a nosocomial pneumonia that has developed in patient who are receiving mechanical ventilation.
- There are two types of VAP :
 - 1-Early onset : **Within 48-72 hours** after tracheal intubation.
 - 2- Late onset: **After 72 hours.**
- Pathogenesis
 - Requires two important processes:
 - 1) Bacterial **colonization** of the aerodigestive tract .
 - 2) Aspiration of contaminated secretion into the lower airway.
- Prevention with **oral regimen** (Topical Gentamicin, Colistin, or Vancomycin)

- **HAV and HAP**

- Most initial therapy is empiric because no pathogen is identified or results are not yet available.
- First, we will treat with a broad spectrum antibiotic regimen to cover all likely bacterial pathogens, after that, the regimen.
- Guidelines by American Thoracic Society has divided HAP patients into three groups, each with a set of probable pathogens :
Group: Mild to moderate with no risk factor.
Group2: Mild to moderate with risk factor
Group3A: Severe, early onset with no risk factor.
Group3B: Severe, late onset or with risk factor.

The treatment for:

- Mild to moderate HAP : Monotherapy.
- Severe HAP with resistant organisms : Combination therapy.
- Patients with Staph. Aureus infection : Vancomycin if MRSA is suspected. OR Linezolid which is less nephrotoxicity.
- Patients with Pseudomonas Aeruginosa infection : Combination of antipseudomonal drugs.
 - 1) Traditional approach: Antipseudomonal Betalactam+ Aminoglycoside . Synergy but potential nephrotoxicity.
 - 2) Another approach: Antipseudomonal Betalactam+ Fluoroquinolone. No benefit of synergy but reduces the concern of nephrotoxicity.

Response to therapy:

If no clinical response is noted or deterioration occurs, we need to consider the following :

- 1) Infectious causes : Resistant pathogen ,Extrapulmonary infection,Lung abscess.
- 2)Non infectious events: is either related to heart or lung.