Carbapenem-Resistant Enterobacterales (CRE)

Kayli Govil and Bryan Khamly

What is CRE?

- CRE = Carbapenem-Resistant Enterobacterales
- Enterobacterales are bacteria that normally live in the human gut
- Carbapenems are “last resort” antibiotics when others fail
- CRE develop resistance against these last resort drugs

Common CRE Bacteria

- Klebsiella pneumoniae
- Escherichia coli

How CRE Spreads

- Mainly nosocomial (healthcare/hospital associated)
- Infected ventilators, catheters, surfaces, healthcare workers
- Resistance genes spread between bacteria through conjugation

Types of Infections

- UTI - painful urination, lower back pain
- Pneumonia - fever, cough, shortness of breath
- Sepsis - fever/chills, low blood pressure, organ failure

3 Major Carbapenemase Classes

- Class A (KPC) - Most common in US, treatable with some new drugs
- Class B (NDM, VIM, IMP) - Metallo-beta-lactamas, difficult to treat
- Class D (OXA-48) - Hard to detect in lab testing

Treatment Options

- Colistin - Old toxic drug, damages kidneys but effective
- Combination therapy - Combining antibiotics with a bodyguard molecule
- **Important**: Treatment depends on Carbapenemase type, testing to see which one is critical

Prevention

- Hand Hygiene - effective
- Contact Precautions - sterile equipment, gloves and gowns
- Antibiotic Stewardship - take antibiotics as prescribed

Key Takeaways

- CRE is an urgent threat
- Knowing the Carbapenemase types is important for healthcare professionals
- Prevention is critical