**Combination Gram Negative Coverage**

Empiric Therapy at University of Louisville Hospital (ULH)

- Certain healthcare-associated infections such as pneumonia, bacteremia, and sepsis may require double coverage for resistant Gram negative pathogens
- Most commonly encountered gram negative pathogens at ULH are:
  - Pseudomonas aeruginosa
  - Escherichia coli
  - Klebsiella pneumoniae
- Preferred empiric gram negative antibiotic regimen for a non-penicillin allergic patient at ULH is:
  - Piperacillin/tazobactam + tobramycin OR
  - Piperacillin/tazobactam + levofloxacin
- Preferred empiric gram negative antibiotic regimen in a non-anaphylactic penicillin allergic patient at ULH is:
  - Cefepime + tobramycin OR
  - Cefepime + levofloxacin
- Preferred empiric gram negative antibiotic regimen in a penicillin allergic (anaphylaxis) patient at ULH is:
  - Aztreonam + tobramycin OR
  - Aztreonam + levofloxacin

**Clinical Pearls – Empiric Treatment at ULH**

Double Coverage for Resistant Gram Negative Pathogens

Adding an aminoglycoside or a fluoroquinolone to a broad-spectrum beta-lactam provides additional gram negative coverage if beta-lactam resistance is present

- Aminoglycosides tend to provide better coverage as add on therapy than fluoroquinolones
- Below are percent of *Pseudomonas aeruginosa* isolates susceptible to one or both of the following agents (2014 data from non-ICU isolates at ULH):
  - Piperacillin/tazobactam monotherapy: 79%
  - Piperacillin/tazobactam + tobramycin: 93%
  - Piperacillin/tazobactam + levofloxacin: 86%
  - Cefepime monotherapy: 74%
  - Cefepime + tobramycin: 93%
  - Cefepime + levofloxacin: 79%
- Monotherapy can be considered:
  - For mild to moderate infections
  - Where susceptibility rates are > 90%
- Adverse side effects of aminoglycosides such as ototoxicity and nephrotoxicity can be avoided with appropriate pharmacokinetic management of serum drug levels
- Pharmacy is automatically consulted for pharmacokinetic management when aminoglycosides are ordered

**References**