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Bugs & Drugs: Did You Know ?

**April 2016**

**Topic: Combination Susceptibility of Antibiotics for**

 **University of Louisville Hospital**

**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/tazobatam + 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**

1. Christoff J, Tolentino J, Mawdsley E. et al. Optimizing Empirical Antimicrobial Therapy for Infection due to Gram-Negative Pathogens in the Intensive Care Unit: Utility of a Combination Antibiogram. *Infection Control and Hospital Epidemiology*. 2010;31:256-261.
2. Pogue JM, Alaniz C, Carver PL, et al. Role of Unit-Specific Combination Antibiograms for Improving the Selection of Appropriate Empiric Therapy for Gram-Negative Pneumonia. *Infection Control and Hospital Epidemiology*. 2011;32:289-292.



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This segment was brought to you by the Antimicrobial Stewardship Committee from Fraizer Rehabilitation, Jewish, Sts. Mary and Elizabeth, and the University of Louisville Hospitals.

**Look for the next edition in May!**