Piperacillin/Tazobactam (Zosyn®) Therapeutic Substitution Options
Prepared: 4/15/2015 by Jeffrey R. Aeschlimann (Antimicrobial Stewardship Program [ASP] Co-Chair)

Background:

- There is a nationwide shortage of Zosyn® and it has now reached a critical state at UConn Health/JDH
- We have limited supply in house and are unable to purchase an adequate replenishment at this time

Plan:

- In an effort to reserve the remaining Zosyn® for patients with the greatest need, we have **restricted the ordering of Zosyn® to Infectious Disease or Antimicrobial Stewardship**.
- LCR CPOE changes are now live which provide general guidance to prescribers for alternative regimens
- The table on the next page offers clinicians more detailed guidance for therapeutic substitution options for EMPIRIC use of Zosyn® based on the type of infection and the UConn Health/JDH Antibiogram
- If additional information and/or guidance is needed, or if the use of Zosyn® appears to be required based on specific patient data, please discuss the patient case with:
  - The Unit Pharmacist
  - Jeff Aeschlimann (ASP Co-Chair)
  - The Infectious Diseases Consult Service

Alternative Antibiotic Treatment Regimens to Zosyn® at UConn Health/JDH during the Nationwide Shortage:

Infection	Therapeutic Substitution Options [Doses for Patients with NORMAL Renal Function]
Febrile Neutropenia	Cefepime 2gm IV every 8 hours **+** Tobramycin 7 mg/kg IV every 24 hours OR Aztreonam 2gm IV every 8 hours **PLUS** Tobramycin 7 mg/kg IV every 24 hours
Healthcare-Associated Pneumonia	Cefepime 2gm IV every 8 hours **+** (Tobramycin 7 mg/kg IV every 24 hours ***OR*** Levofloxacin 750mg IV every 24 hours) **If Strong concern/clinical suspicion for **Aspiration Pneumonia**:* Cefepime 2gm IV every 8 hours **PLUS** Metronidazole 500mg IV every 8 hours **+** (Tobramycin 7 mg/kg IV every 24 hours ***OR*** Levofloxacin 750mg IV every 24 hours) OR Meropenem 500mg IV every 6 hours
Intra-Abdominal Infection (IAI)	**__Community-Acquired IAI__ (To cover usual pathogens __EXCEPT__ Pseudomonas aeruginosa, see __Note #1__):* Cefepime 2gm IV every 8 hours **PLUS** Metronidazole 500mg IV every 8 hours OR Unasyn 3gm IV every 6 hours **__Healthcare-Associated IAI__ (To cover usual pathogens __PLUS__ Pseudomonas aeruginosa [see __Note #1__):* Cefepime 2gm IV every 8 hours **PLUS** Metronidazole 500mg IV every 8 hours OR Meropenem 500mg IV every 6 hours
Skin Infection / Osteomyelitis	**For Infections where activity against aerobic gram-negatives (__EXCEPT__ Pseudomonas) and anaerobes is desired (e.g., Diabetic Foot Infections) – ***__See Note #2__:* Ceftriaxone 1gm-2gm IV every 24 hours **PLUS** Metronidazole 500mg IV every 8 hours OR Unasyn 3gm IV every 6 hours **For Infections where activity against aerobic gram-negatives (__INCLUDING__ Pseudomonas) and anaerobes is desired – ***__See Note #2__:* Cefepime 2gm IV every 8 hours **PLUS** Metronidazole 500mg IV every 8 hours OR Meropenem 500mg IV every 6 hours
Urinary Tract Infection	Cefepime 2gm IV every 8 hours **+** Tobramycin 7 mg/kg IV every 24 hours

*****Notes:**

1 – Per IDSA guidelines, antibiotic therapy active against Enterococcal species should be given ONLY when: (1) Enterococci are recovered from cultures, (2) health care-associated intra-abdominal infection, particularly those with postoperative infection, (3) patients who have previously received cephalosporins or other antimicrobial agents selecting for *Enterococcus* species, (4) immunocompromised patients, and (5) those with valvular heart disease or prosthetic intravascular materials. If a patient meets one or more of these criteria, then Unasyn (for Community-Acquired IAI) or Meropenem (for Healthcare-Associated IAI) should be used.

2 – Per IDSA guidelines, Empiric therapy directed at *P. aeruginosa* is usually **unnecessary** except for patients with risk factors for true infection with this organism. Over the past 2 years, *P. aeruginosa* was isolated from **only 3.9%** of all wound cultures taken from UConn Health/JDH inpatients. Patients with higher risk for *P. aeruginosa* may include: (1) A recurrent skin infection where *P. aeruginosa* was isolated from a culture taken from the previous infection, (2) warm climate, and/or (3) frequent exposure of the foot to water.

References:

Diagnosis and Management of Complicated Intra-abdominal Infection in Adults and Children: Guidelines by the Surgical Infection Society and the Infectious Diseases Society of America. Clin Infect Dis. (2010) 50 (2): 133-164.doi: 10.1086/649554

2012 Infectious Diseases Society of America Clinical Practice Guideline for the Diagnosis and Treatment of Diabetic Foot Infections. Clin Infect Dis. (2012) 54 (12): e132-e173. doi: 10.1093/cid/cis346.