2066. The Effect of a Piperacillin/Tazobactam Shortage on Antimicrobial Prescribing and Hospital-Onset Clostridium difficile Infection Rates in 88 United States Medical Centers

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Session: 230. Clostridium difficile: Epidemiology
Saturday, October 29, 2016: 12:30 PM

Background. The adverse effects of anti-infective shortages have not been well described. Piperacillin/tazobactam (P/T) is considered to have a low-risk for C. difficile infection (CDI) relative to other agents like 3rd/4th-generation cephalosporins.

Objective. To identify any association between changes in antibiotic use during a national P/T shortage and hospital-onset CDI (HO-CDI) rates in U.S hospitals.

Methods. We analyzed electronically captured microbiology and antibiotic usage data from U.S. hospitals for 2 quarters before and 2 quarters after the P/T shortage that began in December 2014. Antibiotics classes considered to have a high-risk for CDI were defined a priori. The primary endpoint was HO-CDI defined as a positive C. difficile result (toxin or molecular assay) obtained >3 calendar days after hospital admission in patients without a positive assay in the previous 8 weeks. We fit a Poisson model to estimate the risk of HO-CDI associated with the varying levels of P/T shortage and resulting changes in high-risk antibiotic usage.

Results. Eighty-eight hospitals experienced a P/T shortage; 39 experienced a mild shortage (<33% decrease in P/T) and 49 experiencing a moderate/severe shortage defined as a ≥33% decrease in P/T (mean change in DOT/1000 days at risk pre and post shortage was 80.8 and 23.6, respectively; P < 0.001). Of the 88 hospitals with P/T shortage, 72 had a resulting increased use of high-risk antibiotics. The pre-post differences in DOT/1000 DAR for high-risk antibiotics in hospitals with no, mild, moderate, or severe P/T shortages were: -17.2 (P = 0.29), 15.6 (P < 0.05), 53.5 (P < 0.05), 98.1 (P < 0.05) respectively. The adjusted relative risk (ARR) of HO-CDI for hospitals with P/T shortage was 1.03 (95% CI: 0.85, 1.26; P = 0.73). The ARR of HO-CDI for increasing high-risk antibiotics use was 1.30 (95% CI: 1.03, 1.64; P < 0.05).

Conclusion. Hospitals impacted by a recent national shortage of P/T showed increased use of agents with high-risk for CDI. The shift toward increased high-risk antibiotic usage was associated with increased rates of HO-CDI. This study suggests a national antibiotic shortage may be associated with patient harm.