

POSTER ABSTRACTS

213. Impact of Antimicrobial Stewardship Strategies on Antimicrobial Use: A Systematic Review

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Session: 39. Antibiotic Stewardship
Thursday, October 9, 2014: 12:30 PM

Background. The increasing emergence of multi-drug resistant bacteria coupled with dwindling antibiotic development pipeline is a major health problem globally. As resistance is largely attributed to inappropriate antimicrobial use, antimicrobial stewardship has been implemented worldwide with varying outcomes. We performed a systematic review on the various strategies of antimicrobial stewardship.

Methods. PubMed, Cochrane Library and Embase databases from January 2000 to February 2014 and bibliographies of retrieved articles were searched. The following search terms were used: (Antibiotic OR Antimicrobial) AND (Stewardship OR Management OR Policy Or Implementation OR Restriction). The inclusion criteria were interventional studies employing audit-feedback, formulary restriction or Computerized Decision Support System (CDSS), which were carried out as Randomized Controlled Trials (RCT), Controlled Before-After (CBA) and Interrupted Time Series (ITS) studies on adult inpatients. Articles that were not written in English were excluded.

Results. Thirty-two studies were identified (21 ITS, 8 RCT and 3 CBA). Audit-feedback (15 studies) was the most common strategy, followed by formulary restriction (7 studies) and CDSS (4 studies). 10 studies were multifaceted.

A meta-analysis of 4 studies demonstrated significant improvement in appropriateness of antimicrobial use with interventions (random-effect model, OR 2.28, 95% CI: 1.03 to 5.04, $p < 0.05$). Three studies also showed significant reduction in the duration of target antimicrobial use (random-effect model, OR -1.63, 95% CI: -2.24 to -1.02, $p < 0.01$). Overall, a reduction of 18% to 70% in target antimicrobial consumption was observed (18 studies) and 9 studies showed 9% to 23% decrease in costs due to this. Antimicrobial stewardship also significantly reduced *Clostridium difficile* infection (3 studies) and incidence of resistant isolates (9 studies). No statistical difference in mortality (12 studies), length of hospitalisation (11 studies) and 30-day readmission (3 studies) was demonstrated.

Conclusion. Antimicrobial stewardship strategies are effective in improving appropriate antimicrobial use, reducing antimicrobial use, expenditures and resistance, without compromising patient safety.

Disclosures. All authors: No reported disclosures.