

KiDrug Alert Journal Club

Anne Matlow

Medical Infection Prevention & Control Programme, The Hospital for Sick Children, Centre for Patient Safety, University of Toronto, Toronto

A Critical Review of: "Impact of antimicrobial stewardship program on vancomycin use in a pediatric teaching hospital".

*Di Pentima MC, Chan S
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SUMMARY OF FINDINGS

Antimicrobial stewardship programs (ASP) are important for cost-effective antimicrobial utilization and reduction in antibiotic resistance. There has been little written about ASPs in pediatric settings.

This study took place at Alfred I DuPont Hospital for Children in Wilmington Delaware, an academic tertiary care pediatric hospital where a computerized prescriber order entry system (CPOE) was in place, and focused on vancomycin utilization.

The ASP included development of guidelines and indications for use of vancomycin, prospective monitoring of prescribing and adherence to indications and hospital policy (displayed as a mandatory field in the CPOE system), and real time prescriber feedback. The major outcome measure was the density of vancomycin use (number of doses administered/1000 patient days). The number of interventions by the ASP were monitored and classified. In the first year of the stewardship program errors in vancomycin use and prescribing were identified by review of an automated report of patients on antimicrobials. After baseline data were collected, two interventions, automatic stop orders and targeted decision support were implemented. Vancomycin utilization decreased significantly

(378 to 255 doses /1000 patient days) despite a significant rise in *S. aureus*, including MRSA infections. Vancomycin prescription errors, primarily premature stop and dosing errors, decreased significantly (1.8 to 1.4 errors/ 1000 patient days). However even after three years, 8% of vancomycin orders did not meet the approved indications. As a result, a restriction policy was introduced for preauthorization by the infectious diseases consultant to use vancomycin beyond 2 doses.

COMMENTS

Antimicrobial stewardship is a complex process and requires a multifaceted approach. Four years ago, the Infectious Diseases Society of America (IDSA) and the Society for Healthcare Epidemiology of America (SHEA), released guidelines for developing an institutional program to enhance antimicrobial stewardship.¹ The ASP as described in the current study included many of the recommendations in these guidelines (i.e., multidisciplinary team; guidelines and indications; prospective audit with real time feedback, microbiology correlation; dose optimization; facilitated by decision support through CPOE), and success was evaluated by the key process measure (reduction in antibiotic use). While significant reductions in vancomycin utilization and prescribing orders are reported, a potential confounder is only fleetingly mentioned in the discussion, i.e. a halt in the stem-cell transplantation program during the last year of the study. Preauthorization of vancomycin use was only introduced at the end of the study; while we are left without knowing whether this approach helped reduce vancomycin use at the Alfred I

DuPont Hospital for Children, this strategy has been used successfully and is included in the IDSA-SHEA guidelines.

The fact that after 3 years, close to a third of vancomycin orders still did not meet approved indications raises 2 issues. The first is the importance of educating prescribers on the judicious use of antibiotics. The second relates to technology. Technology is often considered the solution to patient safety challenges including those related to medication use. If prescribers were able to override the mandatory screen containing the accepted indications for vancomycin use because of a field for “other”, the preauthorization strategy might have been effective if introduced much earlier.

This report reminds us that technology still relies on humans, and that astute humans can always find a work-around to circumvent the guardrails of technology. Ongoing measurement, feedback, and engaging all stakeholders in the efforts remain key to sustainable change.

Corresponding Author:

anne.matlow@sickkids.ca

REFERENCE

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