Impact of an Antimicrobial Stewardship Program on Surgical Antibiotic Prophylaxis Conformity According to 2013 ASHP/IDSA Guidelines

Audrey-Anne Longpré1, 2 PharmD, Rodolphe Kénol-Maurrasse1, 2 PharmD, Pierre Olivier Monast1, 2 PharmD, Silva Vujanovic1, 2 B.Pharm, Sylvie Carle1 B.Pharm, M.Sc., Chantal Guévremont1 B.Pharm, M.Sc., Charles Frenette3 M.D., Daniel JG Thirion1, 2 B.Pharm, M.Sc., PharmD, FCSHP
1Pharmacy Dept. MUHC, 2Université de Montréal, 3Infectious Diseases Dept. MUHC, Montreal, QC

Introduction

• Surgical site infections (SSIs) are common nosocomial infections worldwide, associated with patient morbidity and mortality.
• Although surgical antimicrobial prophylaxis (SAP) diminishes SSIs, adherence to SAP guidelines is often variable.
• 2013 ASHP/IDSA SAP guidelines have brought important changes to whose impact in clinical settings is yet to be known.
• Restrictive or persuasive interventions can be used to change inpatient prescribing. Academic detailing, audit-and-feedback, and reminders appear most effective.
• For SAP, changes occur best through an antimicrobial stewardship program (ASP).

Method

• Study course and interventions:
  - April 2012 - March 2013: Pre-intervention group
  - April 2013: ISDA/IDSA SAP guidelines publication.
  - June 2013 - February 2014: Antimicrobial stewardship program interventions
  - March - June 2014: Post-intervention group

• ASP interventions included:
  - Collaborative establishment of internal SAP protocol
  - Audit-and-feedback
  - Memos to surgical teams

Inclusion criteria:
• Patients ≥ 18 years-old
• Undergoing elective or urgent surgery by one of the nine selected surgical services
• Operated between April 2012 and March 2013, and between March 2014 and June 2014 for pre- and post-interventions periods, respectively.

Exclusion criteria:
• Patients undergoing multiple surgeries within 48 hours; surgeries involving multiple specialties;
• Surgeries where SAP was provided but not indicated
• Surgeries where SAP was indicated without documentation of administration.

Sample size calculation:
• To detect a 20% change in GCS with a power of 80% and a two-sided alpha of 0.05
• 102 surgeries needed per surgical service for each pre- and post-intervention group
• Total desired sample size to obtain statistical power for each surgical service separately: 1836 surgeries.

Results

• Study flowchart:
  - Pre-intervention: 36 threatened surgeries; 98 SAP provided
  - Post-intervention: 37 threatened surgeries; 97 SAP provided

• GCS improvement in a multivariate model accounting for potential confounders:
  - using 1999 IDSA/ASHP guidelines for pre-interventions assessment: 22.0% (19.3-25.1) p<0.001
  - using 2013 internal protocol for pre-interventions assessment: 15.7% (12.6-18.9) p<0.001

• Primary outcome:
  - Global conformity score (GCS, 0% to 158%)
  - Pre-intervention group: 15.2 (12.6 - 17.8) p<0.001
  - Post-intervention group: 23.6 (21.1 - 26.1) p<0.001

• Secondary outcome:
  - Conformity for each criterion (%)

Conclusion

The current study demonstrates that:
• Persuasive interventions delivered by antimicrobial stewardship program can effectively improve SAP prescribing, a pivotal element in the quality of care of surgical patients
• Change in practice does occur over time
It also sets a benchmark for SAP performance according to the new ASHP/IDSA 2013 guidelines

Contact:
Audrey-Anne Longpré
McGill University Health Center
Email: audrey-anne.longpre@umontreal.ca

Acknowledgements

Researchers would like to thank Camille Humeau, Kawak Mehdii and Mathilde Panhelletus for their help in data collection.