

INTRODUCTION

- Many prescribers may question the safety of restricting antibiotic use at their own institution.¹
- Anecdotal experience may subsequently drive prescribers to overprescribe antibiotics to avoid severe infectious complications in future patients.²
- They may view the aim of antimicrobial stewardship is to primarily reduce costs rather than improve patient care.²

OBJECTIVES

- Validate an electronic surveillance tool to detect adverse events related to stewardship.
- Measure the perceived importance and usefulness of safety metrics to prescribers.

METHODS

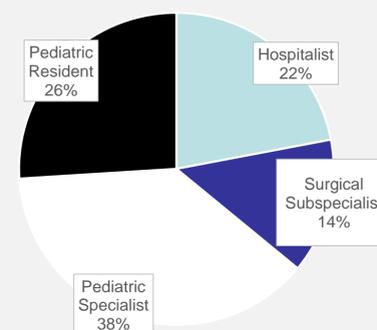
- **Study Design:** Validation study of electronic surveillance tool to detect stewardship adverse events with comparison to primary medical record; Survey and focus group of physicians.
- **Inclusion/Exclusion Criteria:** Patients admitted at Lurie Children's Hospital from April 2013 to March 2017 were included. Children with data elements not contained in EHR or admitted for research studies were excluded.
- **Study Intervention:** Antibiotic prescribing, admit/discharge/transfer (ADT) data, vital sign (VS) trends, white blood cell counts (WBC), microbiology antibiotic susceptibility results (ASR), and medication administration record (MAR) data were reviewed for 2620 patients. Metrics were created using discrete data elements derived from the electronic health record (EHR). Data were presented to 50 pediatricians and pediatric subspecialists who were asked to rate (Likert scale 1-5) the perceived importance of the metrics for patient safety and usefulness of the metrics for their prescribing. Additional information was obtained via focus groups.
- **Statistical Analysis:** The sensitivity (to detect an adverse outcome) and specificity (to avoid false detection of an adverse outcome) were measured in comparison to manual review of the medical record. Means and proportions were measured for survey and focus group responses

RESULTS

Table 1: Metrics, data elements, sensitivity, specificity, and ratings by prescribers

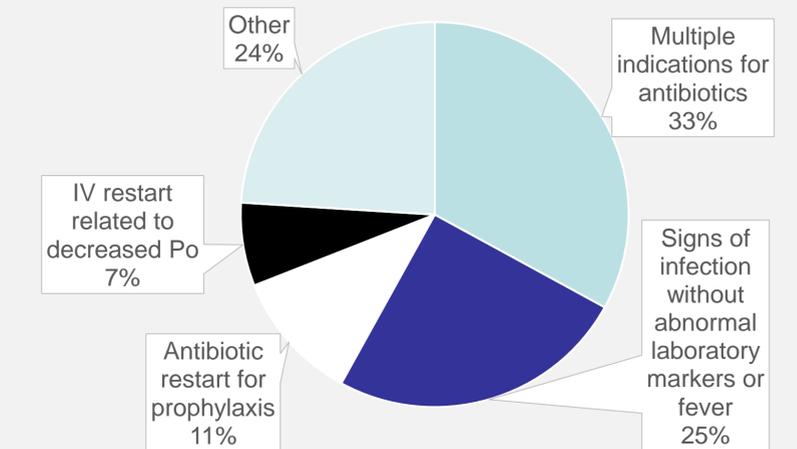
Potential Adverse Outcome	Data Elements	N	Sens	Spec	Importance (Mean)	Usefulness (Mean)
Isolated organism not susceptible to empiric therapy for positive culture at sterile body site	Pharmacy orders ASR	800	86%	85%	4.8	4.3
Disagreement between rapid diagnostic test result and culture result	Pharmacy orders ASR	430	95%	81%	4.2	4.5
Antibiotic restart within 7 days after initial discontinuation	MAR Abnormal WBC Fever>38 F	1200	81%	75%	3.8	3.6
IV restarts or readmissions after IV to PO conversion	ADT MAR Abnormal WBC Fever>38 F	2100	87%	94%	3.8	3.4
Missed true infection when antibiotics not started initially for respiratory tract colonization	ADT MAR Abnormal Fever>38	320	79%	77%	4.2	4.0

Figure 1: Survey and Focus Groups



- Presence of safety metrics increased acceptance of stewardship interventions
- Very interested in trends to measure safety of stewardship interventions including institutional guidelines.
- Preferred in depth discussion of serious adverse events in addition to automated metrics
- Concerns with benchmarking with institutions of higher and lower acuity.

Figure 2: Reasons for Error of Surveillance Tool



CONCLUSIONS

- At the institutional level, safety metrics can monitor that antimicrobial stewardship interventions do not compromise patient safety and quality of care.
- Electronic surveillance can prompt in depth review of adverse outcomes.
- The use of metrics as benchmarks may galvanize stewardship care efforts, as has been shown with other quality endeavors.

REFERENCES

1. Bal AM, et al. *Curr Opin Infect Dis.* 2011; 24:357-62.
2. Brookes-Howell L, et al. *BMJ Open.* 2012; 2:e000796.
3. Owens RC Jr et al. *Pharmacotherapy.* 2004; 24:896-908.