# Implementation of the Core Elements of an Outpatient Antimicrobial Stewardship Program in Pediatric Emergency Departments and Urgent Care Clinics

Rana E. El Feghaly, MD, MSCI*; Alaina Burns, PharmD, BCPPS; Jennifer L. Goldman MD, MS; Angela Myers MD, MPH; Amol V. Purandare MD; Elizabeth Monsees PhD, MBA, RN; Lisa Hiskey DO; and Brian R. Lee, MPH, PhD

Children's Mercy Kansas City, Kansas City, MO, University of Missouri Kansas City

*relfeghaly@cmh.edu

## Background / Objectives

- ≥ 70% of prescribed antibiotics are in outpatient settings
  - ≥ 30% unnecessary
- CDC Outpatient Antimicrobial Stewardship Program (ASP) core elements published in 2016
- General outpatient ASP obstacles:
  - Quantifying local prescribing patterns
  - Frontline provider engagement
- We describe outpatient ASP efforts at Children's Mercy Kansas City
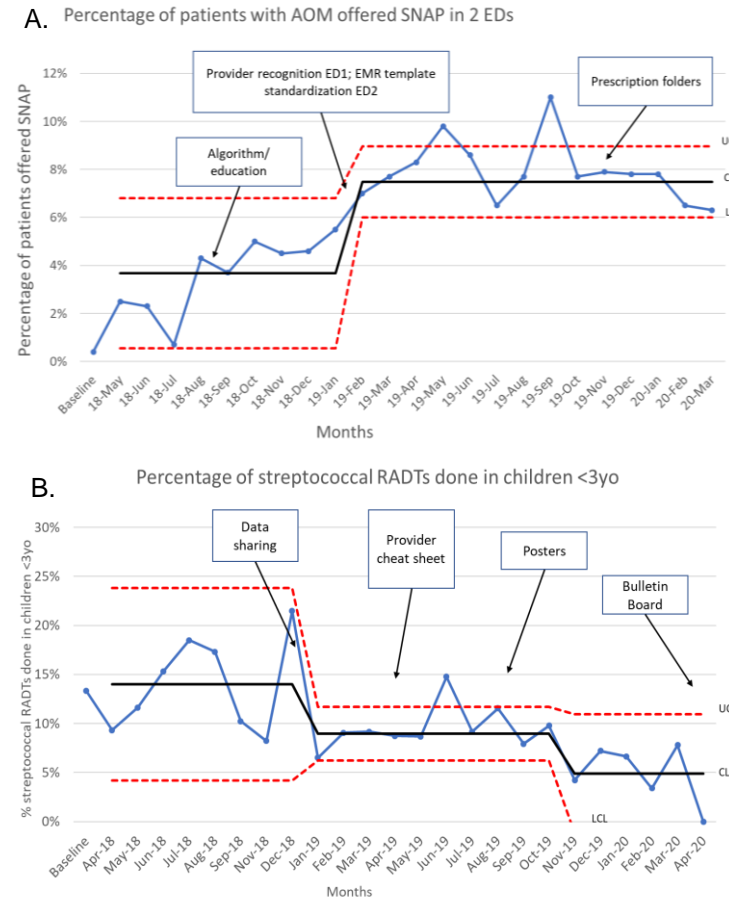  - 2 emergency departments (ED) and 3 urgent care clinics (UCC)

## Methods / Results

**Table 1. Implementation of the outpatient ASP core elements in our program**

| Outpatient ASP core elements | Activities at our institution | Results of our ASP activities |
|---|---|---|
| Commitment | Commitment letters, administration support | Commitment letters in exam rooms, advisory board |
| Action for policy and practice | Quality improvement (QI) projects led by frontline providers | QI success (Figure 1) |
| Tracking and reporting | Monthly report:<br>- Rates of antibiotic use for viral infections and first-line antibiotic use for bacterial infections<br>-Compare rates of diagnoses and overall antibiotic use for all respiratory infections among sites | -Pre-implementation: <5% antibiotic use for common pediatric viral infections, >85% first-line antibiotics for common bacterial infections<br>-Trends help identify site-specific improvement opportunities (Figure 2) |
| Education and expertise | -Face to face ASP updates during division meetings bi-annually –sharing data<br>-Outpatient antibiotic handbook<br>-Lectures, workshops, newsletter articles on wise use of antibiotics | -ASP updates at all division meetings bi-annually - all core providers<br>-Handbook survey completed by 61 ED and UCC providers (Table 2) |

## Results

**Figure 1. Annotated control charts of QI efforts**



A. Percentage of patients with AOM offered SNAP in 2 EDs

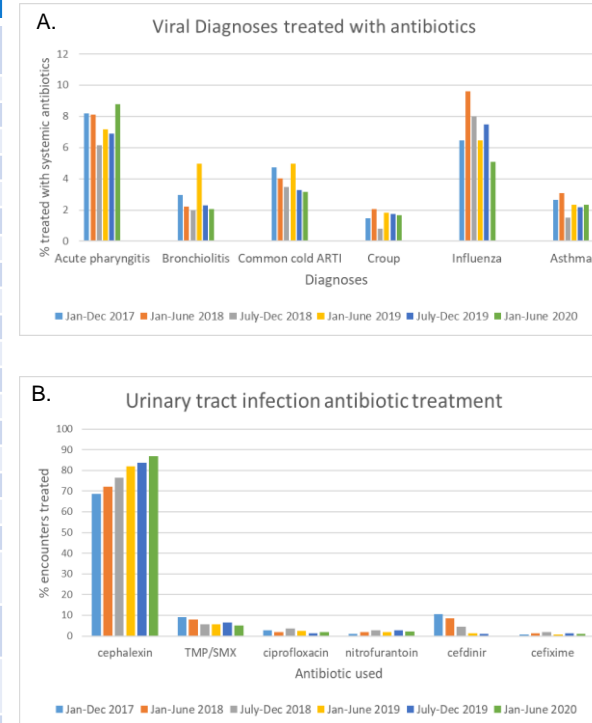B. Percentage of streptococcal RADTs done in children <3yo

AOM = acute otitis media; ED = emergency department; RADT= rapid antigen detection test, SNAP = safety-net antibiotic prescription; UCC = urgent care clinics
CL = central line; LCL= lower control limit; UCL = upper control limit

**Table 2. Outpatient antibiotic handbook survey**

| | Completed surveys = 61 | N (%) |
|---|---|---|
| Provider type | Advanced practice registered nurse | 23 (38%) |
| | Attending | 26 (43%) |
| | Fellow | 8 (13%) |
| | Pediatric resident | 4 (6%) |
| Form of handbook accessed | Printed | 46 (75%) |
| | Online only | 4 (6%) |
| | Both | 11 (18%) |
| % shifts handbook used | 100% | 5 (8%) |
| | 75-99% | 11 (18%) |
| | 50-74% | 14 (23%) |
| | 25-49% | 9 (15%) |
| | <25% | 15 (25%) |
| Is handbook beneficial | Very | 52 (85%) |
| | Somewhat | 7 (11%) |
| | No | 2 (3%) |
| Reasons why beneficial | Easily accessible | 54 (88%) |
| | Clear definition of diagnosis | 27 (44%) |
| | Clear guidelines | 37 (61%) |
| | Common circumstances | 40 (65%) |
| | Other– making sure plan consistent with guidelines | 1 (2%) |
| Impacted practice | Yes | 59 (97%) |
| Influence of sections* | Number of sections referenced (Mean +/-SD) | 6 +/- 2.7 |
| | Number of sections impacting practice (Mean +/-SD) | 4.3 +/- 3.3 |
| Impact | Changed diagnosis | 1 (2%) |
| | Decreased antibiotic use | 14 (23%) |
| | Increased antibiotic use | 1 (2%) |
| | Changed antibiotic choice | 37 (61%) |
| | Changed antibiotic dose | 25 (41%) |
| | Decreased antibiotic duration | 34 (56%) |
| | Increased antibiotic duration | 3 (5%) |

*total number of sections =10

**Figure 2. Examples of report trends**



A. Viral Diagnoses treated with antibiotics

B. Urinary tract infection antibiotic treatment

## Conclusions

Successful implementation of the CDC core elements requires:
- Leadership support
- Engagement from frontline providers
- Maximizing existing resources