

Conclusion. Our findings suggest that antibiotic exposure in the first year of life increases the risk of being diagnosed with asthma later in childhood. This is congruent with similar findings at the individual level in a prospective cohort of Canadian children that also points to a pathway through altered gut microbiota.

Disclosures. All authors: No reported disclosures.

1147. Improving Accessibility and Antibiotic Prescribing with an Enhanced Digital Antibigram

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Background. Institutional antibiograms play a key role in antimicrobial stewardship and may provide a venue for clinical decision support. Our institution recently transitioned our paper antibiogram to an enhanced digital antibiogram with antibiotic recommendations for common pediatric infections. The objectives of this study were (1) to improve the accessibility of our institutional antibiogram through a digital platform and (2) to improve trainee confidence when selecting empiric antibiotics by integrating clinical decision support.

Methods. The digital antibiogram was developed and evaluated at a tertiary children's hospital. The tool was developed iteratively over one year by our innovation and digital health accelerator with recommendations for empiric antibiotic selection provided by experts in pediatric infectious diseases (see Figure 1 for example). Usability pilot testing was performed with a group of ordering providers and the tool was released internally in October 2018. A paired pre- and post- implementation survey evaluated residents' perceptions of the accessibility of the paper vs. digital antibiogram and their confidence when selecting empiric antibiotics. Data were analyzed by Fisher exact test.

Results. During the 3 months after release, the digital antibiogram was accessed 1014 times with similar proportions of views for susceptibility data, dosing, and empiric antibiotic recommendations. Of the 31 pediatric residents who responded to both pre- and post- implementation surveys, only 59% had access to a copy of the paper antibiogram. Following release of the digital antibiogram, residents referred to antibiotic susceptibilities more frequently ($P < 0.05$, Figure 2) and were more frequently more confident when selecting the correct antibiotic dose ($P < 0.01$, Figure 3). See Figure 4 for dosing recommendation example.

Conclusion. Providing antibiotic susceptibility and dosing recommendations digitally improved accessibility and resident confidence during antibiotic prescribing. Our digital tool provides a successful platform for displaying the antibiotic data and recommendations that enable appropriate antibiotic use.

Figure 1. Empiric Antibiotic Recommendations for Orbital Cellulitis

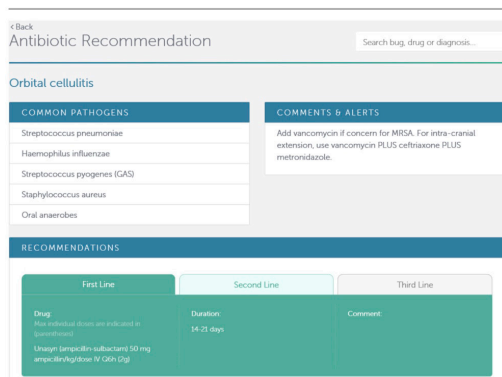


Figure 2.

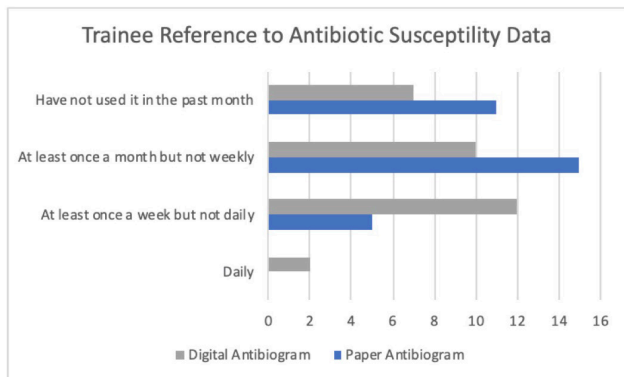


Figure 3.

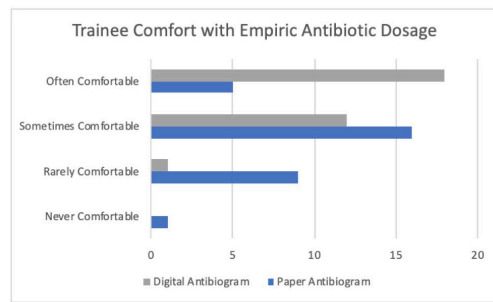
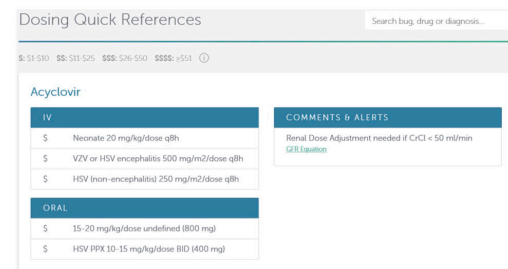


Figure 4. Dosing Recommendations for Acyclovir



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1148. Antimicrobial Stewardship Program at a Long-term Care Hospital for Severely Handicapped Children and Adults

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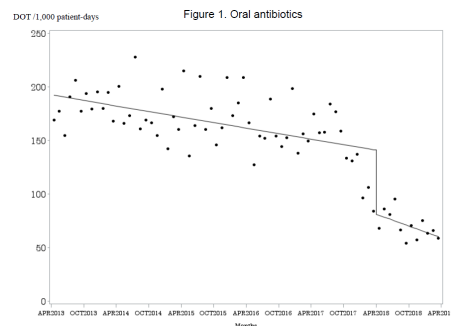
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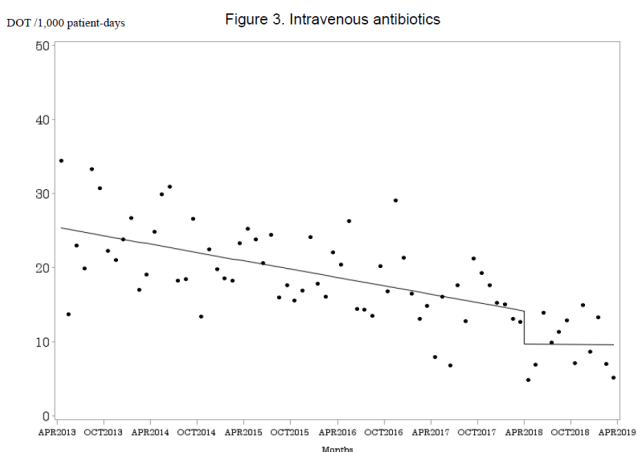
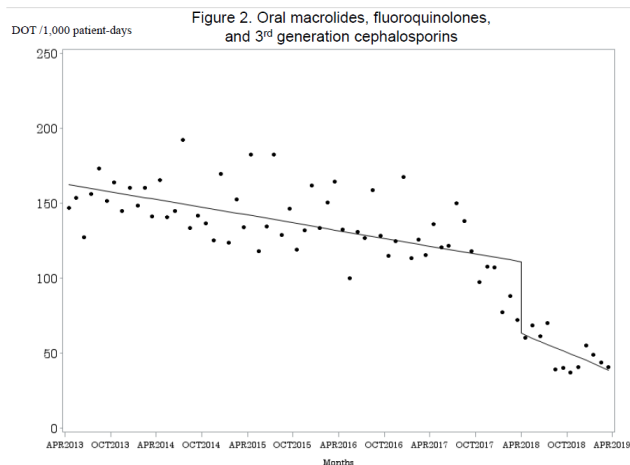
Background. Although antimicrobial stewardship program (ASP) is also recommended for a long-term care facility (LTCF), research on ASP in LTCFs is still limited. Our study was conducted at an LTCF offering chronic medical care for pediatric and adult patients with extensive medical needs since childhood. Our aim of this study was to evaluate the impacts of ASP in an LTCF.

Methods. A quasi-experimental study was conducted at Tokyo Metropolitan Fuchu Ryoiku Medical Center (250 beds) in Japan. The pre- and post-intervention periods were from April 2013 to March 2017 and April 2017 to March 2019, respectively. Periodic educational interventions were conducted throughout study period. ASP in post-intervention period consisted of mandatory consultation with infectious diseases service at an outside children's hospital for prescription of restricted drugs. Fluoroquinolones, cefepimes, carbapenems and vancomycin were listed as restricted drugs. Intravenous and oral antimicrobial use was calculated by day of therapy (DOT) per 1,000 patient-days. Interrupted time series analysis was used for level and trend change for pre- and post-intervention periods.

Results. Oral agents comprised 89% of the total antimicrobial use. Oral antimicrobials were decreased by 39% in post-intervention with significant level change ($P < 0.01$) and without trend change ($P = 0.61$) (Figure 1). Among oral antimicrobials, macrolides, fluoroquinolones and third-generation cephalosporins were decreased by 72% in post-intervention with significant level change ($P < 0.01$) and without trend change ($P = 0.42$) (Figure 2). Intravenous antimicrobials were decreased by 40% without level change ($P = 0.15$) and trend change ($P = 0.65$) (Figure 3).

Conclusion. Combining education and mandatory consultation with infectious diseases service for restricted drug enhanced in decreasing total oral antimicrobials at a LTCF.





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1149. Reducing Piperacillin/Tazobactam Use in Children with Acute Perforated Appendicitis

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Background. Children with perforated appendicitis have more frequent complications compared with nonperforated appendicitis. Existing data suggest broad-spectrum antibiotics are not superior to narrow-spectrum antibiotics for this condition. In an effort to safely decrease broad-spectrum antibiotic use at our hospital, we evaluated the impact of an antimicrobial stewardship program (ASP) intervention on the use of piperacillin/tazobactam (PT) and clinical outcomes in children with perforated appendicitis.

Methods. Single-center, retrospective cohort study of children ≤ 18 years with perforated appendicitis who underwent primary appendectomy. Children with primary nonoperative management or interval appendectomy were excluded. Prior to the intervention, children at our hospital routinely received PT for perforated appendicitis. An electronic health record (EHR)-integrated guideline that recommended ceftriaxone and metronidazole for perforated appendicitis was released on July 1, 2017 (Figure 1). We compared PT utilization, measured in days of therapy (DOT) per 1,000 patient-days, and clinical outcomes before and after the intervention.

Results. A total of 74 children with perforated appendicitis were identified: 23 during the pre-intervention period (June 1, 2016 to June 30, 2017) and 51 post-intervention (July 1, 2017 to September 30, 2018). Thirty-three patients (45%) were female and the median age was 8 years (IQR: 5–11.75 years). Post-intervention rate of guideline compliance was 84%. PT use decreased from 556 DOT per 1000 patient-days to 131 DOT per 1000 patient-days; incidence rate ratio of 0.24 (95% CI: 0.16–0.35), post-intervention vs. pre-intervention. There was no statistically significant difference in duration of intravenous antibiotics, total antibiotic duration, postoperative length of stay (LOS), total LOS, ED visits/readmission, or surgical site infection (SSI) between pre- and post-intervention periods (Table 1).

Conclusion. An EHR-integrated ASP intervention targeting children with perforated appendicitis resulted in decreased broad-spectrum antibiotic use with no

statistically significant difference in clinical outcomes. Larger, multicenter trials are needed to confirm our findings.

Figure 1. Algorithm for antibiotic selection for acute appendicitis

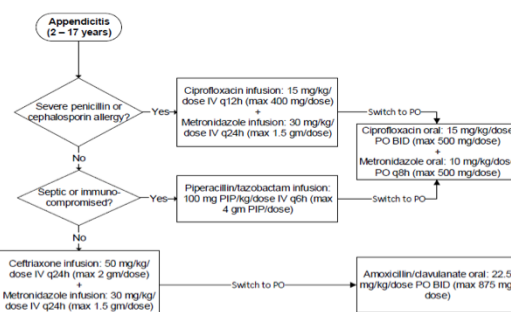


Table 1. Comparison of characteristics and outcomes, before and after the antimicrobial stewardship intervention

Characteristics:	Pre-intervention, N=23	Post-intervention, N=51
Sex (female)	10 (43%)	23 (45%)
Ethnicity (Hispanic)	15 (65%)	24 (47%)
Race		
White	10 (43%)	21 (41%)
Asian	2 (9%)	7 (14%)
Black	0	1 (2%)
Other	11 (48%)	22 (43%)
Age (mean, 95% CI)	8.5 (6.7 – 10.3)	8.3 (7.1 – 9.5)
Immunocompromised	3 (13%)	1 (2%)
Intraoperative findings:		
Diffuse purulence	7 (30%)	15 (29%)
Abscess	9 (39%)	15 (29%)
Extraluminal fecalith	1 (4%)	5 (10%)
Outcomes:	Pre-intervention, N=23	Post-intervention, N=51
Piperacillin/tazobactam days/1000 patient days*	556	131
Length of intravenous antibiotics (mean, 95% CI) in days	5.8 (4.6 – 7.1)	5 (4.2 – 5.9)
Total length of antibiotic therapy (mean, 95% CI) in days	10.7 (9.2 – 12.1)	9.5 (8.4 – 10.6)
LOS after surgery (mean, 95% CI), in days	6.4 (5.2 – 7.6)	6 (4.9 – 7)
Total LOS (mean, 95% CI), in days	6.6 (5.4 – 7.7)	6.4 (5.2 – 7.6)
ED visits/readmissions	2 (9%)	7 (14%)
ED visits	1 (4%)	1 (2%)
Readmission	1 (4%)	6 (12%)
Surgical Site Infection	1 (4%)	6 (12%)

ED; emergency department, LOS; length of stay
* p < 0.05

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1150. Evaluating the Impact of Antibiotic Prophylaxis on the Microbiology and Incidence of Ventriculitis in Patients with External Ventricular Drains

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Background. External ventricular drains (EVDs) are frequently used in acute brain injuries for continuous intracranial pressure monitoring and cerebrospinal (CSF) fluid diversion. EVDs are associated with a 0–22% risk of ventriculitis. The evidence for antibiotic prophylaxis (AP) for ventriculitis prevention is not robust. This study aimed to delineate the incidence of EVD-related ventriculitis and causative organisms in patients receiving AP.

Methods. A retrospective chart review from 2013 to 2018 at Yale New Haven Hospital was performed. Patients were included if ≥ 18 years of age, admitted to the neurosciences intensive care unit (ICU), and had AP with cefazolin, vancomycin, sulfamethoxazole/trimethoprim, or clindamycin. Patients were excluded if they had a diagnosis of meningitis or ventriculitis prior to EVD placement, on multiple agents for AP, on antibiotics for indications other than AP, CSF leak, or skull fracture. The primary endpoint was the incidence of ventriculitis per 1,000 EVD-days. Secondary endpoints were causative organisms of ventriculitis, EVD duration, ICU length of stay (LOS), hospital LOS, and 30-day mortality.

Results. Five hundred ninety-nine patients were reviewed and 249 patients were included. Baseline demographics are noted in Table 1. Cefazolin was the most common agent for AP (98%). There were 7 cases of ventriculitis with an incidence rate of 2.8% (4 infections per 1000 EVD-days). All of the causative organisms were resistant to the