

provides oversight for 6 Columbus NICUs, and Our objective was to evaluate the impact of the vancomycin reduction program, with secondary objectives including duration of therapy, recurrence of BSI within 14 days of completion of therapy, and mortality.

Methods. The pharmacy database at NCH was queried with respect to all nafcillin and vancomycin use from 2013–2018. Pertinent clinical and laboratory data were obtained from the electronic health record (EHR) on all infants who had nafcillin or vancomycin therapy initiated, with each initiation defined as an antibiotic “course.”

Results. From 1/2013 to December 2014 (pre-vancomycin reduction), there was an average of 112 vancomycin and 42 nafcillin courses provided to infants each year. From 1/2015 to December 2018, the use of nafcillin increased to an average of 90 courses while vancomycin decreased to 55 courses per year ($P < 0.01$). Since the institution of the vancomycin reduction program, preliminary EHR review of 50 infants has shown that 9 had a positive blood culture (7 CoNS; 2 methicillin-susceptible *S. aureus*; 1 *Escherichia coli*). All CoNS isolates were resistant to nafcillin, and all infants sterilized the blood culture within 24 hours of vancomycin. The overall median length of therapy was 3 days with nafcillin or vancomycin. However, when excluding rule outs, the median duration of therapy was 9.5 days. There was no BSI recurrence or infection-related death.

Conclusion. An empiric antibiotic regimen that includes nafcillin rather than vancomycin for possible LOS in high-risk infants in the NICU effectively and safely reduced overall vancomycin use.

Disclosures. All authors: No reported disclosures.

1145. Reducing Antibiotic Use In Children With Respiratory Syncytial Virus-related Bronchiolitis: Implementation of TeamSTEPPS 2.0 to Improve Pharmacy-Physician Communication in a Community Hospital Antibiotic Stewardship Program

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Background. Overuse of antibiotics in Respiratory Syncytial virus (RSV) bronchiolitis in children has been reported between 29–80%. Our antibiotic stewardship program (ASP) utilized a validated communication tool using TeamSTEPPS * 2.0 principles to improve pharmacy-physician communication and improve audit-feedback technique (AFT).

Methods. We trained pharmacists and physicians in TeamSTEPPS * 2.0 using simulation-based training. The key component of the training was: closed-loop communication and using a scripted pharmacy communication tool. The scripted pharmacy communication tool was modified from the “DESC” script used in TeamSTEPPS * 2.0, which includes (1) Describing the situation, (2) Expressing concern, (3) providing Solutions, (4) stating Consequences and coming to an agreement. We incorporated this to improve the audit-feedback technique. We aimed to: (1) Reduce overall percentage of antibiotic (abx) use in RSV bronchiolitis by 25%, (2) reduce use of ceftriaxone, (3) reduce average antibiotic days of therapy (DOT).

Results. Our baseline data from 2017–18 RSV season showed a 42% (48/113) use of abx, of which 10% were deemed inappropriate. When compared with the 2018–2019 season, no differences were noted in patient demographics. The median length of stay between the two time periods was similar (2.9 days, IQR 1.9–4.8 days vs. 3.1 days, IQR 2.1–5.1 days, $P = 0.17$). More patients were admitted to the pediatric intensive care unit (PICU) in the 2018–2019 period: 35/96 (36.4%) as compared with 17/113 (15%) in the previous season. Although similar proportions of patients received abx (42% vs. 41%) in the two groups (Figure 1), average abx DOT, significantly decreased in the 2018–2019 period as compared with 2017–2018 (Figure 2). There was also a decrease in the use of ceftriaxone during the 2018–2019 (Figure 3). All physicians and pharmacists were satisfied with the communication technique and thought that it improved their interaction and understanding of the ASP process.

Conclusion. Though we did not reduce the overall abx use in RSV bronchiolitis, we did reduce the average abx DOT and use of ceftriaxone in our institution. The use of a validated communication tool to improve prospective AFT was crucial to the success of the ASP program.

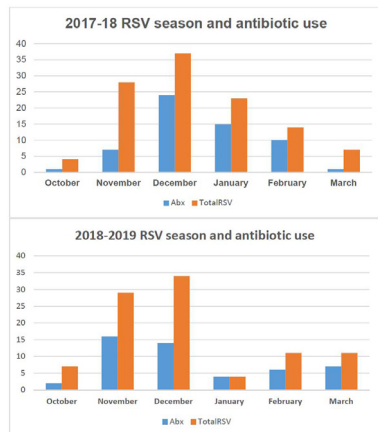


Figure 2: Average antibiotic days of therapy in RSV bronchiolitis 2017-2018 versus 2018-2019 season

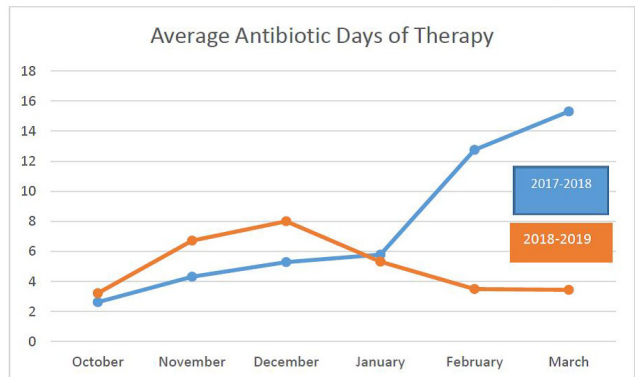
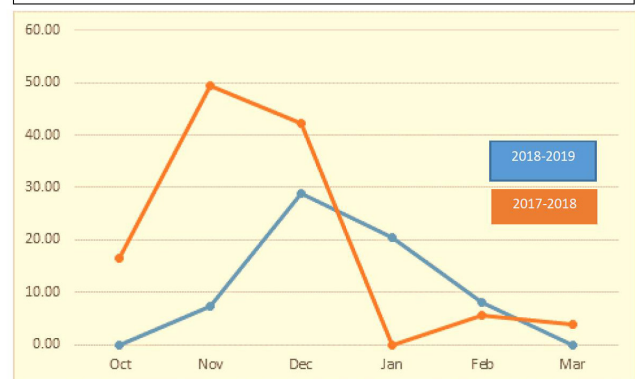


Figure 3: Comparison of Ceftriaxone use among patients with RSV bronchiolitis during 2017-2018 versus 2018-2019



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1146. Antibiotic Use in Infants Predicts Asthma Rate in Children 1–4 years at Fine Geographic Scale

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Background. Early-life exposure to antibiotics is associated with childhood asthma. We previously reported that a dramatic drop in infant antibiotic use is correlated with a decline in asthma incidence in children in British Columbia (BC). This study aims to see whether antibiotic exposure predicts asthma at a fine geographic scale after adjustment for known covariates.

Methods. We used prescribing data from BC PharmaNet, a population-based database capturing all outpatient prescribing for BC population ($n = 4.7$ million). Prescribing rates for infants <1 year were calculated as prescriptions per 1000 population per year using age and sex-specified denominator estimates. Age-adjusted aggregate asthma incidence data for children 1–4 years were obtained from the BC Ministry of Health Chronic Disease Registry. The disease identification uses a standard case definition making use of diagnostic codes (ICD9-493 and ICD10-J45) in BC's universal hospital and physician billing databases and relevant asthma-specific drug data from BC PharmaNet. We modeled the association between antibiotic prescribing rate and asthma incidence in 91 Local Health Areas using multivariable Poisson regression employing a generalized linear mixed-effects model adjusting for covariates.

Results. Between 2000 and 2014, the annual asthma incidence (ages 1–4 years) fell 26% from 27.3 (95% CI: 26.5–28.0) to 20.2 (95% CI: 19.5–20.8) per 1000 population. For children aged 1–4 years in 2000, the average proportion of infants exposed to one or more courses of antibiotics fell from 66.9 to 32.1% over the same interval. Antibiotic was a significant predictor of asthma rate (IRR=1.24 per 10% absolute increase in antibiotic prescribing; 95% CI: 1.19–1.27). Other covariates that remained significant in the model included male sex (IRR=1.56; 95% CI: 1.53–1.58), and atmospheric particulate matter PM 2.5 (IRR=1.08 per interquartile increase; 95% CI: 1.06–1.10).

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.

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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

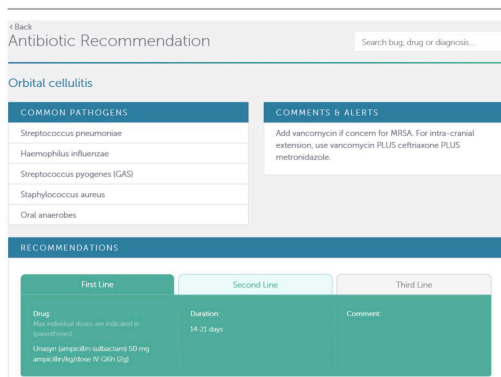


Figure 2.

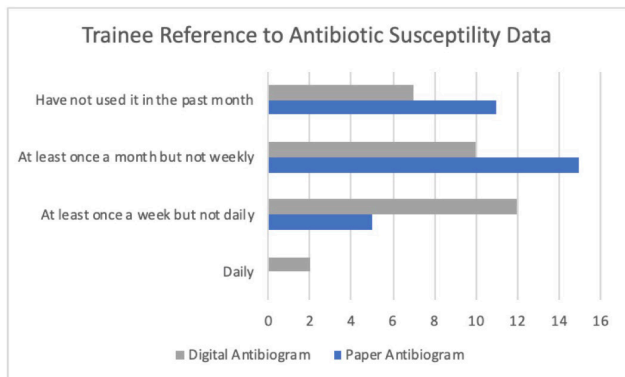


Figure 3.

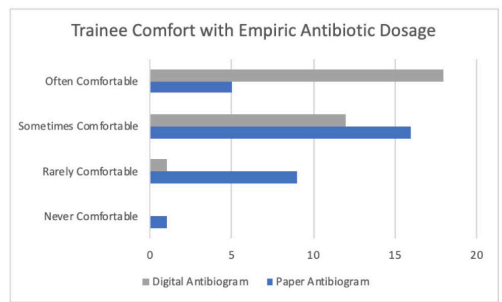
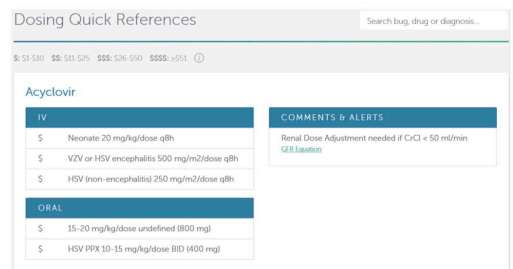


Figure 4. Dosing Recommendations for Acyclovir



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

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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.

