

### 171. Impact of Limiting Antimicrobial Indication Options in a Pediatric Electronic Health Record

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**Session:** 49. Antimicrobial Stewardship: Interventions in Pediatric Populations  
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**Background.** In April 2005, our Antimicrobial Stewardship Program (ASP) started to require prescribers to select an indication as part of an antimicrobial (AM) order. The ASP developed a list of approved indications for each AM with an unlimited number of options including "other." In 2015–2016, we modified the indication lists to decrease the number of options. The goal of this project is to compare the frequency of indication "other" and the appropriateness of provider-selected indications before and after the intervention.

**Methods.** We performed a retrospective cohort study of cefepime, ceftriaxone, piperacillin/tazobactam, and ciprofloxacin (IV) orders for all children in our facility excluding orders placed in ambulatory locations and the emergency department. AM orders and provider-selected indications from January to March 2014 (preintervention) and 2017 (postintervention) were compared. Chart review was performed on a sample of pre- and postmodification orders to assess the appropriateness of provider-selected indications. An indication was considered appropriate if the provider-selected indication matched the clinical indication documented.

**Results.** A total of 747 orders were included in the data analysis, 350 and 397 orders from pre- and postintervention period, respectively. Ceftriaxone was the most commonly prescribed AM: 13.7 and 17.2 orders per 1,000 inpatients-days during pre- and postintervention periods. The percent of indication "other" orders increased in the postintervention period for ceftriaxone while it decreased for ciprofloxacin and remained about the same for cefepime and piperacillin/tazobactam. Most prescribers who selected indication "other" for ceftriaxone during the postintervention period did not provide a reason (29.8%). The agreement between clinical and provider-selected indications was consistent in pre- and postintervention period except piperacillin/tazobactam (RR = 0.56).

**Conclusion.** Requiring selection of an indication encourages prescribers to evaluate their rationale for initiating an AM. Decreasing the number of indication options for some AMs was associated with increased use of indication "other," suggesting that the prescriber could not find an indication that matched their needs.

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### 172. Antimicrobial Stewardship in High-risk Pediatric Patients

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**Background.** The clinical impact of antimicrobial stewardship programs (ASP) on children admitted to the intensive care units (ICU) or oncology wards is unknown. The objective of this study was to determine whether following ASP recommendations improved clinical outcomes in pediatric ICU and oncology patients.

**Methods.** We performed a retrospective cohort study to evaluate the relationship between ASP recommendation(s) agreement and patient outcomes (hospital length of stay [LOS], 30-day mortality, hospital readmission within 30 days, and hospital-onset *Clostridium difficile* infection [HO-CDI]) in a high-risk (HR) population. For this study, we included all children admitted to the neonatal ICU (NICU), pediatric ICU (PICU), or oncology (Onc) ward from March 2008 to March 2017 who underwent an ASP review. Unadjusted differences in LOS, mortality, readmissions, and HO-CDI were compared between cases of ASP agreement and disagreement. Generalized linear mixed models were used to control for potential confounders and account for patients with >1 ASP review.

**Results.** ASP performed 11,545 antimicrobial reviews (PICU 3,628; NICU 2,824; Onc 5,093) on 7,329 unique patients. ASP provided 2,088 recommendations. Stop antibiotics was the most common recommendation ( $N = 1,045$ ; 50%) followed by narrow antibiotics ( $N = 474$ ; 23%), and obtain an infectious disease consultation ( $N = 334$ ; 16%). Agreement with ASP by the prescribing clinician occurred in 70% of cases. Overall, 356 (5%) patients died, 87 (1%) had HO-CDI, and 2,608 (36%) were readmitted. Agreeing with an ASP recommendation was not associated with increased odds of mortality or readmission. Agreement with an ASP recommendation was not associated with decreased odds of acquiring HO-CDI (adjusted OR 1.58, 95% CI: 0.35, 7.26). Among HR patients with a single ASP review, the median LOS was significantly shorter for clinicians who agreed with recommendations vs. disagreed (10.3 days vs. 12.5 days, respectively,  $P = 0.02$ ).

**Conclusion.** Agreement with an ASP recommendation was associated with a shorter LOS and no increase in readmissions or mortality. Further stewardship strategies are needed to optimize antimicrobial use in this HR pediatric population.

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### 173. Nationwide Outpatient Oral Antimicrobial Utilization by Children in Japan

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**Background.** Antimicrobial resistance (AMR) is a major public health concern across the world. Japanese government set goals in national AMR action plan to reduce oral cephalosporins, macrolides, and quinolones into a half of the 2013 use by 2020. We evaluated the nationwide antimicrobial use (AMU) of children in Japan using the dispensed receiptive from the national administrative database in regard to the national AMR action plan.

**Methods.** The national health claims database was interrogated for oral antibiotics dispensed from outpatient pharmacies in Japan to children under 15 years of age from January 2013 to December 2016. Information obtained from each prescription included age, residence area, days of therapy (DOT) for each antimicrobial from dispensing receiptive. DOT was corrected by the resident population in area and calculated as DOT/1,000 pediatric inhabitants/day (DOT/PID). Chi-squared test for trend was performed to evaluate the annual changes of DOT/PID.

**Results.** A total of 1,386,932 oral antibiotic prescriptions were identified during 2013–2016. Total amount of antimicrobial used in children did not change (2013: 28.54 DOT/PID, 2016: 28.70 DOT/PID,  $P_{\text{trend}} = 0.25$ ). No statistically significant changes were observed in prescriptions of third-generation cephalosporins (2013: 10.21 DOT/PID, 2016: 9.87 DOT/PID,  $P_{\text{trend}} = 0.50$ ), macrolide (2013: 11.04 DOTID, 2016: 10.72 DOT/PID,  $P_{\text{trend}} = 0.52$ ), and quinolone (2013: 1.46 DOT/PID, 2016: 1.86 DOT aged <5 years compared with older infants, with the highest rate among children aged 1 year. Targeted antimicrobials for AMR action plan showed similar distribution by age (Figure 2).

**Conclusion.** Interim assessment of the national AMR action plan revealed that the goals were not attainable without significant interventions in children by 2020. Overall antibiotic prescription as well as cephalosporins, macrolides, and quinolones prescription were most prevalent in children aged 1 year. Antimicrobial stewardship targeting infants and younger children is necessary.

Figure 1: Trends of pediatric outpatient total oral antimicrobial use stratified from 2013 to 2016

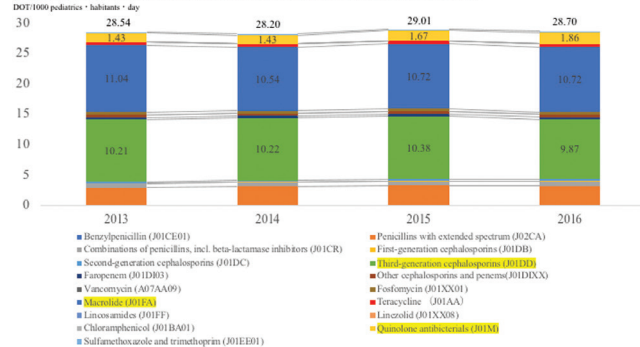
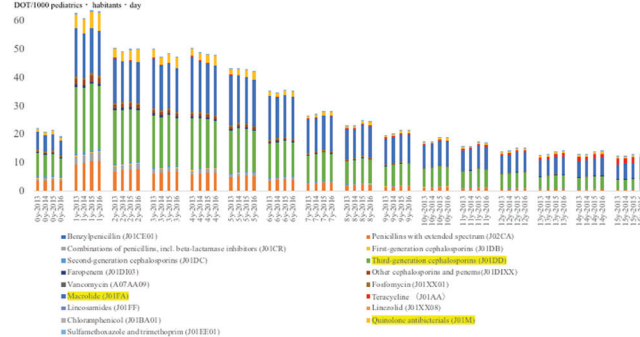


Figure 2: Trends of pediatric outpatient total oral antimicrobial use by age stratified from 2013 to 2016



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### 174. Treatment of Tracheitis and Antimicrobial Stewardship Interventions

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