

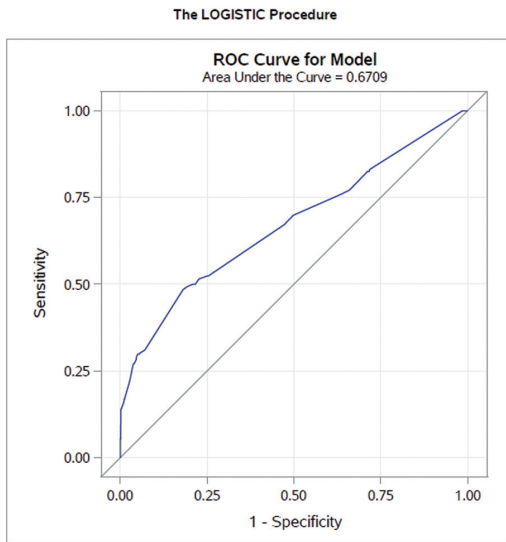
Background. Upper Respiratory Infections (URI) represent a significant disease burden to children worldwide. Clinicians must rely on clinical acumen and evidence-based medicine to responsibly prescribe antimicrobials to curb the rise of antimicrobial-resistant pathogens. We propose a model to help clinicians predict the odds of hospital transfer upon initial evaluation of pediatric patients presenting with URI in a low to middle income setting.

Methods. We performed a prospective cohort study of 2,311 children aged 3 months–15 years enrolled in an outpatient government health clinic in Managua, Nicaragua over a 5-year period. Symptoms, examination findings, laboratory studies, diagnoses, and data on antimicrobial use were collected. Primary outcome was hospital transfer. Using forward-selection logistic regression, we constructed a model of the risk factors and examination findings most likely to predict hospital transfer. WHO criteria were used to risk-stratify pneumonia cases. We examined the frequency and type of antimicrobials used. We then applied Hay et al's STARWAVE model to examine its utility in our population.

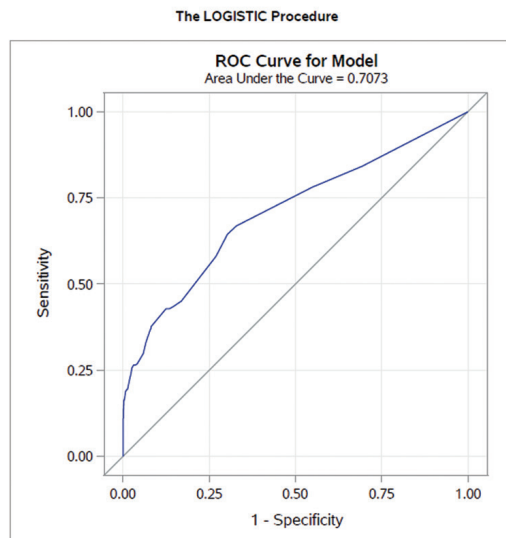
Results. Of the 2,311 children that participated in the cohort between 2011 and 2015, 2,155 children (93%) experienced one or more URI. Those children experienced a total 18,826 URI episodes. 5,383 (28.6%) of URI cases received antibiotics. 332 URI cases were transferred to the hospital, of which 167 (50.3%) were given antibiotics. Age <2 years, male sex, having four or more symptoms, vomiting, poor appetite, diagnosis of "flu-like illness," wheezing, subcostal retractions, rhonchi and fever were all independently associated with hospital transfer ($P < 0.05$). STARWAVE had fair predictive value (AUC = 0.6709) but our model had better predictive value (AUC = 0.7011). Ninety percent of all pneumonia cases were properly managed by WHO criteria.

Conclusion. We defined a set of clinical criteria that predict hospital transfer in a low- and middle-income community setting. We also examined the fit of a validated predictive model developed in a high-income setting and found that this model performed reasonably well in our setting. Overall, most pneumonia cases were treated effectively by WHO criteria indicating that local physicians were properly prescribing antimicrobials.

Odds of Hospital Transfer as a Function of Starwave Model Risk Factors



Odds of Hospital Transfer as a Function of Best Predictors Including Age



Disclosures. All authors: No reported disclosures.

279. A Decision Tree Using Clinical Characteristics to Predict a Hospitalized Child's Risk of a Multidrug-Resistant Gram-Negative Bloodstream Infection
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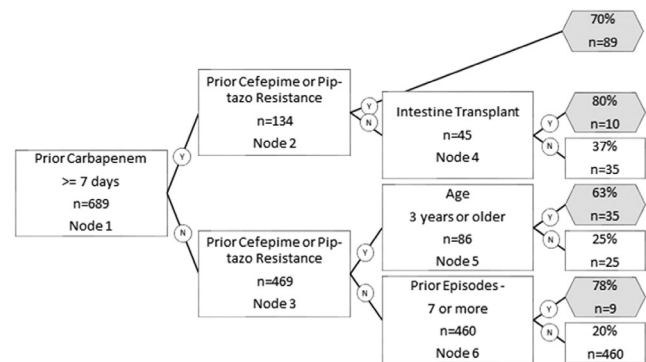
Background. As the threat of multidrug-resistant Gram-negative (MDRGN) bacteria rises, recognizing children at high risk of bloodstream infections with bacteria resistant to commonly prescribed empiric antibiotics is critical. We developed a decision tree to predict which pediatric bloodstream infections were due to MDRGN bacteria resistant to cefepime or piperacillin-tazobactam, commonly prescribed empiric antibiotics.

Methods. We conducted a longitudinal retrospective cohort study at the Children's Hospital of Pittsburgh including all admitted patients with a Gram-negative bloodstream infection from June 2009 to June 2015. Episodes of bloodstream infection were considered unique if at least 30 days had elapsed since the previous bloodstream infection. Logistic regression was performed to identify notable risk factors. A decision tree describing the risk of an MDRGN infection was developed using recursive partitioning based on clinical characteristics available at the time of presentation.

Results. Six hundred eighty-nine episodes of Gram-negative bloodstream infections occurred during the study period among 387 patients. Twenty-eight percent of infections were multidrug-resistant (MDR). The decision tree separated patients into higher or lower risk groups based on history of prior carbapenem treatment for seven or more days, having a prior MDR infection within 6 months, intestinal transplant status, age 3 years or older, and seven or more prior episodes of bacteremia. The sensitivity to classify high risk of MDR was 46% and the specificity was 92% based on leave one out cross validation. For patients who had more than one episode, 30% of initially non-MDR infections were subsequently MDR.

Conclusion. A decision tree using readily available clinical characteristics may be helpful to identify pediatric patients at higher risk of bloodstream infection due to an MDRGN organism resistant to common empirical antibiotic therapy.

Figure 1. Decision tree. Risk of resistance presented as percentage. Abbreviations: Y- yes; N- no. Gray hexagons represent high-risk of multidrug-resistant (MDR) groups while squares represent low-risk of MDR groups.



Disclosures. All authors: No reported disclosures.

280. The Impact of a Revised Neutropenic Fever Guideline on Vancomycin-Resistant Enterococcus Rates in Pediatric Oncology Patients
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Background. Data on the impact of empiric febrile neutropenia (FN) guidelines on resistant bacteria in pediatric oncology patients are limited. We implemented a risk-stratified guideline for empiric FN antibiotics, limiting vancomycin use to high-risk patients for 48 hours if cultures were negative. Our aim was to assess the impact of this intervention on rates of vancomycin-resistant *Enterococcus* (VRE) and vancomycin use.

Methods. We conducted a retrospective, quasi-experimental study of oncology patients ≤ 18 years with FN admitted from 2010 to 2014. Microbiologic data and inpatient antibiotic use were obtained by chart review. Risk strata incorporated diagnosis, chemotherapy phase, Down syndrome, septic shock, and typhlitis. The primary outcome was VRE incidence; all VRE isolates were included but active surveillance