

Brittany Lehrer, M.D.

M.P.H. Candidate, Epidemiology Track

brittany.j.lehrer@vanderbilt.edu

Practicum Site: V.U.M.C. - Pediatric Antimicrobial Stewardship Team

Practicum Site Supervisor: Sophie Katz, M.D., M.P.H.

Effect of an Educational Intervention on the Appropriateness of Pediatric Outpatient Antibiotic Prescribing



Introduction: Nearly $\frac{1}{3}$ of outpatient antibiotic prescriptions are unnecessary or inappropriate. QuizTime is a web-based application based on Test-Enhanced Learning Theory that delivers daily case-based questions to a learner's email or cell phone. We performed a prospective cohort study to evaluate the impact of a QuizTime module on appropriateness of pediatric outpatient antibiotic prescriptions at Vanderbilt University Medical Center.

Methods: Participants received one question daily for 10 days starting in July 2022. Quiz topics included age-appropriate antibiotic duration for acute otitis media (AOM), empiric antibiotics for uncomplicated urinary tract infections (UTI), and empiric antibiotics and duration for community-acquired pneumonia (CAP). Participants were pediatric prescribers (physician, resident, physician assistant, nurse practitioner) in a primary care, urgent care, retail health, or emergency department setting. Antibiotic prescription data were collected during the "baseline" period (Jul 2021 – Jun 2022) though 3 months after QuizTime participation (Jul 15 – Oct 15, 2022) defined as the "post-quiz" period. Pre- and post-intervention data were analyzed in aggregate. Significance was determined by calculating a 95% confidence interval (CI) for the difference of proportions.

Results: Eighty clinicians participated in QuizTime totaling 13,478 antibiotic prescriptions [AOM 5,613 (41.6%), UTI 668 (5.0%), CAP 225 (1.7%)] compared to 776 non-QuizTime clinicians totaling 43,321 antibiotic prescriptions [AOM 15,258 (35.2%), UTI 2,528 (5.8%), CAP 849 (2.0%)]. AOM guideline-concordant antibiotic duration was significantly higher among participants than non-participants [appropriate duration for: baseline non-participants 44.5%; post-quiz non-participants 46.3% (Δ 1.8%); baseline participants 56.6%; post-quiz participants 68.6% (Δ 12%)]. There were encouraging trends towards improvement in other outcomes, but our sample size may have been too small for statistically significant results.

Conclusions: Clinicians who participated in a QuizTime module on pediatric outpatient antibiotic prescribing showed improvement in antibiotic appropriateness suggesting web-based microlearning modules are an effective tool for disseminating antibiotic stewardship education and may lead to decreased inappropriate antibiotic prescribing. Creation, dissemination, and evaluation of additional QuizTime modules is ongoing.