Original Investigation

ONLINE FIRST

January 18, 2022

Short- vs Standard-Course Outpatient Antibiotic Therapy for Community-Acquired Pneumonia in Children

The SCOUT-CAP Randomized Clinical Trial

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JAMA Pediatr. Published online January 18, 2022. doi:10.1001/jamapediatrics.2021.5547

Visual Abstract

Key Points

Question Is a 5-day strategy of antibiotics superior to a 10-day strategy for treatment of nonsevere pneumonia in young children demonstrating early clinical response?

Findings In this randomized clinical trial of 380 children with community-acquired pneumonia, a 5-day strategy resulted in similar treatment response with fewer antibiotic days compared with a 10-day strategy. For the primary composite outcome, the 5-day strategy was associated with a 69% probability of a more desirable outcome and a significantly lower abundance of antibiotic resistance genes.

Meaning Among young children responding to initial therapy, a 5-day antibiotic strategy was superior to a 10-day strategy for treatment of nonsevere pneumonia.

Abstract

Importance Childhood community-acquired pneumonia (CAP) is usually treated with 10 days of antibiotics. Shorter courses may be effective with fewer adverse effects and decreased potential for antibiotic resistance.

Objective To compare a short (5-day) vs standard (10-day) antibiotic treatment strategy for CAP in young children.

Design, Setting, and Participants Randomized double-blind placebo-controlled clinical trial in outpatient clinic, urgent care, or emergency settings in 8 US cities. A total of 380 healthy children aged 6 to 71 months with nonsevere CAP demonstrating early clinical improvement were enrolled from December 2, 2016, to December 16, 2019. Data were analyzed from January to September 2020.

Intervention On day 6 of their originally prescribed therapy, participants were randomized 1:1 to receive 5 days of matching placebo or 5 additional days of the same antibiotic.

Main Outcomes and Measures The primary end point was the end-of-treatment response adjusted for duration of antibiotic risk (RADAR), a composite end point that ranks each child's clinical response, resolution of symptoms, and antibiotic-associated adverse effects in an ordinal desirability of outcome ranking (DOOR). Within each DOOR rank, participants were further ranked by the number of antibiotic days, assuming that shorter antibiotic durations were more desirable. Using RADAR, the probability of a more desirable outcome was estimated for the short- vs standard-course strategy. In a subset of children, throat swabs were collected between study days 19 and 25 to quantify antibiotic resistance genes in oropharyngeal flora.

Results A total of 380 children (189 randomized to short course and 191 randomized to standard course) made up the study population. The mean (SD) age was 35.7 (17.2) months, and 194 participants (51%) were male. Of the included children, 8 were Asian, 99 were Black or African American, 234 were White, 32 were multiracial, and 7 were of unknown or unreported race; 33 were Hispanic or Latino, 344 were not Hispanic or Latino, and 3 were of unknown or unreported ethnicity. There were no differences between strategies in the DOOR or its individual components. Fewer than 10% of children in either strategy had an inadequate clinical response. The short-course strategy had a 69% (95% CI, 63-75) probability of a more desirable RADAR outcome compared with the standard-course strategy. A total of 171 children were included in the resistome analysis. The median (range) number of antibiotic resistance genes per prokaryotic cell (RGPC) was significantly lower in the short-course strategy compared with the standard-course strategy for total RGPC (1.17 [0.35-2.43] vs 1.33 [0.46-11.08]; $P = .01$) and β-lactamase RGPC (0.55 [0.18-1.24] vs 0.60 [0.21-2.45]; $P = .03$).

Conclusions and Relevance In this study, among children responding to initial treatment for outpatient CAP, a 5-day antibiotic strategy was superior to a 10-day strategy. The shortened approach resulted in similar clinical response and antibiotic-associated adverse effects, while reducing antibiotic exposure and resistance.

Trial Registration ClinicalTrials.gov Identifier: NCT02891915.

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