

Prolonged Intravenous Therapy Versus Early Transition to Oral Antimicrobial Therapy for Acute Osteomyelitis in Children

Theoklis Zaoutis, MD, MSCE, A. Russell Localio, PhD, Kateri Leckerman, MS, Stephanie Saddlemire, MSPH, David Bertoch, MHA and Ron Keren, MD, MPH

OBJECTIVES. Early transition from intravenous to oral antimicrobial therapy for acute osteomyelitis in children has been suggested as a safe and effective alternative to traditional prolonged intravenous therapy via central venous catheter, but no studies have directly compared these 2 treatment modalities. We sought to compare the effectiveness of early transition from intravenous to oral antimicrobial therapy versus prolonged intravenous antimicrobial therapy for the treatment of children with acute osteomyelitis.

METHODS. We conducted a retrospective cohort study of children aged 2 months to 17 years diagnosed with acute osteomyelitis between 2000 and 2005 at 29 freestanding children's hospitals in the United States to confirm the extent of variation in the use of early transition to oral therapy. We used propensity scores to adjust for potential differences between children treated with prolonged intravenous therapy and logistic regression to model the association of outcome (treatment failure rates within 6 months of diagnosis) and difference in the mode of therapy within hospitals and across hospitals.

RESULTS. Of the 1969 children who met inclusion criteria, 1021 received prolonged intravenous therapy and 948 received oral therapy. The use of prolonged intravenous therapy varied significantly across hospitals (10%–95%). The treatment failure rate was 5% (54 of 1021) in the prolonged intravenous therapy group and 4% (38 of 948) in the oral therapy group. There was no significant association between treatment failure and the mode of antimicrobial therapy. Thirty-five (3.4%) children in the prolonged intravenous therapy group were readmitted for a catheter-associated complication.

CONCLUSIONS. Treatment of acute osteomyelitis with early transition to oral therapy is not associated with a higher risk of treatment failures and avoids the risks of prolonged intravenous therapy through central venous catheters.