

# Intravenous vs. oral antibiotics for serious bone infections in children

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Children with osteomyelitis (a serious bacterial bone infection) who were discharged from the hospital to complete several weeks of outpatient antibiotic therapy with an oral medication did not have a higher rate of treatment failure than children who received their antibiotic therapy intravenously, according to a study published online by *JAMA Pediatrics*.

How children receive their outpatient antibiotic therapy impacts both them and their caregivers. While a peripherally inserted central catheter (PICC) is effective at delivering high concentrations of antibiotic it can result in serious complications such as infections and blood clots. Oral medication is an appealing alternative but clinical trials have not documented its effectiveness for osteomyelitis, according to the study background.

Ron Keren, M.D., M.P.H., of the Children's Hospital of Philadelphia, and co-authors compared the effectiveness and adverse outcomes of post-discharge antibiotic therapy delivered by pills or intravenously. Authors analyzed medical record data comparing the two antibiotic methods in children discharged from 36 hospitals from 2009 through 2012. The analysis included 2,060 children and adolescents with osteomyelitis (1,005 who received [oral antibiotics](#) at discharge and 1,055 given antibiotics delivered through a PICC). Most of the children were male, who ranged in age from 5 to 13 years old, and the most common site of infection was the lower extremity (lower leg, ankle, foot; the pelvis and thigh).

Study results indicate that children treated with oral antibiotics did not experience more treatment failures than those treated with PICC-delivered antibiotics (5 percent vs. 6 percent, respectively). Rates of [adverse drug reaction](#) also were low (less than 4 percent in both groups). Among children in the PICC group, 158 of them (15 percent) had a PICC complication that sent them back to the hospital for an emergency department visit, rehospitalization or both.

"Given the magnitude (15 percent of all children in the PICC group) and gravity (i.e., bloodstream infection, thromboembolism and line breakage) of the PICC-related complications, clinicians should reconsider the practice of treating otherwise healthy children with osteomyelitis with prolonged IV therapy when an effective oral alternative exists," the study concludes.

In a related editorial, Pranita D. Tamma, M.D., M.H.S., and Aaron M. Milstone, M.D., M.H.S., of the Johns Hopkins University School of Medicine, write: "In summary, this study addresses an important question with obvious implications for children and their caregivers hoping to avoid PICC-associated complications. In the absence of data demonstrating that long-term IV antibiotics enhance clinical outcomes compared with oral therapy, clinicians should strongly consider transition to oral [antibiotic therapy](#) at the time of discharge for the treatment of acute osteomyelitis in otherwise healthy [children](#)," the authors conclude.

**More information:** *JAMA Pediatr.* Published online December 15, 2014. [DOI: 10.1001/jamapediatrics.2014.2822](https://doi.org/10.1001/jamapediatrics.2014.2822)  
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