

# Antibiotic Errors Common in Community Hospitals

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By [Michael Smith](#), North American Correspondent, MedPage Today

Reviewed by [Robert Jasmer, MD](#); Associate Clinical Professor of Medicine, University of California, San Francisco

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## Action Points

- More than one patient in three treated for a bloodstream infection in community hospitals got inappropriate antibiotic therapy, a study found.
- Note that patients more likely to receive inappropriate therapy were those who had been in hospital or a nursing home within the previous year, as well as those needing help with daily activities or who had multidrug-resistant pathogens.

More than one patient in three treated for a bloodstream infection in community hospitals got inappropriate antibiotic therapy, researchers reported.

In a multicenter retrospective cohort study, 38% of patients in a network of community hospitals were treated incorrectly, according to [Deverick Anderson, MD](#), of Duke University, and colleagues.

The proportion varied across institutions, ranging from 22% to 71% with a median of 33%, they reported online in [PLoS ONE](#).

Most healthcare in the U.S. is delivered in community hospitals, the researchers noted, but [analysis of how bloodstream infections are treated](#) has usually been focused on tertiary care institutions.

The new study, involving nine small institutions in the Southeast, is the "most complete picture" of bloodstream infections in community hospitals to date, the researchers reported.

Aside from the antibiotic issue, the analysis also found that growing drug resistance and a high prevalence of *Staphylococcus aureus* are among the challenges facing community hospitals when patients have serious bloodstream infections.

"Our study provides a much-needed update on what we're seeing in community hospitals and, ultimately, we're finding similar types of infections in these hospitals as in tertiary care centers," Anderson said in a statement.

"It's a challenge to identify bloodstream infections and treat them quickly and appropriately, but this study shows that there is room for improvement in both kinds of hospital settings," he said.

To help fill the knowledge gap, Anderson and his colleagues analyzed data on 1,470 patients seen at community, nonacademic hospitals in North Carolina and Virginia from Jan. 1, 2003, through Dec. 31, 2006. The median bed size of participating hospitals was 151.

They stratified the infections as:

- "Community-onset, healthcare-associated" if they occurred less than 48 hours after admission and involved at least one of the following: prior hospital admission, surgery, invasive devices including catheters, or residence in long-term-care facilities
- "Community-acquired" if they occurred less than 48 hours after admission but had no risk factors associated with healthcare
- "Hospital-onset, healthcare-associated" if they occurred at least 48 hours after admission

All told, Anderson and colleagues found, some 56% of bloodstream infections were community-onset and healthcare-associated, while community-acquired and healthcare-associated infections were seen in 29% and 15% of patients, respectively.

The most common pathogen, they reported, was *S. aureus*, followed by *Escherichia coli*, causing 28% and 24% of infections, respectively. Multidrug-resistant pathogens were found in 23% of patients, with [methicillin-resistant \*S. aureus\* \(MRSA\)](#) the most common.

"There's a misconception that community hospitals don't have to deal with *S. aureus* and MRSA," Anderson said, "but our findings dispel that myth, since community hospitals also see these serious infections."

The researchers defined appropriate empiric antimicrobial therapy as delivering a drug with in vitro activity against the infecting organism within 24 hours after the onset of infection.

On that basis, therapy was inappropriate in 542 of the 1,470 patients, they reported.

Patients more likely to receive inappropriate therapy were those who had been in hospital or a nursing home within the previous year, as well as those needing help with daily activities or who had multidrug-resistant pathogens.

Anderson and colleagues cautioned that the study was retrospective, which might have led to misclassifications or selection bias. In addition, the study covered the years 2003 through 2006, so the findings might not reflect the current situation. And, the investigators added, they did not correct for multiple statistical comparisons.

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**Primary source:** PLOS One

Source reference: Anderson D, et al "Bloodstream infections in community hospitals in the 21st century: A multicenter cohort study" *PLOS One* 2014; 9: e91713.