

# Diagnostic errors linked to high incidence of incorrect antibiotic use

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New research finds that misdiagnoses lead to increased risk of incorrect antibiotic use, threatening patient outcomes and antimicrobial efficacy, while increasing healthcare costs. The study was published online today in *Infection Control & Hospital Epidemiology*, the journal of the Society for Healthcare Epidemiology of America.

"Antibiotic therapies are used for approximately 56 percent of inpatients in U.S. hospitals, but are found to be inappropriate in nearly half of these cases, and many of these failures are connected with inaccurate diagnoses," said Greg Filice, MD, lead author of the study. "The findings suggest that antimicrobial stewardship programs could be more impactful if they were designed to help providers make accurate initial diagnoses and to know when antibiotics can be safely withheld."

Researchers conducted a retrospective cohort study at Minneapolis Veterans Affairs Medical Center (MVAMC), evaluating 500 inpatient cases to examine provider diagnoses - categorized as either correct, indeterminate, incorrect, or a sign or symptom consistent with an infectious disease rather than a specific syndrome or disease - and to determine whether the antimicrobial course prescribed was appropriate.

The researchers found that 95 percent of patients with an incorrect or indeterminate diagnosis, or with a symptom identified but no diagnosis made, were given inappropriate antibiotics. By comparison, only 38 percent of patients who received a correct diagnosis were incorrectly given antibiotics. The inappropriate use of antibiotics contributes to

antibiotic resistance, clinical failure, adverse drug events, and excessive costs.

Additionally, researchers found that overall, only 58 percent of patients received a [correct diagnosis](#), indicating that diagnostic errors were more prevalent in this study than in previous studies unrelated to antimicrobial use. The most common incorrect diagnoses identified by researchers were pneumonia, cystitis, urinary tract infections, kidney infections and urosepsis.

Contributing factors which the researchers said may lead to inaccurate diagnosis and inappropriate antibiotic use include:

- Healthcare workers (HCWs) relying on intuitive processes, instead of analytical processes which are more reliable, safe and effective.
- HCWs experiencing fatigue, sleep deprivation and/or cognitive overload more prevalent in inpatient settings.
- HCWs receiving patients with a previous diagnosis from another provider.
- Lack of clinical experience and minimal personal experience with adverse drug effects.

"Diagnostic accuracy is integral to the safe use of antibiotics. In order to improve the use of antibiotics in healthcare, we must consider this challenge and look for tools and strategies that help clinicians decrease unnecessary and potentially harmful antibiotic use" said Filice.

**More information:** Greg A. Filice, Dimitri M. Drekonja, Joseph R. Thurn, Galen M. Hamann, Bobbie T. Masoud, James R. Johnson. "Diagnostic Errors that Lead to Inappropriate Antimicrobial Use." *Infection Control & Hospital Epidemiology*. Web. (May 18, 2015).

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