

# 'Last resort' antibiotics use on the rise, study shows

April 3 2011

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A large, multi-year study of antibiotic use in Veterans Health Administration's acute care facilities demonstrates dramatically increased use of carbapenems, a powerful class of antibiotics, over the last five years. These drugs are often considered the last treatment option for severe infections with multi-drug resistant pathogens. The increased carbapenem use, which has also been described in non-VA facilities in the US, is alarming because carbapenem-resistant bacteria are becoming more common. Overuse of these drugs could weaken their efficacy, threatening their effectiveness against these and other emerging infections. The study was presented today at the annual meeting of the Society for Healthcare Epidemiology of America (SHEA).

Using barcode medication administration (BCMA) data for antibiotics administered in 110 VA acute care health facilities from 2005-2009, Makoto Jones, MD, and colleagues identified an increasing trend in the use of broad spectrum antibiotics. In the study's five year period, researchers noted a gradual increase in overall antibiotic use, but striking increases in the use of carbapenems (102 percent increase), intravenous vancomycin (79 percent increase), and combinations of penicillin with beta-lactamase-inhibitors (41 percent increase). Fluoroquinolones were the most frequently used drugs across facilities, accounting for 20 percent of all antibiotic use.

"Use of these antibiotics helps the patient receiving the treatment, but has future consequences for innocent bystanders," said Jones. "The more these drugs are used, the more resistance we see." Additionally, the

researchers noted that the quantity of antibiotics reported from VA facilities seems to be similar to reported data from non-VA hospitals in the US.

The use of BCMA to collect data of antibiotic use across VA facilities allowed researchers to analyze which antibiotics are given to any patient on any given day. Jones noted that patient-level data permit powerful studies of antibiotic effects that have not been possible to date. Overall, researchers noted that more than half of all patients received at least one dose of any antibiotic during their hospital stay, regardless of presenting condition.

"In this era of multi-drug resistant organisms, clinicians are placed in a difficult situation. As treatment outcomes of many bacterial infections are influenced by the timing of appropriate therapy, the increasing presence of resistant organisms triggers broader use of these powerful antibiotics for proven or suspected infections when treating patients in the hospital" said Steven Gordon, MD, president of SHEA. "Clinicians must always put the patient first in treatment decisions but we must empower effective antibiotic stewardship programs, infection prevention and control efforts, the development of new diagnostic testing to facilitate better treatment decisions as well as support development of new [antibiotics](#)"

Among other measures antimicrobial stewardship ensures effective and appropriate use of the medications we have, with a focus on improving patient safety and treatment outcomes while slowing the growth of resistance. Use of individual level data can be used to inform both the basic science and the implementation of antimicrobial stewardship programs.

"[Antibiotic use](#) studies in the U.S. are critical to understanding the basic science of how and why resistance is on the rise," said Gordon. "Dr.

Jones' study is a clarion call for a need for better diagnostic tools to identify pathogens and resistance as implementation of effective antimicrobial stewardship."

Provided by Society for Healthcare Epidemiology of America

Citation: 'Last resort' antibiotics use on the rise, study shows (2011, April 3) retrieved 10 April 2024 from <https://medicalxpress.com/news/2011-04-resort-antibiotics.html>

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