Outpatient antibiotic use falling across the U.S.

July 9 2021

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Outpatient antibiotic prescribing fell by almost 4% a year between 2011 and 2018, according to a study of prescribing patterns in the largest integrated health care system in the USA, being presented at the European Congress of Clinical Microbiology & Infectious Diseases (ECCMID) held online this year.

Veterans Affairs (VA) facilities play a large role in the provision of outpatient care across the USA, providing care to over 9 million Veterans at more than 1,200 outpatient clinics.

The researchers speculate that the downward trend may be related to the antibiotic stewardship programs widely implemented across the Veterans Health Administration (VHA) health-system since 2014.

"We have seen positive steps taken to reduce antibiotic use in VA outpatient clinics, community-based outpatient clinics, emergency departments, and other outpatient settings, and healthcare teams should be congratulated for their ongoing work to reduce unnecessary antibiotic use", says lead author Dr. Haley Appaneal from Providence VA Medical Center, Rhode Island, USA.

"But over 8 years, prescriptions for three of the most commonly prescribed outpatient antibiotics—have changed little. And even with that drop in overall prescriptions, the threat of antibiotic resistance is increasing, so there is much more to be done."

In the USA, more than 2.8 million antibiotic-resistant infections occur every year, causing at least 35,000 deaths and $20 billion in health-care costs. According to WHO, infections such as pneumonia, tuberculosis, sepsis, gonorrhea, and foodborne diseases, are becoming harder, and sometimes impossible, to treat as antibiotics become less effective.

Bacteria have long been thought to develop antibiotic resistance largely due to repeated exposure through over-prescribing. Each year, 266 million courses of antibiotics are dispensed to outpatients in the USA.

In 2011, the VHA established the National Antimicrobial Stewardship Task Force (ASTF) to help guide implementation and development of antibiotic stewardship programs in the VA and in 2014, the VHA

required all of its hospitals to introduce antibiotic stewardship programs. Between 2008 and 2015, inpatient antibiotic use decreased substantially by 12%.

However, 80-90% of antibiotic use occurs in the outpatient setting, and the US Centers for Disease Control and Prevention (CDC) estimates that at least 30% of outpatient antibiotics are unnecessary (no antibiotic was needed), and up to 50% inappropriate prescribing (unnecessary use and inappropriate selection, dosing and duration).

To provide more evidence on prescribing patterns, researchers analyzed data from VA pharmacy datasets to examine trends in antibiotic prescriptions dispensed in VA outpatient clinics across the USA between 2011-2018.

They calculated annual number of days of therapy (DOT) per 100 outpatient visits for all antibiotics and then individually for the 5 most common antibiotics (doxycycline, azithromycin, amoxicillin/clavulanate, ciprofloxacin, and sulfamethoxazole/trimethoprim). Over 8 years, total antibiotic prescriptions dispensed in the community went down by an average of 3.9% a year, falling from 39.6 DOT/100 visits in 2011 to 29.4 DOT/100 visits in 2018.

The largest decline was in the use of the broad-spectrum antibiotic ciprofloxacin, which decreased by an estimated 12.6% on average per year. The authors point out that here has been a national movement away from the use of fluroquinolones, such as ciprofloxacin, if alternative agents are available due to the harms associated with their use, including Clostridium difficile infection, adverse drug events, and selection of resistance. The VA and the Food and Drug Administration both have issued safety warnings related to fluroquinolones and recommend restricting their use for uncomplicated infections which generally have other safer treatment options, such as acute sinusitis, acute bronchitis,

and uncomplicated urinary tract infections (UTI).

The use of sulfamethoxazole/trimethoprim (commonly used for UTIs) also decreased substantially (by around 7% a year).

However, outpatient prescriptions remained unchanged and were high for doxycycline (commonly used to treat skin infections and sexually transmitted infections), azithromycin (widely used for chest, nose, and throat infections), and amoxicillin/clavulanate (used for wide range infections, particularly respiratory) between 2011 and 2018.

"Use of these three commonly prescribed antibiotics remain high and may be an appropriate target for antibiotic stewardship programs in the VA to further reduce inappropriate outpatient prescribing", says Dr. Appaneal. "It might also help combat resistance if national guidelines took stewardship principles into account when making disease-specific recommendations for antibiotic use."

She continues, "Antibiotics are essential for treating serious bacterial infections, such as sepsis, pneumonia and meningitis. But they should not be used to treat acute respiratory conditions such as asthma, coughs, earache and sore throats, which do not respond to these drugs. Antibiotic resistance is not just a matter for clinicians—the public also have a crucial role to play in helping to preserve these vital medicines."

The authors point out several limitations of their study including that it does not take into account prescriptions filled outside the VA system (such as community pharmacies) and may not be complete in all outpatient settings such as the emergency department or outpatient surgery settings. They also note that the study was based on a largely older white male population so the generalisability of the findings to the general US population is limited.

Provided by European Society of Clinical Microbiology and Infectious Diseases