Medical Xpress

Alarming pattern of antibiotic use in the southeastern United States

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New research suggests a pattern of outpatient antibiotic overuse in parts of the United States-- particularly in the Southeast --a problem that could accelerate the rate at which these powerful drugs are rendered useless, according to Extending the Cure, a project of the Center for Disease Dynamics, Economics & Policy.

These findings come out just as the Centers for Disease Control and Prevention (CDC) kicked off an annual effort to reduce overuse of antibiotics called "Get Smart: Know When Antibiotics Work." The campaign, which lasts throughout the week, urges Americans to use antibiotics wisely. The CDC estimates that $1.1 billion is spent annually on unnecessary antibiotic prescriptions for adult upper respiratory infections alone. These prescriptions also speed the development of resistance to important antibiotic therapies.

Also, on Monday of this week, Extending the Cure introduced a new tool that allows non-experts to track changes in antibiotic effectiveness over time. The new Drug Resistance Index (DRI) is similar in concept to the Consumer Price Index and is described in a paper in the *British Medical Journal Open*.

Trends in Antibiotic Use Paint a Troubling Picture

Interactive maps released by Extending the Cure track antibiotic use in the United States from 1999 to 2007 and show how overall antibiotic

dispensing has decreased; consumption fell by about 12% over this time period. However, they also highlight alarmingly high antibiotic use across the Southeast compared to states in the Pacific Northwest. For example, residents of West Virginia and Kentucky, where antibiotic use rates are highest, take about twice as many antibiotics per capita as people living in Oregon and Alaska.

Additional key findings include:

- The five states with the highest antibiotic use in the nation are West Virginia, Kentucky, Tennessee, Louisiana and Alabama. However, the maps show higher than average use of antibiotics in other regions of the country as well. Check your state's antibiotics use at ResistanceMap.
- Prescribing rates for a powerful class of antibiotics known as fluoroquinolones shot up by 49 percent from 1999 to 2007. At the same time, antibiotic resistance is increasing: these drugs are now seven times less likely to work against Escherichia coli, the most frequent cause of bacterial infections, than they were in 1999.
- Penicillins remain the most popular antibiotics -- accounting for nearly one out of three prescriptions filled in the United States. At the same time, the market share of these standard drugs has declined by 28 percent as physicians increasingly turn to more powerful antibiotics.

High per capita antibiotic use rates could reflect an environment in which consumers mistakenly demand antibiotics – and physicians prescribe them -- when they have a cold or the flu, which are caused by viruses and cannot be treated with these drugs. However, additional research must be done to better understand the driving factors behind antibiotic use.

The data was released today as part of Extending the Cure's ResistanceMap, an interactive web-based tool that tracks drug resistance.

Novel Way to Track Resistance: Drug Resistance Index (DRI)

In a report published this week in the *British Medical Journal Open*, Ramanan Laxminarayan, Director of Extending the Cure, and Keith P. Klugman, Professor of Global Health at Emory University, describe a first-of-its-kind index for tracking resistance. Like a Consumer Price Index (CPI) for drug resistance, the tool aggregates information about resistance trends and antibiotic use into a single measure of antibiotic resistance over time.

Hospitals can use the DRI to track resistance levels in their facility and to measure the success of interventions including antibiotic stewardship and infection control programs. The tool also offers decision makers a convenient way of communicating progress and pitfalls in the fight against resistance, according to the study authors. The index is designed to be applicable at any level, from local hospitals to national healthcare system surveillance.

In this paper, researchers explain how the index can be used by assessing trends in resistance associated with two disease-causing micro-organisms: Escherichia coli and Acinetobacter baumannii. The index can also illuminate how physicians adapt to trends in resistance. For example, in this analysis, the index showed how physicians were able to use other drugs to treat infections caused by resistant strains of E. coli but had very few options left for treating Acinetobacter, a superbug that increasingly is resistant to all available antibiotics.

"Mapping the geography of antibiotic use and summarizing their

effectiveness with a Drug Resistance Index bring us one step closer to the solutions we urgently need in order to curtail this public health crisis," Laxminarayan said. "If we do nothing, resistance will continue to develop and our most valuable antibiotics ultimately will fail."

Extending the Cure research suggests that policymakers must address the broader problem of antibiotic resistance by putting comprehensive solutions in place, including better infection control and surveillance as well as stepping up efforts to curtail overuse of antibiotics, a solution that would help preserve the power of the drugs we have left on the shelf.

Provided by Burness Communications

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