Monitoring antibiotic use cuts millions in wasteful spending, study finds

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Curbing unnecessary use of antibiotics is our best defense against the spread of drug-resistant infections. A new study suggests another benefit to antimicrobial stewardship: a potential cost savings of millions of dollars now wasted on therapies that don't help patients.

The research is published in the April issue of *Infection Control and Hospital Epidemiology*, the journal of the Society for Healthcare Epidemiology of America, in a special topic issue focused on antimicrobial stewardship. Antimicrobial stewardship programs and interventions help prescribers know when antibiotics are needed and what the best treatment choices are for a particular patient.

According to the study, which evaluated a seven-year antimicrobial stewardship program at University of Maryland Medical Center (UMMC), the program eliminated $3 million from the hospital's annual budget for antimicrobials by its third year. After seven years, it had cut antibiotic spending per-patient day nearly in half. Cost savings were evident across hospital departments, including the cancer center, trauma center, surgical and medical intensive care units and transplant service.

Importantly, these savings did not compromise quality of patient care. The study found no increases in mortality, length of stay, or readmission to the hospital.

Despite its success, however, the program was terminated in 2008 in favor of providing more infectious diseases consults. The consequences

of that decision were immediate. Antimicrobial costs increased by 32 percent—nearly $2 million—within two years after the program was terminated according to the research.

"Our results clearly show that an antimicrobial stewardship program like the one at UMMC is safe, effective, and makes good financial sense," said Harold Standiford, MD, medical director for antimicrobial effectiveness at UMMC and the study's lead author.

The central component of the UMMC program was an antimicrobial monitoring team (AMT) that included an infectious diseases physician and a clinical pharmacist with infectious diseases training. The AMT made daily rounds and provided real time monitoring of antimicrobial use with active intervention and education when changes in treatment were recommended. The team also provided leadership in discussions about changes to antibiotics on the formulary and the development of relative policies and guidelines.

When the program was terminated, the AMT was disbanded in favor of additional personnel who provided infectious diseases consults throughout the hospital including in areas caring for highly specialized patients. It was believed that these additional personnel, though decentralized, would provide appropriate stewardship and render the AMT redundant. That decision proved costly, however, and in light of this study's findings the medical center has restarted a modified stewardship program including an AMT.

"Our research shows that investing in stewardship not only helps preserve our dwindling antibiotic tools, it can also help to eliminate wasteful healthcare spending," Dr. Standiford said. "We believe it's an important lesson to keep in mind when considering the allocation of resources to stewardship programs."

More information: Harold C. Standiford, Shannon Chan, Megan Tripoli, Elizabeth Weekes, Graeme N Forrest, "Antimicrobial Stewardship at a Large Tertiary Care Academic Medical Center: Cost Analysis Before, During, and After a 7-Year Program." Infection Control and Hospital Epidemiology 33:4 (Special Topic Issue: Antimicrobial Stewardship, April 2012).

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