

Antibiotic stewardship reduces *C. diff* in hospitalized children

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Hospitalized children were three times less likely to become sick with *Clostridium difficile* (*C. diff*), a serious bacterial infection that can occur after prolonged antibiotic use, following implementation of an antibiotic stewardship program, a new study found. These programs reduce the misuse of antibiotics and therefore *C. diff*, and also result in antibiotic cost savings, according to research being presented at IDWeek 2015.

Antibiotics disturb the balance of bacteria in the gastrointestinal system, wiping out good bacteria and allowing the *C. diff* bacteria to multiply and cause cramps and diarrhea. *C. diff* is an emerging infection among hospitalized children. Antibiotic stewardship programs led by infectious diseases (ID) specialists are increasingly being established within hospitals to reduce antibiotic misuse by ensuring that the right drug is prescribed at the right time for the right diagnosis. The IDWeek study shows these programs can save money and improve care by reducing the rate of *C. diff* in children more than three-fold.

"*C. diff* infection is not always benign and can result in significant consequences for a child, including longer hospital stays, treatment with unpleasant-tasting and expensive medicines, and weight loss," said Jean Wiedeman, MD, PhD, an author of the study and medical director of pediatric antimicrobial stewardship at the University of California Davis Medical Center, Sacramento. "It's also stressful for parents because even after release from the hospital, their children don't feel well and have to stay out of school and day care while they have symptoms."

Researchers compared rates of *C. diff* and antibiotic-related costs at UC Davis Children's Hospital between the pre-antibiotic stewardship era (2008-2010) and the antibiotic stewardship era (2011-2014). They found the rates of *C. diff* decreased from 9.2 to 2.8 per 10,000 patient days after the antibiotic stewardship program was instituted, a greater than three-fold reduction.

Cost savings arising from decreased antibiotic use following institution of the stewardship program were calculated. When all antibiotics were evaluated, annual costs decreased from \$277,620 to \$221,590 for a total yearly savings of \$56,030. The physician-led stewardship program utilized two methods: (1) prospectively auditing charts of hospitalized patients to determine if antimicrobial prescribing was appropriate and providing immediate (real time) feedback to prescribing physicians and (2) requiring prescribers to obtain authorization from an infectious disease specialist prior to the use of certain restricted broad-spectrum or expensive antibiotics. The authors found that both methods contributed to the antibiotic cost savings.

The UC Davis Children's Hospital antibiotic stewardship program reduced antibiotic misuse by reviewing antibiotic use in all children in the 110-bed hospital three times a week. Recommended interventions included: stopping antibiotics that were unnecessary; de-escalating therapy by prescribing a more narrow-spectrum antibiotic than was being used; adjusting the dose based on obesity, kidney or liver dysfunction; switching from intravenous to oral antibiotics; and changing to an equally effective and less expensive antibiotic; changing to an equally effective and less expensive antibiotic; and sometimes extending duration of the antibiotic or adding additional antimicrobials. Additionally, a pediatric infectious disease specialist was available seven days a week to authorize use of restricted antibiotics. The study analyzed the use of [antibiotics](#) prescribed to hospitalized children one to 17 years old.

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