Children’s Hospital Colorado Antimicrobial Stewardship Program Reduces Costs—and Unnecessary Prescriptions

With 60% of hospitalized children receiving antimicrobials and more than 40% of antimicrobial use being deemed inappropriate, there’s a great deal of room for improvement. Yearly at Children’s Hospital Colorado (CHCO), there are 15,000 inpatient admissions, and 45,000 antimicrobial orders. All of this adds up to why CHCO implemented an Antimicrobial Stewardship Program (ASP) in 2011, with the aim of supporting providers in appropriate antimicrobial prescribing. (Pictured: Sarah Parker, MD, Sarah Kinder, MD and Jason Child)

The ASP program started small, with one employee devoting 20% of a full-time job to the program. But with the development of a successful business case, the program has grown: Sarah Parker, MD, Associate Professor of Pediatric Infectious Diseases and Medical Director of the ASP, now devotes 50% of her full-time position to the ASP. And, the program also boasts one additional FTE for a full time pharmacist, split between Jason Child, PharmD and Amanda Hurst, PharmD. The pillars of the program are patient safety and quality care, provider support and education, scholarship to forward pediatric dosing, and a national and international presence.

In 2013, a team consisting of Dr. Parker, Jason Child and Sarah Kinder, MD, applied to the Institute for Healthcare Quality, Safety and Efficiency (IHQSE) Certificate Training Program (CTP) because they wanted to strengthen their approach to tackling patient safety initiatives. Once accepted, they began working toward the goals of:

- Increasing safety
- Decreasing use of broad spectrum antimicrobials
- Decreasing overall use of antimicrobials
- Decreasing adverse drug events
- Containing antibiotic resistance and C. difficile rates
- Containing anti-infective cost
- Containing hospital costs

So far, the results have been positive.

- Through a 2013 pilot program that was part of their hands-on IHQSE training, 1,831 patient cases were reviewed post-prescription. This review resulted in a 9% intervention rate, which saved approximately $600 per intervention. If this type of intervention were extended to all patients, it could mean a conservative estimated cost avoidance of $98,874—all from avoiding unnecessary prescriptions.
- Children’s Hospital Colorado saves more than $50,000 annually by switching from the drug ertapenem to a less expensive drug with no clinical differences in patients with appendicitis.
- Use of vancomycin in the Pediatric Intensive Care Unit has dropped by half.
● Orally bioavailable agents are now administered orally more often than intravenously on the medical units.

● Two grants were awarded to the program, including a CCTSI CO-Pilot Independent Faculty Award “Pilot study of metronidazole pharmacokinetics in pediatric patients”, and a CHCO Clinical and Operational Effectiveness and Patient Safety Small Grant, “Stewardship of Antimicrobials Aims to Increase the Judicious, Safe and Effective Use of Antimicrobials while Preventing Resistance, Side Effects and Excessive Antimicrobial Costs”.

● Four IRB/ORRQIRP protocols approved

● Development of a new clinical rotation in Stewardship for residents and medicals students in 2013

● Seven major clinical care guidelines/protocols, with follow up evaluation underway

● Dr. Parker’s appointment to three major national committees

The team estimates that an additional $1 million in cost avoidance could be attributed to a 10% decreased use in unnecessary antimicrobials and associated laboratory testing, as well as a 10% reduction of drug resistant cases with a 4% impact on C. difficile.

What’s Next

The ASP will again survey providers to learn about what they want and need from the ASP. While some hospitals have implemented a request process before using antimicrobials, Children’s Colorado has not, choosing instead to focus on appropriate use and de-escalation of antimicrobials with post-prescriptive provider support, and collaborative effort at the section level to change systematic practices.

The team will continue to work toward a culture shift, increasing universal interest among all subspecialties, increasing dialogue between providers, and increasing collaboration between sections. The team will have forthcoming publications on many of their successful projects from the past two years.

For Bits and Pieces

Get Smart About Antibiotics Week:

Antimicrobial Stewardship: Wise Use Today Preserves Cure Tomorrow

Did you know that approximately 3 pounds of every human, and 9 out of 10 of “our” cells, are microbial? Or that resistant microbes sicken 2 million people, and kill 23,000? Or that 50 million pounds of antimicrobials are prescribed each year in the United States, 20 million of which goes to humans, and 30 million of which goes to livestock? Each provider can impact change, in small and large ways! Take the first step for the CDC’s “Get Smart: Know When Antibiotics Work” week (November 17-21st) and
pledge to ponder this looming problem and purchase an antibiotic-free Turkey for your holiday!

Children’s Hospital Colorado