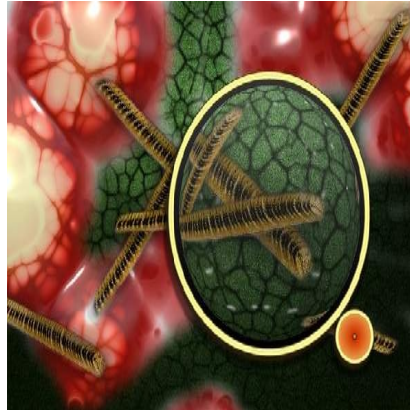




Study: Protocol Increases Appropriate Antibiotic Use



According to a retrospective study, an antibiotic protocol that determined antibiotic use based on risk for health care-associated infections significantly increased appropriate prescription of antibiotics in a paediatric ICU. The study has been published online in *Annals of the American Thoracic Society*.

Researchers evaluated patients with an infection-related diagnosis one year before and after a computer order entry-based empiric antibiotic protocol was implemented in a tertiary paediatric ICU. The protocol used risk stratification to place patients at high- or low-risk for healthcare-associated infection (HAI) based on risk factors described in adults for hospital-acquired pneumonia due to multi-drug-resistant pathogens.

“The rise of antibiotic-resistant bacteria has made antibiotic decisions more challenging,” lead author Todd J. Karsies, MD, of Nationwide Children’s Hospital, and colleagues wrote. “Particularly challenging are organisms such as methicillin-resistant *Staphylococcus aureus* (MRSA), *Pseudomonas aeruginosa* and other so-called ESKAPE organisms: *Enterococcus faecium*, *S. aureus*, *Klebsiella pneumoniae*, *Acinetobacter baumannii*, *P. aeruginosa* and *Enterobacter species*.”

The antibiotic protocol was implemented in 2005. Doctors were encouraged although not required to use the protocol. The study covered 213 patients prior to protocol implementation, who had 252 infectious episodes, and 278 patients during protocol implementation.

Dr. Karsies' team found that protocol patients were more likely to receive appropriate antibiotics compared with pre-protocol patients regardless of risk category. The study's key findings include:

- Prior to protocol implementation, 29 percent of patients were receiving MRSA coverage compared with 85 percent of patients after protocol implementation.
- Amongst patients with positive cultures, 64 percent of patients received appropriate antibiotics based on the cultured organisms prior to protocol vs. approximately 90 percent of patients after protocol.
- The amount of appropriate antibiotics prescribed to patients with gram-positive organisms significantly increased after protocol implementation from 59 percent to 93 percent.
- Appropriate antibiotic use also increased amongst patients with gram-negative cultures following protocol implementation (67 percent vs. 88 percent). Similarly, appropriate antibiotic use increased significantly amongst patients with MRSA post-protocol implementation, from 36 percent to 88 percent.

In addition, the research team found that time from culture to first risk-appropriate antibiotic was

significantly shorter after protocol implementation: median time 4 hours vs. 5.9 hours.

“A computerised physician order entry-based antibiotic protocol incorporating risk assessment for resistant organisms can improve antibiotic decisions and timing in critically ill children while limiting broad antipseudomonal antibiotics to those at greatest risk for resistant bacteria,” Dr. Karsies' team noted.

“This protocol represents a first step in striking a balance between the need for rapid, correct empiric antibiotic therapy in critically ill children with suspected infection and the growing demand for antibiotic stewardship,” the team added.

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