A Citywide Electronic Infection Control Network: Successfully Translating Data into Action
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Abstract
The prevalence of drug resistant bacteria such as Methicillin-resistant Staphylococcus aureus (MRSA) and Vancomycin-resistant Enterococci (VRE) continues to increase dramatically worldwide. Successful programs to reduce infection rates of resistant organisms require a coordinated regional approach to infection control. We assembled a multidisciplinary team of experts in informatics, industrial engineering, health services research, interinstitutional collaboration, infection control and organizational change. Our team developed an electronic infection control network to deliver standardized infection control data to infection control staff. We linked data delivery to a standardized implementation focused on dramatically improving adherence with three evidence based practices: hand hygiene, barrier isolation, and active surveillance. We used a Lean Six Sigma approach, to engage front-line staff to identify and overcome barriers to implementation and create tools to feedback results to frontline infection control staff. To date we have successfully standardized both the electronic data and the infection control response at five out of six of the major healthcare systems within Indianapolis. Effective informatics applications require an interdisciplinary approach and front-line staff engagement to ensure data delivery consistently translates into action.

MRSA: A Worldwide Problem
Two million Americans acquire an infection in the hospital each year resulting in an estimated 88,000 patient deaths per year.1 In 2003, MRSA accounted for 57% of all Staphylococcus aureus isolates in ICUs in the United States.2,3 Coordinated regional approaches to infection control have successfully reduced the prevalence of MRSA to < 1% in the Netherlands despite much higher rates in surrounding countries.4

A Citywide Infection Control Network.
We built upon the existing Indiana Network for Patient Care (INPC), an example of an operational community wide electronic medical record. We created electronic infection control abstracts for delivery to infection control practitioners (ICPs) when a patient with a history of MRSA from any INPC institution is admitted to any hospital within the network. We created web-based data entry forms for ICPs to update and make changes to patient data. We assembled an interdisciplinary team of experts in informatics (AK, PD, SH), industrial engineering and lean six sigma (HWH), interinstitutional collaboration (SH), and infection control and implementation of organizational change (BD). In parallel and coordinated with our informatics development, we designated teams of frontline staff (ICPs, environmental services, nursing, physicians) from each participating institution to undergo Lean Six Sigma training with goals of 100% compliance with three evidence based measure: hand hygiene, barrier isolation, and active surveillance.

Progress to Date
We have standardized the infection control data and assembled implementation teams of frontline staff at five out of the six major healthcare systems in Indianapolis. We achieved over 90% adherence with these three measures in 2 ICUs at one participating institution, with a resulting elimination of MRSA transmission over the first 60 days of the program. Our presentation will include lessons learned from a number of our implementation sites, and an example walk-through of the infection control process.

References