MRSA leads to worse outcomes, staggering expenses for surgical patients

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Post-surgical infections significantly increase the chance of hospital readmission and death and cost as much as $60,000 per patient, according to Duke University Medical Center researchers who conducted the largest study of its kind to date.

"We conducted a multi-center study of multiple surgical procedure types among 659 patients to determine clinical and financial outcomes of surgical site infections that are directly attributable to MRSA (methicillin-resistant Stapylococcus aureus)," said Deverick J. Anderson, M.D., MPH, an infectious diseases specialist at Duke University Medical Center and lead author of the study. "We found the impact of methicillin-resistance on surgical patients is substantial and that preventing a single case of surgical site infection due to MRSA can potentially save hospitals as much as $60,000."

Previously published research on surgical site infections provided conflicting conclusions. For the Duke study, researchers looked at the 90-day postoperative period for patients over a five-year period in one tertiary care center and six community hospitals in the Duke Infection Control Outreach Network (DICON). Created in 1997, DICON assists community hospitals in improving quality of care and enhancing patient safety, while minimizing the costs associated with non-evidence based approaches to infection control.

The researchers compared hospital readmission, mortality, length of hospital stay and hospital charges for patients in three groups. Some had

surgical site infections due to MRSA, some were infected with methicillin-susceptible Staphylococcus aureus (MSSA), and some were uninfected. The study evaluated deep-incision and organ/space infections, which are more severe than superficial infections at the site of incision. The findings are published in *PLoS ONE.*

"We found that patients with surgical site infections due to MRSA were 35 times more likely to be readmitted and seven times more likely to die within 90 days compared to uninfected surgical patients," Anderson said. "These patients also required more than three weeks of additional hospitalization and accrued more than $60,000 in additional charges."

The researchers found most of the outcomes for MRSA compared to MSSA were worse, as anticipated, however one finding was surprising, according to Anderson. "Our findings show that methicillin-resistance contributed to longer hospital stays and increased hospital charges but did not increase the risk of mortality," he said.

The data shows that patients with surgical site infections due to MRSA compared to MSSA on average required six more days of hospitalization and incurred $24,000 in additional charges.

"For the seven hospitals we looked at, the total estimated cost resulting from surgical site infections due to MRSA was more than $19 million," Anderson said. "That's a staggering amount, which demonstrates an area of cost-saving potential for these institutions and other community hospitals."

The Duke study provides the first cost impact data tied to post-surgical MRSA infection in a large group of hospitals. "Given our estimated cost of one MRSA case, we can conclude that a $60,000 intervention to prevent even one of these infections would be cost-effective for an institution," Anderson said. "With this new financial data, greater

emphasis should be placed on an effort to design and evaluate specific preventative interventions."

Provided by Duke University Medical Center