

Hand Hygiene Noncompliance and the Cost of Hospital-Acquired MRSA Infection

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A new study shows that even minimal improvements in hand hygiene compliance is associated with significant and substantial savings in hospital costs.

Researchers at Duke University Medical Center (Durham, NC, USA) created two models to simulate sequential patient contacts by a hand hygiene-noncompliant healthcare worker. The first model involved encounters with patients of unknown methicillin-resistant *Staphylococcus aureus* (MRSA) status; the second model involved an encounter with an MRSA-colonized patient, followed by an encounter with a patient of unknown MRSA status. The probability of new MRSA infection for the second patient was then calculated using published data. In all, a simulation of one million noncompliant events was performed; the total costs of the resulting infections were then aggregated and amortized over all events. Estimates of MRSA prevalence, probability of transmission, and subsequent infection were derived from the published literature and experience at the study institution.

The results showed that the first model was associated with 42 MRSA infections, an infection rate of 0.0042%; the mean infection cost was US\$47,092; and the mean cost per noncompliant event was \$1.98. In the second model, noncompliance was associated with 980 MRSA infections, an infection rate of 0.098%; the mean infection cost was \$53,598; the mean cost per noncompliant event was \$52.53. Based on these figures, a 200-bed hospital incurs a total of \$1,779,283 in annual MRSA infection-related expenses that are directly attributable to hand hygiene noncompliance. According to the researchers, a mere 1% increase in hand hygiene compliance would result in annual savings of \$39,650; an increase in hand hygiene adherence by 5% would result in a mean decrease in expected MRSA-related costs of \$198,250. The study was published in the April 2010 issue of *Infection Control and Hospital Epidemiology*.

"Many other pathogens are also spread to patients on the hands of healthcare workers as a result of noncompliance with hand hygiene. In fact, in some reports MRSA accounts for fewer than 8% of all hospital-acquired infections," concluded lead author Keith Cummings, M.D., and colleagues of the department of medicine. "Because our model focused on costs associated only with MRSA transmission, it substantially underestimated the costs associated with hand hygiene noncompliance."