Making the Link between Hand Hygiene Compliance and Decreased Infections

Time after time, in studies that have been performed all around the world, increased rates of hand hygiene compliance have been linked to increased quality of care and decreased levels of healthcare-associated infections (HAIs). The resulting decreases in HAIs can be correlated directly to decreased operating costs and maximized reimbursements for hospitals. It makes sense for hospital officials to implement system-wide hand hygiene compliance programs – not only to preserve the safety of patients and staff, but also to ensure a healthy impact to the bottom line.

For hospitals in the United States, that impact to the bottom line is of particular importance, considering the recent passage of the Affordable Care Act, and specifically the Hospital Readmissions Reduction Program. The program, which went into effect October 1, 2012, reduces reimbursements to hospitals with excessive readmissions. Hospitals that perform below average, with patients returning to the hospital within 30 days of discharge, will face up to a one percent penalty, which could average $125,000 per facility in 2013, according to government estimates. The penalties increase over time, up to three percent in 2015. Under the program, several measures are considered when evaluating readmission rates, penalties and reimbursements – and HAIs are at the top of the list.

HAIs account for nearly two million infections, 99,000 deaths and up to an estimated $45 billion in costs annually in the United States alone. In addition, nearly one-fifth of Medicare beneficiaries – roughly two million individuals per year – who are discharged from a hospital, will return within 30 days, according to the Medicare Payment Advisory Commission. By identifying and reducing avoidable readmissions – particularly those caused by HAIs – hospitals can improve safety, enhance quality of care and reduce spending. Simply put, hospitals need to focus on ensuring proper hand hygiene in the patient care setting, as it is the single best way to prevent HAIs.

Compelling results in the U.S. and abroad

Hospitals, health systems and universities around the globe have spent years studying the impact of hand hygiene compliance on a wide range of issues. Some studies have focused solely on compliance rates, others on patient care, and still others on the financial implications of
At Memorial Sloan-Kettering Cancer Center, a 464-bed comprehensive cancer center in New York City, average hand hygiene compliance rates hovered between 60 to 70 percent from 2006 to 2008. In 2008, officials overhauled the institution’s approach to hand hygiene by creating small teams that set goals and tracked hand hygiene compliance rates based on the World Health Organization’s (WHO’s) hand hygiene guidelines, the results of which were shared system-wide. As a result of these focused efforts, hand hygiene compliance reached 97 percent and has remained at that level since the conclusion of the study, which was published in the *American Journal of Infection Control*.

In a study published in the *Joint Commission Journal on Quality and Patient Safety*, Novant Health increased hand hygiene compliance rates from 49 to 98 percent from 2006 to 2008. Officials at Novant Health, a system of nine facilities in North and South Carolina, implemented a comprehensive system-wide program that included the use of alcohol-based sanitizer and standardized data collection and reporting procedures. The health system also reported a decrease in MRSA rates from .52 HAIs per 1000 patient days in 2005, to .24 HAIs per 1000 patient days by the end of 2008.

Facilities outside the U.S. have also seen dramatic results. In a 180-bed tertiary care teaching hospital in Buenos Aires, Argentina, officials monitored hand hygiene compliance in two intensive care units. Through a program of focused education and consistent feedback from 2000 to 2002, hand hygiene compliance increased from 23.1 to 63.5 percent. Additionally, overall nosocomial infection rates decreased from 47.55 to 27.93 per 1000 patient days, as reported in the *American Journal of Infection Control*.

Also published in the *American Journal of Infection Control*, a study conducted at Schneider Children’s Medical Center in Israel demonstrated a link between hand hygiene compliance and decreased rates of rotavirus gastroenteritis (RVGE). Officials implemented a program of hand-washing along with the use of gloves and antiseptic solution from 2003 to 2006. During the course of the study, hand hygiene compliance rates increased from 33.7 to 49 percent and rates of RVGE declined from 20.3 to 12.7 percent.

At Erasmus MC-Sophia Children’s Hospital, an urban hospital in Rotterdam, the Netherlands, officials studied very low birth weight infants in the neonatal intensive care unit (NICU) with one or more bloodstream infections. Following the implementation of an educational program on hand hygiene, the proportion of infants with infections decreased from 44.5 to 36.1 percent from 2003 to 2006. During the same period, the infection rate decreased from 17.3 to 13.5 percent per 1000 patient days. In addition, hand hygiene compliance increased from 65 to 88 percent, as reported in the *International Journal of Nursing Studies*.

In a 2200-bed teaching hospital in Taiwan, a hand hygiene compliance program was implemented from 2004 to 2007. As reported in *PLoS One*, the hospital observed an increase in hand hygiene compliance from 43.3 to 95.6 percent, along with an 8.9 percent decrease in HAIs. In addition, the net benefit of the overall hand hygiene compliance program was calculated at more than $5.2 million.

At Austin Health, an 840-bed teaching hospital at the University of Melbourne in Victoria, Australia, a three-year hand hygiene compliance program consisting of detailed culture change and the use of alcohol-based hand sanitizer was introduced. Hand hygiene compliance improved from 21 to 42 percent at the 12-month mark, and at 36 months, Austin Health reported significant reductions in hospital-wide rates of several types of serious infections, including a 40 percent reduction in MRSA and a 90 percent decrease in E. coli and Klebsiella. The study was published in the *Medical Journal of Australia*.

In the NICU of Queen Mary Hospital at the University of Hong Kong, China, a multimodal hand hygiene compliance program including education, greater availability of alcohol antiseptic, ongoing hand hygiene auditing and healthcare-associated infection surveillance was conducted. The results of the one-year study, as published in *Pediatrics*, showed an increase in hand hygiene compliance from 39 to 59 percent. More marked improvement was observed for high-risk procedures (35 to 60 percent) and the HAI rate decreased from 11.3 to 6.2 per 1000 patient days.

The National Taiwan University Hospital, a 2000-bed tertiary-care teaching hospital in northern Taiwan, implemented a multimodal
hand hygiene compliance program from 1998 to 2001. The program included formal lectures, written instructions and posted reminders regarding hand hygiene and proper hand-washing techniques, and resulted in an overall hand hygiene compliance rate increase from 43 to 80 percent. The rate of nosocomial infections decreased from 15.13 to 10.69 per 1000 patient days. In addition, the rate of respiratory tract infections decreased from 3.35 to 1.06 per 1000 patient days during the campaign, as reported in *Infection Control and Hospital Epidemiology*.

At Johns Hopkins Hospital in Baltimore, Md., a three-phase study was conducted in the hospital’s 14-bed intermediate care unit, consisting of electronic monitoring, observation and computerized voice prompts. The unit reported a 37 percent increase in hand hygiene compliance during phase two (electronic monitoring with a computerized voice prompt for failing to clean hands upon exiting a patient room) and a 41 percent increase during phase three (electronic monitoring only). These results were published in *Critical Care Medicine* and also highlighted a decrease in the rate of nosocomial infections of 22 percent during phase two, and 48 percent during phase three. The study concluded that electronic monitoring provided effective ongoing feedback about hand hygiene compliance. Hand hygiene compliance and nosocomial infection rates improved, suggesting that ongoing monitoring and feedback had both a short-term and, perhaps, a longer-term effect.

In addition to the positive clinical outcomes demonstrated in these studies, there are also studies that correlate hand hygiene compliance to financial consequences.

Officials at Duke University Medical Center, a 750-bed tertiary medical center in Durham, N.C., conducted a study in an attempt to determine the cost of each episode of hand hygiene noncompliance by healthcare workers. The study, which was published in *Infection Control and Hospital Epidemiology*, found that the estimated cost per non-compliant hand hygiene event (when healthcare workers did not wash their hands after contact with a patient who was a carrier) was as high as $52.53. The study also showed that minimal improvements in compliance could lead to substantial savings. Officials concluded that just a one percent increase in hand hygiene compliance would result in annual savings of $39,650 for a 200-bed hospital.

Research clearly supports the effectiveness of hand hygiene compliance. Repeated studies throughout the world have shown a definitive link between increased hand hygiene compliance and decreased infection rates. Hospital officials need to act immediately to implement comprehensive hand hygiene compliance programs in order to protect the safety and financial health of their institutions.
Appendix


Reduction in nosocomial infection with improved hand hygiene in intensive care units of a tertiary care hospital in Argentina, American Journal of Infection Control, 2005 Sep; 33(7):392-7.


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