



“The rates of hand hygiene improvement and health care-associated infections (HAIs) were evaluated after the introduction in 2004 of an infection surveillance and prevention program at a university teaching hospital in a low- to middle-income country.” Alp et al (2014).

Reference:

Alp, E., Altun, D., Cevahir, F., Ersoy, S., Cakir, O. and McLaws, M.L. (2014) Evaluation of the effectiveness of an infection control program in adult intensive care units: A report from a middle-income country. American Journal of Infection Control. 42(10), p.1056-61.

Rates of hand hygiene improvement and health care-associated infections

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Abstract:

BACKGROUND: The rates of hand hygiene improvement and health care-associated infections (HAIs) were evaluated after the introduction in 2004 of an infection surveillance and prevention program at a university teaching hospital in a low- to middle-income country.

METHODS: Data on hand hygiene compliance, HAI rate, multiresistant organisms, and antibiotic consumption in 4 adult intensive care units (ICUs; medical, general surgery, anesthesiology and reanimation, and neurosurgery) were collected retrospectively for each

year from 2004 to 2012. Negative binomial regression modeling with a log link was used to adjust for overdispersion in observations, and the first year of observations served as the baseline for comparing changes in incidence rate ratio (IRR) over the subsequent years.

RESULTS: Total hand hygiene compliance improved from 30.5% in 2004 to 43.5% by 2010 (IRR, 1.3; $P < .0001$) and reached 63.8% by 2012 (IRR, 1.9; $P < .0001$). The HAI rate was 42.6/1,000 patient-days at baseline and increased significantly thereafter until 2012, when it decreased by 20% to 33.6/1,000 patient-days (IRR, 0.8; $P = .001$). The rate of central line-associated bloodstream infection was 7.85 (95% confidence interval [CI], 5.89-10.26)/1,000 catheter-days in 2004 and increased to 12.4 (95% CI, 9.98-14.39)/1,000 catheter-days in 2012 (IRR, 1.5; $P = .024$). The rate of ventilator-associated pneumonia remained stable from the 2004 baseline rate of 31.66/1,000 ventilator-days to the 2012 rate of 24.04/1,000 ventilator-days (IRR, 0.88; $P = .574$). The rate of catheter-associated urinary tract infection remained relatively stable between 2004 and 2012 (from 7.92/1,000 catheter-days to 4.97/1,000 catheter-days; $P = .101$). The rate of methicillin-resistant *Staphylococcus aureus* infection was 6.24/1,000 patient-days at baseline and decreased significantly to 0.73/1,000 patient-days by 2007 (IRR, 0.13; $P < .001$) and continued to remain below 2/1,000 patient-days for the next 5 years. The rate of *Pseudomonas aeruginosa* infection decreased significantly from 8.66/1,000 patient-days in 2004 to 6.09/1,000 patient-days in 2010 (IRR, 0.72; $P = .026$) and to 5.44/1,000 patient-days by 2012 (IRR, 0.63; $P = .002$). The rate of *Acinetobacter baumannii* infection was 14.3/1,000 patient-days at baseline, decreased significantly by 2005 (IRR, 0.73; $P = .012$), fluctuated between 2006 and 2010, and then decreased significantly to 10.44/1,000 patient-days in 2011 (IRR, 0.74; $P = .007$) and then to 7.6/1,000 patient-days in 2012 (IRR, 0.53; $P < .001$). Antibiotic consumption did not decrease noticeably over the 9-year study period.

CONCLUSIONS: Hand hygiene improved in all of the ICUs evaluated. Measuring changes in HAI rates in a single health care setting can be statistically challenging, and a bias in the detection rates is not uncommon in the early years of a new infection prevention program. Here, for the first time, implementation of an infection surveillance and prevention program was associated with a reduction in HAI rate.

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