

Letters to the Editor

Costs and Benefits of Measures to Prevent Needlestick Injuries in a University Hospital

To the Editor:

We are writing in regard to the article "Costs and Benefits of Measures to Prevent Needlestick Injuries in a University Hospital" by Roudot-Thoraval and colleagues,¹ which appeared in the September 1999 issue of *Infection Control and Hospital Epidemiology*. At a time when needlestick-injury prevention is receiving national attention, this article and others like it provide important information to inform policy-making—by both providers and government—on this issue.

This cost-effectiveness study reports the effectiveness of measures to reduce the risk of needlestick injury, as did the study we conducted and published in the *American Journal of Infection Control* in 1994.² Dr. Roudot-Thoraval and her colleagues cited our study in their discussion, stating that we calculated cost-effectiveness ratios of between \$800 and \$1,500 and that these calculations included the costs of seroconversions averted. While we calculated and reported various cost-effectiveness ratios for needlestick-prevention devices we studied, our calculations were based solely on the costs of implementing the use of the devices and did not include the costs of seroconversions averted. However, we discussed the exclusion of these costs from our calculations as additional considerations that could potentially affect the cost-effectiveness of these devices. In fact, because of the magnitude of such costs, implementing the use of these devices might save money, at least from a societal perspective, and possibly save the hospital money if the hospital incurs these costs either directly or indirectly.

REFERENCES

1. Roudot-Thoraval F, Montagne O, Schaeffer A, Dubreuil-Lemaire M-L, Hachard D, Durand-Zaleski I. Costs and benefits of measures to prevent needlestick injuries in a university hospital. *Infect Control Hosp Epidemiol* 1999;20:614-617.
2. Laufer FN, Chiarello LA. Application of cost-effectiveness methodology to the consideration of needlestick-prevention technology. *Am J Infect Control* 1994;22:75-82.

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The authors reply.

The work published by Laufer and Chiarello is an important contribution in the field on prevention of needlestick injury, and we enjoyed reading the report of their cost-effectiveness analysis. I am sorry that in our article a condensed sentence did not render justice to the completeness of their approach.

I fully agree that it is useful to document the costs of human immunodeficiency virus and hepatitis C virus infections as information to readers and policy makers, and I also agree that it is not correct to include those in a model because of uncertainty regarding the actual numbers of seroconversions averted and the evolution of treatment costs in the coming years. This is why we did not do it either. I was interested to see that, despite a different methodological approach, our conclusions with regard to prevention of needlestick injuries were similar to those of researchers from New York.

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Evaluation of Hospital Infection Rates and Control Measures in a Cardiac Surgery Hospital: 10 Years' Experience

To the Editor:

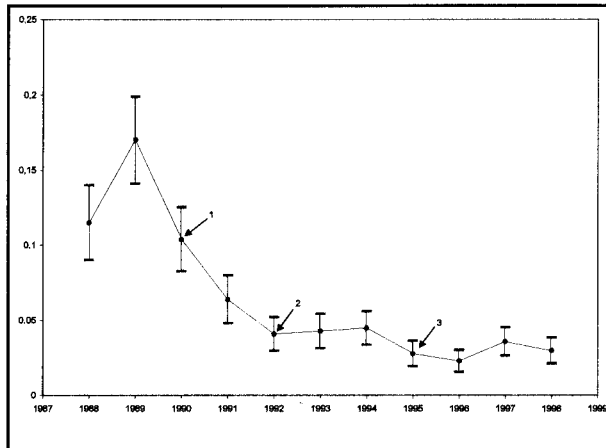
Besides extending the hospitalization period, surgical-site infection (SSI) in cardiac surgery may be associated, in some cases, with increased death rates. Reported infection rates range from 0.81%¹ to 16%²; in most studies, the average is approximately 2%. The aim of the present study was to evaluate the evolution of hospital infection rates over time after the initiation of a hospital infection control service.

The Hospital Infection Control Program instituted in our hospital was composed of two phases: (1) identification of problems (1988-1989), and (2) intervention and educational programs (classes, discussion of cases, medical visits, and training courses), starting in 1990.

In 1989, with the beginning of the systematic Active Epidemiological Surveillance (AES) and the notification of hospital infection cases according to the Centers for Disease Control and Prevention,³ there was an increase in the SSI rate from 11.5% to 17% ($P=0.005$; Figure). The proportion of *Staphylococcus aureus* that was methicillin-resistant was 63.5%. In 1990 we started the second phase of the program with a series of measures, and the SSI rate decreased to 10.3% ($P=0.01$). After the nurse began working exclusively for the Infection Control Program, the volume of surgery increased, and a new hospital building was opened (1992), the SSI rates dropped to 4.1% ($P=0.01$; Figure).

In 1995 a new step was taken with the substitution of cefazolin for cephalothin: 1 g intravenous at anesthetic induction and after every 4 hours until the end of surgery, with maintenance for 48 hours after surgery; the SSI rate dropped to 2.8%

FIGURE. Trends in surgical-site infection rates. (1.) Start of the program. In 1989, with the start of the Active Epidemiological Surveillance, there was a significant increase in the identification of infections. (2.) Relocating to a new building and hiring of a nurse with the exclusive purpose of controlling infection. (3.) Change in antibiotic prophylaxis to cefazolin. In 1997, a surgical-site infection outbreak was detected and controlled.



($P=0.01$; Figure). Those figures remained stable, except that in 1997 there was an outbreak of infection that increased the rate to 3%. That rate remained stable in 1998. With regard to the prevalence of methicillin-resistant *S aureus*, we went from 65.3% at the beginning of the program to 39.3% from 1995 through 1998.

In conclusion, the introduction of the Hospital Infection Control Program was extremely beneficial in our institution, because we started out with a 17% real SSI rate, and it has decreased to 2.5%. According to Haley et al,⁴ the addition of either an effective hospital epidemiologist or a

nurse per 250 beds to perform surveillance and to control infections was estimated to decrease the percentage of infections by 35% in surgical wounds. Greco et al demonstrated that the reduction in surgical-wound infection may reach 50%.⁵ In our study, the decrease reached 80% in these 10 years. A change in the sensitivity profile of the *S aureus* was also reported by Nettleman et al,⁶ who observed that feedback to the healthcare providers has also been shown to reduce rates of methicillin-resistant *S aureus*. The present work reinforces the need for a well-structured infection control program with specialized professionals.

REFERENCES

- Hazelrigg SR, Wellons HA Jr, Schneider JA, Kolm P. Wound complications after median sternotomy: relationship to internal mammary grafting. *J Thorac Cardiovasc Surg* 1989;98:1096-1099.
- Conklin CM, Gray RJ, Neilson D, Wong P, Tomita DK, Matloff JM. Determinants of wound infection incidence after isolated coronary artery bypass surgery in patients randomized to receive prophylactic cefuroxime or cefazolin. *Ann Thorac Surg* 1988;46:172-177.
- Garner JS, Jarvis WR, Emori TG, Horan TC, Hughes JM. CDC definitions for nosocomial infections, 1988. *Am J Infect Control* 1988;16:128-140.
- Haley RW, Culver DH, White JW, Morgan WM, Emori TG, Munn VP, et al. The efficacy of infection surveillance and control programs in preventing nosocomial infection in US hospitals. *Am J Epidemiol* 1985;121:182-205.
- Greco D, Moro ML, Tozzi AE, De Giacomo GV, the Italian PRINOS Study Group. Effectiveness of an intervention program in reducing postoperative infections. *Am J Med* 1991;91(suppl 3B):164S-169S.
- Nettleman MD, Trilla A, Fredrickson M, Pfaller M. Assigning responsibility: using feedback to achieve sustained control of methicillin-resistant *Staphylococcus aureus*. *Am J Med* 1991;91(suppl 3B):228S-232S.

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Effect of Dispensers and Hand Antiseptic on Hand Hygiene

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Muto and colleagues from the University of Virginia Health System recently reported a study designed to improve healthcare workers' compliance with hand hygiene after patient contact by use of an alcohol-based hand antiseptic. Six commercially available alcohol-based hand antiseptics were evaluated. The one most pleasing to the evaluators' hands was selected for the study. Baseline handwashing rates were assessed on two medical wards. Alcohol dispensers were mounted by every door on the two wards. An educational campaign was conducted with four weekly visits to these floors to remind and

reinstruct staff about the use of the alcohol dispensers and to address questions. After 2 months, handwashing rates were reassessed. The study was set in a university hospital.

The baseline handwashing rate was 60% (76/126). Physicians were most compliant (83%), followed by nurses (60%), technologists (56%), and housekeepers (36%). Two months later, overall hand-hygiene rates had decreased to 52% ($P=.26$). Nurses were most compliant (67%), followed by technologists (57%), physicians (29%), and housekeepers (25%). Physician compliance was associated with compliance by attending physicians, whose example was usually followed by all other physicians on rounds.

The authors concluded that a brief educational campaign and installation of dispensers containing a rapidly acting hand-hygiene product near hospital rooms did not affect hand-hygiene compliance. The behavior of attending physicians was predictive of handwashing rates for all others in the attending's retinue. Compliance with hand washing after half of all patient contacts was a result of perfect compliance by some and total noncompliance by others being observed.

FROM: Muto CA, Siström MG, Farr BM. Hand hygiene rates unaffected by installation of dispensers of a rapidly acting hand antiseptic. *Am J Infect Control* 2000;28:273-276.