Letters to the Editor

The Expanding Horizons of Infection Control

To the Editor:

We thoroughly appreciated the editorial by Dr. Stratton in the April issue of *Infection Control and Hospital Epidemiology* (1995;16:192-193) concerning the expanding horizons of infection control. We would like to share another role we have been involved in at Tampa General Healthcare.

Our hospital has organized an Environment of Care Rounds Team, comprised of personnel from the departments of infection control, safety, plant operations, facilities, dietary, pharmacy, environmental services, central sterile processing, laboratory, and biomedical engineering. This team of managers surveys each clinical area twice per year using checklists designed by each specialty, to assess a variety of infection control and safety issues. By dividing up the tasks of surveillance, we can survey 175 issues in approximately 15 minutes. This also provides a time for clinical managers to voice infection control or safety concerns to our management team.

The results are discussed with the department manager briefly before leaving the area, and a summary report is compiled and mailed to the manager. The reports are submitted quarterly to the safety committee, and unresolved problems are forwarded to the administrative quality improvement committee.

Since this multidisciplinary team of managers has dedicated the time to make these rounds, the team has been received very well and has emphasized the importance of infection control and safety practices in every aspect of patient care, at the bedside, and in support departments. The surveys also have allowed us to meet the Joint Commission on Accreditation of Hospital Organizations' requirements for safety management and documentation of processes to reduce the risks of endemic and epidemic nosocomial infections.(EOC 1.2.1, 1.3.1, 1.5.1, 2.3.1, IC.2). Sample survey forms are available from the undersigned upon request.

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Ciprofloxacin Resistance Among Nosocomial *Pseudomonas aeruginosa* and *Staphylococcus aureus* in the United States

To the Editor:

The study by Coronado et al[1] provided important information about the epidemiology of ciprofloxacin resistance in *Staphylococcus aureus* and *Pseudomonas aeruginosa.* In the discussion section of the paper, the authors cited our paper that reported results of epidemiological typing of *S aureus* by DNA restriction fragment-length polymorphisms of rRNA genes (ribotyping).[2] Coronado et al have misquoted results from our study and have attributed results from typing studies of methicillin-susceptible *S aureus* (MSSA) to methicillin-resistant *S aureus* (MRSA). Our report indicated that ribotyping demonstrated that a number of different strains or clones of MRSA existed at the Atlanta VA Medical Center and that ciprofloxacin resistance had emerged in multiple strains of MRSA as opposed to primarily a single strain or clone of MSSA. Selective pressure appeared to play an important role in the development of ciprofloxacin resistance in MRSA, as resistance was not documented until after the drug was introduced into the hospital formulary in late May 1988 and increased rapidly from 0% to approximately 80% in a 1-year period.[3] Currently, 89% of MRSA isolates and 8% of MSSA isolates recovered from the Atlanta VA Medical Center are resistant to ciprofloxacin.

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REFERENCES

1. Coronado VG, Edwards JR, Culver DH, Gaynes RP. Ciprofloxacin resistance among nosocomial *Pseudomonas aeruginosa* and *Staphylococcus aureus* in the United States. *Infect Control Hosp Epidemiol* 1995;16:71-75.
2. Blumberg HM, Rimland D, Kiehlbauch JA, Terry PM, Wachsmuth IK. Epidemiologic typing of *Staphylococcus aureus* by DNA restriction fragment-length polymorphisms by rRNA genes: elucidation of the clonal nature of a group of bacteriophage nontypeable, ciprofloxacin-resistant, methicillin-susceptible *Staphylococcus aureus. J Clin Microbiol* 1992;30:362-369.
3. Blumberg HM, Rimland D, Carroll DJ, Terry PM, Wachsmuth IK. Rapid development of ciprofloxacin resistance in methicillin-susceptible and -resistant *Staphylococcus aureus. J Infect Dis* 1991;163:1279-1285.

The author replies.

We thank Drs. Blumberg and Rimland for their comments. While the results from their paper[1] were attributed incorrectly to methicillin-resistant *Staphylococcus aureus* (MRSA) in our manuscript,[2] the authors' finding that a rapid increase in ciprofloxacin resistance occurred among MRSA isolates provides additional evidence of the rapidly increasing ciprofloxacin resistance suggested by our analysis. Indeed, the current Atlanta VA Medical Center data on ciprofloxacin resistance among *S aureus* isolates are remarkably similar to the pooled means provided in our report. Additionally, Drs. Blumberg and Rimland related the increase in resistance to ciprofloxacin introduction, which our analysis was

unable to do, because drug use information was not available.

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REFERENCES

1. Blumberg HM, Rimland D, Kiehlbauch JA, Terry PM, Wachsmuth IK. Epidemiologic typing of *Staphylococcus aureus* by DNA restriction fragment-length polymorphisms of rRNA genes: elucidation of the clonal nature of a group of bacteriophage-nontypeable, ciprofloxacin-resistant, methicillin-susceptible *S aureus* isolates. *J Clin Microbiol* 1992;30;362-369.
2. Coronado VG, Edwards JE, Culver CH, Gaynes RP. Ciprofloxacin resistance among nosocomial *Pseudomonas aeruginosa* and *Staphylococcus aureus* in the United States. *Infect Control Hosp Epidemiol* 1995;16:71-75.

Glutaraldehyde: Current Status and Uses

To the Editor:

The excellent review by Russell[1] invited us to report our own experiences with glutaraldehyde (GA) for disinfecting endoscopes. During the last 10 years, flexible endoscopes were disinfected at our hospital by using GA in a homemade all-channel perfusion system.[2] In 1993, the cleaning and disinfecting systems were replaced by full automatic cleaning and disinfecting machines (Wassenburg, Doodewaard, The Netherlands). These machines have been supplied with ventilation for the GA vapor and with flow-controlled channels. Each machine uses 10 L glutaraldehyde 2% (Cidex) for the disinfection process, which is carried out with a frequency of five to eight times per day. The GA is reused.

The manufacturer of Cidex guarantees that a freshly prepared activated solution can be used for 2 weeks; the manufacturer also advises to use concentrations of more than 1% GA. In the Wassenburg machines, the disinfection process always starts with ultraclean endoscopes. Air pulses remove most of the water out of the channels, so that dilution of the GA can be ignored.

In the Wassenburg machine, dilution and reuse of GA are the main factors that can influence the activity of GA.

Russell1 stated that several factors, such as concentration and the presence of soil, will influence the activity of GA. We studied the decrease in concentration of GA in a laboratory situation and in the Wassenburg machine. An activated Cidex solution was prepared freshly in a container normally used for disinfection of rigid endoscopes. The container was placed in a ventilated cupboard for 2 weeks. During working days, the lid of the box was lifted every hour. Twenty samples were taken immediatedly after preparation of the solution; 10 of these samples were kept at room temperature, and 10 samples were kept at 6°C . Every working day, one sample of each category was placed at −20°C. Also every working day, two fresh samples were taken; one was placed at 6°C and one at −20°C. All samples were analyzed in a gas chromatograph (Figure 1). The daily samples of the container showed a decrease in concentration of GA, hardly influenced by the storage temperature.

Samples of the activated Cidex were taken from two Wassenburg machines every working day during 2 weeks (one machine that was used most frequently and one that was used less frequently) at 8:30 am and 4:30 pm. The samples were kept at 6°C and analyzed on the same day. The decrease in concentration of GA is shown in Figure 2. We noticed a decrease in GA concentration of 25% in 3 days. The change of the Cidex container for a new one before the weekend was abandoned immediately. Instead, a new container was activated on the first working day of the week.

Comparing the results of our two experiments, we concluded that the decrease in GA concentration was caused by an interference in the vapor concentration of GA. This interference can be decomposition, oxidation, or vaporation of GA. We mentioned that, in the Wassenburg machine, the GA vapor was removed continuously by ventilation.

Another problem is the estab-

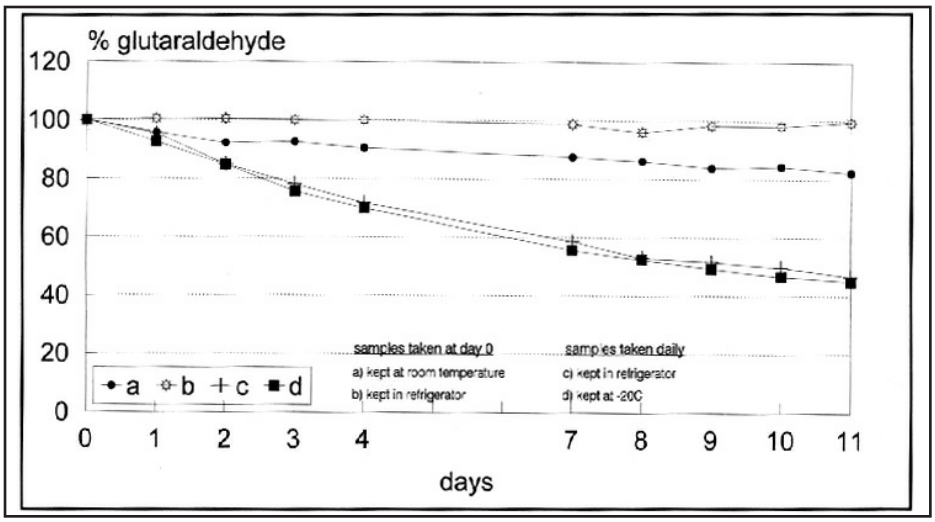

Figure 1. Decrease in glutaraldehyde concentration (CidexR) during 11 days.