Letters to the Editor

Reporting Sensitivity and Resistance of Bacteria to Antibiotics

To the Editor:

Once again I call upon *Infection Control and Hospital Epidemiology* to assist in the resolution of a problem that probably concerns infection control and pharmacy therapeutics committees in acute hospital settings compared with long-term skilled nursing facilities.

In reporting sensitivity and resistance of bacteria to antibiotics, it is either as the values of minimum inhibitory concentration (MIC) or Kirby-Bauer. In the population in skilled nursing facilities (SNFs) and the actual difficulty and reluctance of attending men to monitor their patients as closely as those in the acute environment, what would be the preferable system to use for the antibiotics of choice? Is there any difference in the results based upon the zone ofinhibition that is seen on the plate! Is there any compatibility or interchange in the two tests? Is there a preference in the use of either test, depending on factors such as age, weight and location of the patient or whether the infection is nosocomial versus community acquired? And lastly, does prior or current monotherapy versus multi-antibiotic therapy affect the choice of the test?

Harry J. Silver, MD
Los Angeles, California

This question was referred to Michael A. Pfaller, MD.

The choice between MIC versus Kirby-Bauer disk diffusion testing depends on several factors, including the workload of the laboratory, the number of antibiotics to be tested, the financial resources available and the needs of the physicians caring for the patients. The Kirby-Bauer method is inexpensive, simple to perform, Hexible and provides qualitative information as to the susceptibility or resistance of the test organism to various antibiotics. The MIC test, using one of a number of commercially available test panels, is also simple and flexible but is relatively more expensive and provides quantitative data.

The relationship between the MIC and Kirby-Bauer test results is well defined for each of the commonly used antibiotics. In general, the diameter of the zone of inhibition obtained with the Kirby-Bauer method is directly proportional to the MIC for a given organism-drug combination. The susceptibility breakpoints for both methods are assigned based on the distribution of strains as to susceptibility ranges and the levels of antibiotics achievable in vivo. The two approaches to in vitro susceptibility testing are essentially interchangeable with respect to their clinical usefulness. Neither of these methods are influenced by host factors, antibiotic therapy of the host, or nosocomial versus community-acquired infection. Although these are all factors that may influence the choice of therapy for a given infection they do not affect the test method.

Michael A. Pfaller, MD
Iowa City, Iowa

Calculating Infection Control Rates

To the Editor:

I am interested in obtaining answers to the following questions:

- Is there a universal way to calculate hospital infection rates! Apparently any institution can "customize" their own formula in calculating the hospital's infection rate.
- Should there be a universally accepted formula for calculating hospital infection rates that can be applied easily from one similar institution to another?
- What is the best formula for acute and long-term care facilities?

Manuel H. Moraleda, MD
Battle Creek, Michigan

This letter was referred to Elizabeth Bolyard, RN, MPH, CIC.

One of the difficulties that the specialty of hospital epidemiology has encountered during its developmental years is the lack of uniformity among institutions for calculating hospital infection rates. In the early years most practitioners used number of infections and number of patients with infections as the numerator and number of hospital admissions or discharges as the denominator, which is actually a ratio and not a rate. As you would expect, this made comparisons between hospitals difficult as severity of illness affected patient length of stay within the different hospitals. In some hospitals where the average length of stay was short, such as hospitals with large obstetric services, the denominator increased and therefore the hospital-wide incidence rates appeared low. In institutions with long stays, the inverse was the case. Comparisons, therefore, were not valid.

The method of calculating rates using only the total number of patients, as described above, does not take into effect time of infection or duration of risk. Many people today are using number of infections as the numerator but are using the average length of stay or number of patient days as the denominator for calculating hospital-wide or unit-specific incidence rates, which accounts for the effect