Letters to the Editor

A Statewide Surveillance System for Antibiotic-Resistant Bacteria: The New Jersey Department of Health

To the Editor:

We thoroughly appreciated the Readers' Forum presentation on "The Need for Surveillance for Antimicrobial Resistance" by Dr. Lorian (1995;16:638-641) and the accompanying editorial by Dr. Gaynes on "Surveillance of Antibiotic Resistance: Learning to Live with Bias" in the November issue of *Infection Control and Hospital Epidemiology.* We agree with Dr. Gaynes that selection bias is a great concern in an antimicrobial surveillance system. In New Jersey's statewide hospital laboratory-based surveillance system for antibiotic-resistant bacteria, the New Jersey Department of Health eliminated selection bias by including all 95 acute-care general hospitals licensed by the Department of Health. Eliminating selection bias did not come without a cost, however. To keep the data flow at a manageable volume, the surveillance system collects data only on gram-positive cocci resistant to vancomycin, methicillin-resistant *Staphylococcus aureus,* gram-negative rod-shaped bacteria (GNRs) resistant to imipenem, GNRs resistant to amikacin, and pneumococcal and other streptococcal isolates resistant to penicillin. This surveillance system is focused on the detection of clinically significant antibiotic-resistant patterns. This surveillance system, implemented in 1991, is more fully described in the July 14, 1995, issue of *MMWR* and the July 1995 issue of *Infection Control and Hospital Epidemiology.*[1,2]

The New Jersey surveillance system quantified the emergence of vancomycin-resistant enterococci (VRE) and penicillin-resistant *Streptococcus pneumoniae* in New Jersey.[1] After ascertaining that the increase detected by the system was a true increase and not a surveillance artifact, collaborative efforts involving public, private, and academic organizations were established to evaluate risk factors for VRE, treatment options, and effectiveness of infection-control practices. The organisms collected by the surveillance system also were used for in-vitro susceptibility testing for VRE antimicrobial agents in preclinical trials.

The New Jersey surveillance system differs from that recommended by Dr. Lorian in two ways. Dr. Lorian advocates a national antimicrobial resistance surveillance system. However, the emergence and incidence of antibiotic-resistant bacteria may vary from region to region or from community to community. Therefore, treatment options selected and control strategies implemented should take advantage of this variability. This has been shown to be particularly true for drug-resistant *S pneumoniae.*[3]

The second difference is that the system advocated by Dr. Lorian would track only eight bacterial species, which currently account for only 68.5% of all antimicrobial-resistant isolates. While this system would provide useful information on these eight species, it would not detect the emergence of antimicrobial resistance in other species, such as *S pneumoniae.* The clinical treatment of illnesses due to *S pneumonia,* an organism not selected by Dr. Lorian, would be affected drastically if and when this organism becomes resistant to vancomycin.

A surveillance system that monitors the development of antibiotic resistance in bacteria will be a crucial tool for clinicians in the selection of appropriate antibiotics for their patients, as well as a tool for the understanding and controlling of the spread of antibiotic resistance. New Jersey has taken an important first step, which has demonstrated that statewide surveillance for antibiotic-resistant bacteria can provide a useful and valid population-based surveillance tool for antibiotic-resistant bacteria.[4]

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The author replies.

The New Jersey Department of Health is a pioneer in bacterial resistance surveillance. They tailored their program to respond to their local needs and to meet their resources. Because bacterial resistance is suspected to be a national or world phenomenon, the scope is much larger and must include data on most species encountered in infections that showed increased rates of resistance. Pneumococci, while producing many infections, are—with some local exceptions—still treatable with penicillin in 98.7% of cases,[1] a very enviable rate of susceptibility compared to the other species producing infection. At this time, I would not worry about vancomycin-resistant pneumococci.

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Recorded Criteria as a "Gold Standard" for Sensitivity and Specificity Estimates of Surveillance of Nosocomial Infection: A Novel Method to Measure Job Performance

To the Editor:

In describing a method to measure accuracy of infection control practitioners' (ICPs) identification of infec-

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tions, Ehrenkranz et al comment that ". . . prospective measures are costly, however, and this approach rarely is done even once at most hospitals."[1] I agree that evaluation of surveillance accuracy, an important job performance measure, tends to be done too infrequently. However, interdisciplinary collaboration enabled by a change in the use of infection control committee members' time provides a simple means to support prospective monitoring.[2] Decreasing the frequency of routine infection control committee meetings in exchange for assigning one "prevalence round" per year to each physician member permits continuing measurement of surveillance accuracy, builds collaborative relationships, provides ongoing educational exchanges, and can identify both problems and approaches to improve cases detection in the spirit of continuous quality improvement.[3] The ICP and an accompanying physician, on their annual turn, independently review every chart on a randomly selected ward and then compare their findings. Analysis of discrepancies and of cases not previously known to the surveillance system may improve performance of both the ICP and the system.

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The authors reply.

We thank Dr. Birnbaum for his comments. His suggestion to permit each physician member to exchange the participation in one infection control committee meeting with attendance at an interdisciplinary surveillance accuracy "prevalence round" is very creative and probably highly effective in improving surveillance sensitivity and specificity at his hospital. Success in replicating such an activity elsewhere is likely to depend on the availability of knowledgeable physicians members who, in fact, do attend meetings regularly and are willing to set aside the necessary time to carry out the "prevalence round" as intended.

Several years' experience appears to be required for infection control practitioners (ICPs) to develop proficiency at the Florida Consortium for Infection Control; this may well reflect the period necessary for their acquiring facility in skills of time management and networking with other hospital personnel, who act as referral sources of possibly infected patients, as well as for becoming familiar with application of criteria of infection. In a number of instances, it seems that, as a consequence of increasing burdens currently being placed on ICPs, surveillance receives a lower priority, and established accuracy falls concomitantly. Repeated use of recorded criteria as the "gold standard" of surveillance accuracy then serves to distinguish between what the ICPs are capable of doing and what they actually accomplish.

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Is Expressed Breast Milk From Home Safe? A Survey From a Neonatal Intensive-Care Unit

To the Editor:

Human milk is the preferred diet for newborn infants. For infants in neonatal intensive-care units (NICUs) whose mothers may have been discharged from the hospital, it may be appropriate to provide fresh or stored raw human milk brought by the mother from home. We carried out a microbiological examination of 139 consecutive samples of expressed breast milk (EBM) brought from home by 24 mothers during a study period of 1 month. Mothers completed a questionnaire for each sample about the various aspects of breast milk expression, collection, storage, and transportation.

Prior to discharge, the nursing staff gave all mothers detailed instructions regarding hygienic practices needed while expressing, storing, and transporting EBM to the hospital. This was reinforced by a printed pamphlet. Sterile, sealed, empty bottles were supplied for collection. On request, sterilized manual breast pumps were supplied.

Using sterile syringes, milk was obtained and sent for culture from each sample brought in. An average of 5.8 samples per mother were studied. Twenty-two of 24 mothers had understood the instructions given in the postnatal ward. One mother expressed milk manually (six samples); the remaining 23 used the pump. The interval between expression of milk and delivering it to the NICU ranged from 1 to 8 hours. Mothers differed in their practices regarding cleaning of breasts, procedures for maintaining hygiene of the pump, and the mode of milk storage (Table 1).

Of the 24 mothers, there was only one (who had supplied two samples) from whose EBM no bacteria were isolated. The remaining 23 (95%) had bacterial growth from at least one of the samples. Twelve mothers (52.2%) had only nonpathogenic bacteria isolated, and 47 EBM samples (34%) from 11 mothers (46%) grew a mixture of nonpathogens and potential pathogens (Table 2).

We found potential pathogens from one third of the breast milk samples sent for qualitative culture. This is a higher prevalence than reported from previous studies.[1,2] It is somewhat reassuring that large studies have not found adverse events that could be directly related to ingestion of bacteria in raw breast milk,[2] nor did we observe any. Routine milk screening programs have not shown any benefit. However, infants in NICUs have low levels of immunity and are easily susceptible to infection, and common sense suggests it is preferable not to feed potentially pathogenic bacteria that could colonize the gut and lead to bacteremia. Pasteurization of breast milk has been practiced in several milk banks, but there is no doubt that it influences and alters the lymphocyte and antibody content of human milk.[3]

Studies have shown that simple but adequate cleansing of breasts lowers the incidence of contamination.[4] In addition, breast pumps could be a potential source of contamination. We recommend that educating mothers in proper techniques of expressing, handling, and transporting breast milk should be emphasized. Expressed breast milk should be stored at 3°C to 4°C if it is to be used