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The Stethoscope as a Potential Source of Transmission of Bacteria

To the Editor:

Dr. Itzhak Brook's letter (1997;19:608) is of importance not only in showing that the stethoscope may be a vector for both aerobic and anaerobic bacteria but also in demonstrating that the stethoscope may be contaminated when used in physical examinations.

The various textbook recommendations for cleaning before and after use are known commonly.[1-3] However, these are not always adhered to, nor are adequate to prevent contamination of patients.[4] Furthermore, hygiene rituals for stethoscopes often ignore the need for meticulous cleaning.

The risk of contamination is high, especially in clinical settings and particularly for patients in the intensive-care unit or neonatal intensive-care unit.[5] In those very high-risk settings, the use of individual stethoscopes for each patient is known to be the most effective prevention. (Unfortunately, this makes doctors now a target of potential cross-infections via earpieces).

To minimize this hazard, using single-use stethoscope-covers (Figure) would assure a high hygiene standard. Such covers could be used before physical examination and could be disposed of easily thereafter. We were able to detect 13 different patented devices designed to decrease stethoscope contamination, but only two seem to be feasible for real practice (Wurzburger, US Patent #5,538,004, 1996; Rothan-Tondeur, PCT #WO 96/38088, 1996).

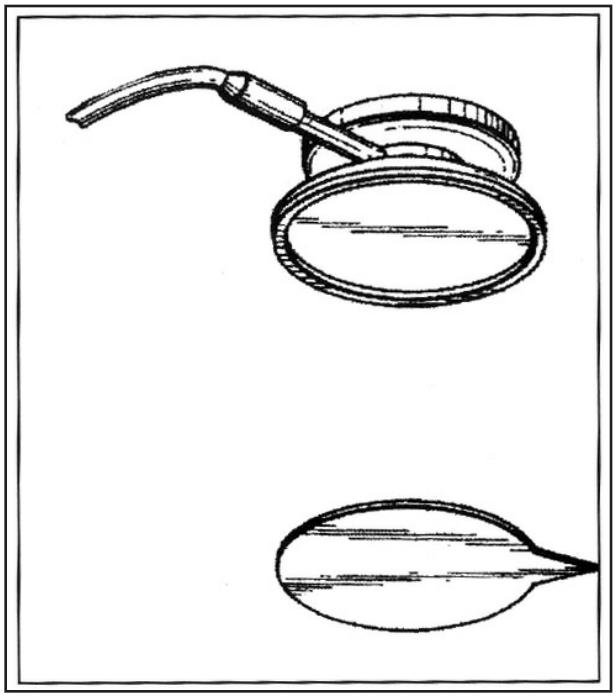

FIGURE. Single-use stethoscope cover.

These devices involve a disposable cover that is attached to the diaphragm of the stethoscope prior to examination of the patient. After obtaining the desired clinical information, the cover can be removed easily. Application and disposal of these devices take 3 to 5 seconds. Because disposable stethoscopes are unrealistic, we believe these covers are a good alternative to disinfection procedures; but, as long as such covers are not available, meticulous disinfection of stethoscopes prior to use should be carried out.

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The author replies.

I agree with the comments made by Assadian and colleagues that my report illustrates that the stethoscope can be a vector for nosocomial transmission of microorganisms. Implementation of their suggestion, to use one of the commercially available single-use stethoscope covers, indeed could reduce this risk. This, of course, needs to be studied prospectively.

Assadian and colleagues also noted that the use of an individual stethoscope for each patient may make the caregiver a target of potential cross-infection via earpieces. We recently have demonstrated the potential for this phenomenon.[1] We studied the bacterial flora of 35 earpieces from stethoscopes used individually by nurses. Fifty-three isolates, 36 aerobic and 17 anaerobic, were recovered. The number of isolates per earpiece ranged from 14 to 204 (average 92). The predominant isolates were *Staphylococcus epidermidis* (16), *Propionibacterium acnes* (12), and *Staphylococcus aureus* (7). The suggestion of Assadian and colleagues to disinfect the diaphragm therefore should be expanded to dis-

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infect the earpiece in stethoscopes assigned to individual patients, also.

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Safety Butterfly Needles for Blood Drawing

To the Editor:

Despite safety recommendations, the increased availability of personal protective equipment, and the implementation of improved disposal systems, high-risk needlestick injuries continue to occur in unacceptably high numbers in healthcare settings.[1]

Design features of needle devices are relevant to their high injury risk. For example, butterfly-type devices with needle-shielding features to protect against needlestick injuries showed a 25% reduction in needlesticks in a clinical trial.[2] Any other risk-reducing design enhancements that can be incorporated into butterfly-type devices should be promoted and evaluated, particularly those intended for blood drawing, because of their disproportionate involvement in the transmission of bloodborne pathogens.

In a recent study on device-specific sharps injuries among healthcare workers, of all hollow-bore needles, conventional butterfly needles were associated with the highest injury rate per 100,000 devices used.[3] This finding is consistent with the high rate of injury from butterfly-type needles documented in the Italian study on occupational risk of human immunodeficiency virus (HIV) that we reported previously.[4]

Since 1994, our data collection has been expanded to include all occupational exposures, regardless of source patient status, using the Exposure Prevention Information Network surveillance system.[5] Of a total of 7,240 percutaneous injuries reported through December 31, 1996, 2,079 (29%) injuries were caused by butterfly-type needles. Our data show that more high-risk injuries (those involving blood-filled hollow-bore needles) are caused by butterfly-type needles than by any other device.[1,4]

Butterfly-type needles are notorious for producing the "cobra effect" against users when the spiral tubing recoils during disassembly and disposal. This is due to the length of the tubing and the fact that it is wound in a tight coil in its package. Although butterfly-type needles were designed primarily for intravenous therapy, they are used primarily for blood drawing. In the above-mentioned study, the highest use of butterfly-type needles was among laboratory phlebotomists. Similarly, in 569 (27%) butterfly-related needlesticks reported in the Italian Study on Occupational Risk of HIV—Exposure Prevention Information Network study, the device was used to draw blood, and 176 (31%) of these incidents occurred while putting the butterfly into a disposal container.

These data demonstrate that, in relation to current practice, butterfly-type devices frequently are used for blood drawing, a different procedure than that for which they were designed. We suggest that butterfly-type devices intended for blood drawing should have only a short length of tubing and that the tubing should not be packaged in coils. The effectiveness of these kinds of devices should be evaluated.

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Vancomycin Use and Monitoring in Pediatric Patients in a Community Hospital

To the Editor:

Before 1988, resistance to vancomycin was rare in gram-positive bacteria. An increase in infection and colonization with vancomycin-resistant enterococci was reported after 1989,[1] and the Centers for Disease Control and Prevention (CDC) issued guidelines in 1995 recommending that vancomycin be used to treat only serious infections caused by β-lactam–resistant gram-positive cocci or used in patients with serious allergies to β-lactams.[2] We investigated patterns of vancomycin use in pediatric patients at our institution in reference to CDC guidelines.

In this retrospective study, information was abstracted from the vancomycin dispensing log of the pharmacy department on all patients age 18 and younger (patients admitted to the neonatal intensive-care unit were excluded) who received vancomycin between January 1, 1994, and December 31, 1995. Patient's age, admitting diagnosis or symptoms and signs, accompanying illness, location, duration of vancomycin therapy, other antibiotics used, number of serum vancomycin levels obtained, monitoring of blood urea nitrogen and creatinine, number of vancomycin dosages adjusted, development of any adverse reactions, and type, results, and susceptibilities of bacterial cultures were recorded.

During the study period, there were 6,239 admissions, of whom 80 (1.3%) received either parenteral (77

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