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In Reply:—Swygert *et al.* correctly state that syringes may become contaminated, especially when aseptic techniques are not employed after the first use. The report by Blogg *et al.*[1] showed that contents in all of the glass syringes and in at least 50% of the plastic syringes were contaminated after refill.

Sherry points out that syringes should never be refilled because refilling increases stiction. However, he states that this problem does not always occur because the breakdown of lubricant is erratic. The pump malfunction experienced by the authors[2] was not secondary to increased stiction, since the pump should have alarmed earlier, according to Sherry's proposal. The malfunction was due to an inherent flaw in the machine. On several occasions when intravenous anesthetic was not delivered to the patient, no alarm sounded and the pump's digital meter indicated that the solution was given.

I agree that a new syringe for propofol infusion should be used especially if cases are prolonged. However, two recent surveys of anesthesia personnel showed that aseptic techniques and infection control frequently are not implemented during anesthesia,[3,4] and that 48–90% of respondents in the survey reused syringes to administer drugs to multiple patients. Clearly, the use of new syringes only is not practiced in many centers. In cases in which syringes are reused, a condom cover over the plunger helps to maintain asepsis. A cover similar to that used with the 10-ml syringe (Abbott Critical Care Systems, North Chicago, IL) for injecting solution while thermodilution measurements of cardiac outputs are being performed is effective. Moreover, as pointed out in the recent report,* aseptic techniques were not observed during preparation of propofol for use during infusion. In one case, the same organism was isolated from the wound of the patient and from the throat culture of the implicated anesthesiologist.

I also agree that the same syringe should not be used with multiple patients. In our methodology,[2] the syringe used for refilling may be discarded after each use. Careful manipulation of the parent syringe's plunger, with sterile gloves, prevents contamination of the barrel. In the system described by Mangar *et al.*,[2] compliance with proper sterile techniques should result in less contact contamination and should increase the efficacy of treatment. Syringes prefilled with anesthetic agents, condom-covered syringe plungers, and the changing of syringes after each use may facilitate asepsis. However, of utmost importance are sterile techniques to avoid contamination of intravenous agents.

DEVANAND MANGAR, M.D.
Instructor of Anesthesiology
Department of Anesthesiology
University of South Florida
Box 59
12901 Bruce B. Downs Boulevard
Tampa, Florida 33612-4799

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Proposed New Alarm Standards May Make a Bad Situation Worse

To the Editor:—A committee to establish a specification for electrically generated alarms and signals for use on medical equipment in Europe (CEN/TC 259) is considering mandating specific types of alarm sounds for all medical equipment. The alarm sounds most likely to be adopted by the European standard are the so-called "Patterson sounds." Dr. Patterson described a series of general and context-specific alarm tones for use in civil aviation.* These tones have been modified for the medical environment and consist of well-defined, complex sequences of tones producing distinctive auditory signatures. There are three "general" alarm sounds of increasing complexity for advisory, caution, and warning. Six "specialized" alarm categories have been defined (ventilation, oxygenation, cardiovascular, artificial perfusion, drug administration, and temperature), each with its own unique auditory signature. For each category, both a caution alarm and a warning alarm are specified. One piece of medical equipment currently available in North America that incorporates Patterson alarm sounds is the Fisher-Pakel humidifier. (To hear a recording of sample Patterson alarm tones, dial (608) 221-1551, extension 3603.)

The use of the Patterson sounds in anesthesia remains controversial. Recent committees of both American (American Society for Testing and Materials [ASTM] F29.03.04) and international standards organizations (ISO/TC 121/SC3/WG1) failed to reach a consensus on alarm tone standards for medical monitoring equipment. Monitoring equipment manufacturers have stated that they may be required to design their equipment to comply with the European standards in order to sell their products in that market. This may result in a *de facto* international alarms standard.

The studies resulting in the development of the Patterson sounds are now more than 10 yr old and may not be applicable to the operating room (OR) setting, especially given recent advances in monitoring devices and technology. To establish strict alarm standards for medical devices based on the Patterson approach may be undesirable at this time because to do so may stifle innovation in alarm technology. The requirements for alarm annunciation for general operating room broadcast may be significantly different from those used in a personal (ear-piece) audio system. More importantly, the use of Patterson alarms in individual (nonintegrated) devices will certainly worsen existing problems of noise and stress in the OR environment. The cockpit of an airplane is a different workspace than an OR, and the task of flying an airplane is not entirely analogous to that of administering anesthesia. In the cockpit, only the flight crew must listen and attend to alarms. In the OR, surgeons and nurses are a captive audience who find extraneous sounds disturbing and without obvious meaning. Scientific studies must be performed to evaluate the impact of different alarm