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Contamination of syringes

To the Editor:

The recent article by Lessard *et al.* showed the risk to the patient of bacterial contamination with multiple use of syringes to be negligible but emphasized the risks from viral contamination.¹ A questionnaire was distributed to all members of anaesthesia departments of the Universities of Pittsburgh and Michigan in the general adult, paediatric and obstetric divisions (five hospitals total) to quantitate the frequency of common syringe techniques. Anonymous responses were collected and evaluated from 139 personnel: 48 anaesthetists, 48 CRNAs, 31 residents and 12 student CRNAs. Respondents indicated that they routinely, frequently, rarely or never used common syringe techniques 30.9, 41.7, 17 and 10 per cent of the time, respectively. Almost all personnel (98 per cent) reuse multiple dose vials opened by unknown persons and 75 per cent refill common syringes from multi-dose vials without discarding them subsequently. Common syringes were used by 18 per cent, when blood products were given through the IV line.

In the 1950's it was recognized that reusing common syringes on multiple patients could transmit diseases and that changing needles was quite ineffective in lowering the danger of crossinfection.^{2,3} During needle removal from the syringe, the needle contents are aspirated up to the syringe tip before the air lock is broken at the needle hub. The lumen of intravenous lines is frequently and occultly contaminated with blood and 10^{-7} to 10^{-9} ml of blood can transmit hepatitis.^{4,5} The reuse of these needles or syringes clearly presents a danger to patients and the

health care providers themselves, who may acquire hepatitis from them during use or recapping. The contamination of IV tubing can only be excluded when the IV is started and continuously observed and manipulated by one person alone. Hepatitis is transmitted via transfusion and/or operation as independent factors: 3.3 per cent of non-transfused patients acquire hepatitis from unknown sources versus 5.6 per cent of transfused patients.⁶⁻⁹

Viral transmission may additionally occur when using multi-dose vials in conjunction with common syringe techniques. Hepatitis virus is stable on dry surfaces for one week and may survive longer in suitable aqueous states.¹⁰ Bacteriological studies of multi-dose vials or syringes are not useful in documenting contamination, as contained bacteriostatic agents rapidly eliminate bacteria.¹¹ There is no evidence that bacteriostatic agents will destroy all introduced pathogenic virus and manufacturers recommend that only sterile equipment is used to enter multidose vials.

Although high rates of common syringe technique utilization may not be encountered in all institutions, widespread practice is likely, in spite of recommendations to the contrary.¹² These techniques violate guidelines which exist to protect hospital workers from exposure to blood-borne infections.^{13,14} The Center for Disease Control, however, has no specific policy regarding common syringes. Universal precautions guidelines are apparently needed to preclude nosocomial infection of patients.

Until research proves that the use of common syringe techniques is safe they should be abandoned.

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REPLY

We were very interested by the survey Dr. Kempen conducted on the prevalence of the use of a common syringe technique. The high percentage of practitioners who use this technique was no surprise to us. Indeed, an informal survey had showed us that this practice is also very frequent in Canada. We agree on most of the points raised by Dr. Kempen. However, we feel that there is a serious lack of data on the incidence of IV contamination by blood in the operating room setting. Further studies are needed to provide objective data on this occurrence and the factors altering it.

We agree with Dr. Kempen that guidelines on this issue should be proposed. However, research should be directed toward the identification and quantification of the risk of disease transmission involved. Such studies would allow both the CAS and the ASA to propose guidelines that would be both scientifically and ethically sound.

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A portable anaesthetic monitoring trolley for labour room placement of epidurals

In obstetrics, the placement of an epidural catheter and the institution of epidural anaesthesia for labour requires an appropriate level of patient monitoring and the ready availability of resuscitation equipment.¹ At our institution, the rooms in which the patients labour were not designed for special procedures and lack appropriate lighting, monitoring equipment and storage space which are necessary to safely begin an epidural anaesthetic. Until recently, we have moved labouring patients across to one of our operating/delivery rooms for the placement of the epidural catheter and the initial local anaesthetic injection. Whereas this arrangement provides the best environment for the anaesthetist to monitor and manage the patient, the transfer of a patient is disruptive during her labour and an inefficient use of nursing staff.

To enable us to place epidural catheters safely and begin epidural anaesthesia in the labour rooms, we have developed a portable epidural anaesthetic trolley which combines maternal monitoring equipment, a light source, epidural placement supplies and resuscitation drugs and equipment together on a mobile trolley.

The trolley is a standard four-drawer anaesthetic cart measuring 20 inches wide, 18 inches deep, and 34 inches high (Figure). We have mounted a pulse oximeter (Nellcor® N100, Nellcor Incorporated, Hayward, California) and an automatic blood pressure cuff (Critikon® Dinamap 1846P, Critikon Corporation, Tampa, Florida) to the table and equipped it with a medically approved multiple electrical outlet power bar. An articulated incandescent/fluorescent light source is also permanently mounted to the table top.

The trolley is stocked with epidural trays, local anaesthetic solutions and supplies for beginning intravenous infusions. Masks, caps and sterile gloves are stocked for the sterile procedure. Resuscitation/intubation drugs and equipment are stored in the drawers and are prepared three times a week, ready for immediate use.

All labour rooms have independent oxygen and suction sources as well as oral airways, a resuscitation bag and mask. These are maintained at an appropriate level of readiness. Beds in these rooms are all capable of leg-elevation and Trendelenburg positioning and have removable headboards.

When patients request epidural anaesthesia, the trolley is moved to the patient's bedside and monitors are attached. Epidural anaesthesia can then be performed safely with the same degree of patient monitoring and