Letters to the Editor

Needleless Intravenous Systems

To the Editor:

L'Ecuyer et al[1] reported in the December issue of this journal that, despite the introduction of needleless intravenous systems, needlestick injuries continued to occur, leaving the risk of bloodborne pathogen transmission merely unchanged. Certainly, their study is a valuable addition to a great number of investigations published between 1993 and today on the safety, cost-effectiveness, and handling of needleless devices, but we strongly argue their conclusion that further studies of these devices are needed, especially if they do not include patient safety aspects.

Needleless and needle-safe devices certainly will become a part of modern health care, and we assume that they will prove to reduce needlestick injuries, to be cost-effective, and to be safe when correctly introduced in the hospital. Implementation should include training sessions with regard to the handling, efforts to influence healthcare worker (HCW) behavior, and probably a limitation of indications.

Our concern regarding the needleless systems that were constructed solely to reduce the need for needles when gaining intravenous access is that they are additionally promoted as "closed" intravenous systems, suggesting an efficacy to prevent device-related bloodstream infections. In some HCWs, this has led to the belief that aseptic measures taken during intravenous catheter care are unnecessary or at least less stringent. In our opinion, the question remains whether the mechanical mechanisms and membranes of the different needleless systems are impermeable to microorganisms, even after extended use.

Interestingly, hardly any evaluation of these devices included patient safety. So far, only one study is published that carefully evaluated bloodstream infections associated with the use of needleless intravenous devices. Danzig et al[2] suggested that, if used in patients receiving home infusion therapy, the risk of bloodstream infection increases. Furthermore, studies presented at the Annual Meeting of the Society for Healthcare Epidemiology of America and the Interscience Conference on Antimicrobial Agents and Chemotherapy in 1994 and 1995 indicated increased infection risks, but these studies have not been published. It is unclear whether the increased infection rates are due to the construction of the devices (which might need a cap to protect the infusion system from the invasion of bacteria) or due to incorrect use. Regardless of the reasons, needleless devices should not be used routinely in hospitals until the patient's safety is proven convincingly. Taking into account the increasing number of different needleless devices with the need to be sold and (at least in our country) the growing urge of consumers who wish to use these devices, we should stimulate colleagues to study (and furthermore to publish their results regarding) the patient safety of these devices to determine definitively whether we are dealing with "needleless or needless" systems.

REFERENCES

1. L'Ecuyer PB, Schwab EO, Iademarco E, Barr N, Aton EA, Fraser VJ. Randomized prospective study of the impact of three needleless intravenous systems on needlestick injury rates. *Infect Control Hosp Epidemiol* 1996;17:803-808.
2. Danzig LE, Short LJ, Collins K. Bloodstream infections associated with a needleless intravenous infusion system in patients receiving home infusion therapy. *JAMA* 1995;273:1862-1864.

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The authors reply

We appreciate the letter of Drs. Voss and Verweij on behalf of the Working Party of Hospital Infection Epidemiology of The Netherlands concerning our study of the impact of three needleless intravenous systems on needlestick injury rates. Voss and Verweij outline two major and related concerns with needleless intravenous systems: (1) promotion of needleless systems as "closed" systems may encourage a decline in the aseptic measures used by healthcare workers with these devices, resulting in higher rates of device-associated bloodstream infections; and (2) inadequate attention has been paid to patient safety in needleless device evaluations.

Certainly, healthcare workers should not ignore routine aseptic measures when using safety devices. We did not observe this problem directly. However, despite educational efforts, we found employees inappropriately rigging needleless devices with other traditional devices, which may have an impact on rates of device-associated bacteremia. Intensive and ongoing education of employees is needed to ensure optimal device use.

We agree that additional studies of needleless devices must incorporate stringent evaluations of device safety, but we feel additional studies of efficacy, cost-effectiveness, and customer satisfaction are needed equally, because few epidemiologically sound studies have been published concerning the majority of the several hundred needleless products available. Needleless devices cannot be evaluated as a homogenous group, because device efficacy and cost-effectiveness (ie, risk-benefit ratio) will vary by the risk level of the activity (eg, low-risk infusion therapy versus high-risk phlebotomy). While these devices may "certainly become a part of modern healthcare," we are not yet convinced that they all will "reduce needlestick injuries, be cost-effective, and be safe" in all areas of the hospital.

Aggressive education and intensive monitoring did not prevent multiple employees from inappropriately rigging needleless devices with traditional devices or from obtaining nee-

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dled devices from other hospital areas, resulting in continued needlestick injuries. Many of the new devices are expensive, and it is not clear that they will be cost-effective in all areas of the hospital. Careful evaluation and implementation of safety devices for specific intermediate-risk and high-risk functions (eg, safe phlebotomy devices, safe intravenous catheter devices) should be a more cost-effective approach.

Devices adopted for use must have the best overall efficacy, cost-effectiveness, safety, and customer satisfaction profile. Ideally, a failure of any of these conditions should result in rejection of the device.

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NIOSH Publishes Latex Allergy Alert

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The National Institute for Occupational Safety and Health (NIOSH) recently published an "Alert on Preventing Allergic Reactions to Natural Rubber Latex in the Workplace." This alert was developed in response to the increase in recent years of reports of allergic reactions to natural rubber latex among workers who use gloves and other products containing latex. Latex gloves have proved effective in preventing transmission of many infectious diseases to healthcare workers; however, for some workers, exposures to latex may result in skin rashes; hives; flushing; itching; nasal, eye, or sinus symptoms; asthma; and (rarely) shock.

At present, scientific data are incomplete regarding the natural history of latex allergy. Also, improvements are needed in methods used to measure proteins causing latex allergy. This alert presents the existing data and describes six case reports of workers who developed latex allergy. The document also presents NIOSH recommendations for minimizing latex-related health problems in workers while protecting them from infectious materials. These recommendations include reducing exposures, using appropriate work practices, training and educating workers, monitoring symptoms, and substituting nonlatex products when appropriate.

NIOSH requests that employers, owners, editors of trade journals, safety and health officials, and labor unions bring the recommendations in this alert to the attention of all workers who may be exposed to latex. Copies of this document (NIOSH Alert: Preventing Allergic Reactions to Natural Rubber Latex in the Workplace: DHHS [NIOSH] Pub No. 97-135) may be obtained from NIOSH, 4676 Columbia Pkwy, Cincinnati, OH 45226-1998; fax, 513-533-8573; telephone, 800-356-4674.

Correction

High Frequency of Pseudobacteremia at a University Hospital

A reference was cited incorrectly in the Concise Communication "High Frequency of Pseudobacteremia at a University Hospital" (1997;18:200-202). Reference 10 should have cited *Ann Intern Med,* not *Arch Intern Med,* as the source: Bates DW, Cook EF, Goldman L, Lee TH. Predicting bacteremia in hospitalized patients. *Ann Intern Med* 1990; 113:495-500. We apologize for any inconvenience the error may have caused.

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