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Nosocomial Hepatitis B Outbreak Despite New Design of Finger-Stick Device

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Finger-stick devices are used widely for capillary-blood sampling for glucose monitoring in patients with diabetes. The CDC recently reported two outbreaks of hepatitis B virus (HBV) infection, involving four patients in an Ohio nursing home and three inpatients in a New York City hospital, respectively. In both outbreaks, HBV transmission was associated with the use on multiple patients of spring-loaded finger-stick devices. In one outbreak, the lack of glove change between patients may have played a role in transmission of HBV.

The Ohio nursing home routinely used the Monojector AE (Sherwood-Davis and Geck, St Louis, MO), a pen-like device with a lancet and an end cap that rests on the patient's finger during blood sampling. Nursing personnel routinely changed the lancet between residents, but, after the initial supply of end caps for each device had been used, end caps no longer were changed. It is believed that the end cap, which rests on the finger during blood sampling, can be contaminated with blood after the lancet pierces the skin.

The package insert for this device indicates that both the lancet and end cap should be replaced after each use.

The fact that these end caps were not changed routinely suggests that HBV transmission occurred through exposure of subsequent patients to residual blood on the end caps.

After recognition of this outbreak and implementation of individual finger-stick devices for each patient, no additional cases were detected.

Finger-sticks at the New York City hospital were performed with the Glucolet AE 2 (distributed by Miles Elkhart Inc, Elkhart, IN), a pen-like device with a disposable lancet and end cap assembly. The lancet was changed after each finger stick, but the pen-like lancet-holding device was used for multiple patients. Finger sticks usually were performed by nursing staff who started at one end of the ward and moved from room to room. Improper use of the finger-stick device (eg, reusing disposable parts) was not reported by the nursing staff; however, nursing reported observing that hands were not always washed nor gloves changed between patients and that used lancet caps were placed in the same box as unused lancet caps. Although the combined lancet and end cap assembly was changed after each patient use, the pen-like lancet-holding device, which was shared and not cleaned between patients, may have served as a vehicle for transmission. Transmission also may have occurred via blood contam-

ination of the nurses' gloves or unused lancet caps. After implementation of a completely disposable, non-reusable finger-stick device, routine handwashing, and glove changing after contact with each patient, no additional cases have been identified.

Outbreaks of HBV infection associated with the use of spring-loaded finger-stick devices on multiple patients have been reported in the United States and elsewhere. Various designs of these devices are cleared by the FDA, but all of them function similarly. After an outbreak in a hospital in California involving 26 patients, the CDC and the FDA issued recommendations for the safe use of spring-loaded finger-stick devices, including, optimally, using a separate device for each patient. The results of these investigations reemphasize the need to restrict use of finger-stick capillary-blood sampling devices to individual patients and to discard used parts appropriately. In addition, when medical procedures are performed on multiple patients, gloves should be changed after contact with each patient.

FROM: Centers for Disease Control and Prevention. Nosocomial hepatitis B virus infection associated with reusable fingerstick blood sampling devices—Ohio and New York City, 1996. *MMWR* 1997;46(10):217-221.