

Eliminating the Blood: Ongoing Outbreaks of Hepatitis B Virus Infection and the Need for Innovative Glucose Monitoring Technologies

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Abstract

Background:

As part of routine diabetes care, capillary blood is typically sampled using a finger-stick device and then tested using a handheld blood glucose meter. In settings where multiple persons require assistance with blood glucose monitoring, opportunities for bloodborne pathogen transmission may exist.

Methods:

Reports of hepatitis B virus (HBV) infection outbreaks in the United States that have been attributed to blood glucose monitoring practices were reviewed and summarized.

Results:

Since 1990, state and local health departments investigated 18 HBV infection outbreaks, 15 (83%) in the past 10 years, that were associated with the improper use of blood glucose monitoring equipment. At least 147 persons acquired HBV infection during these outbreaks, 6 (4.1%) of whom died from complications of acute HBV infection. Outbreaks appear to have become more frequent in the past decade, primarily affecting long-term care residents with diabetes. Each outbreak was attributed to glucose monitoring practices that exposed HBV-susceptible persons to blood-contaminated equipment that was previously used on HBV-infected persons. The predominant unsafe practices were the use of spring-loaded finger-stick devices on multiple persons and the sharing of blood glucose testing meters without cleaning and disinfection between uses.

Conclusion:

Hepatitis B virus infection outbreaks associated with blood glucose monitoring have occurred with increasing regularity in the United States and may represent a growing but under-recognized problem. Advances in technology, such as the development of blood glucose testing meters that can withstand frequent disinfection and noninvasive glucose monitoring methods, will likely prove useful in improving patient safety.

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Abbreviations: (CDC) Centers for Disease Control and Prevention, (HBV) hepatitis B virus, (HCV) hepatitis C virus, (HIV) human immunodeficiency virus, (LTC) long-term care

Keywords: bloodborne virus, blood glucose monitoring, diabetes, hepatitis B virus, prevention, transmission

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