Infection Prevention during Blood Glucose Monitoring and Insulin Administration

Summary

The Centers for Disease Control and Prevention (CDC) has become increasingly concerned about the risks for transmitting hepatitis B virus (HBV) and other infectious diseases during assisted blood glucose (blood sugar) monitoring and insulin administration. CDC is alerting all persons who assist others with blood glucose monitoring and/or insulin administration of the following infection control requirements:

1. Fingerstick devices should **never** be used for more than one person
2. Whenever possible, blood glucose meters should **not** be shared. If they must be shared, the device should be cleaned and disinfected after every use, per manufacturer's instructions. If the manufacturer does not specify how the device should be cleaned and disinfected then it should not be shared.
3. Insulin pens and other medication cartridges and syringes are for single-patient-use only and should **never** be used for more than one person

Blood Glucose Monitoring and Insulin Administration

Monitoring of blood glucose levels is frequently performed to guide therapy for persons with diabetes. Blood glucose monitoring and insulin administration can be accomplished in two ways: *self-monitoring of blood glucose and insulin administration*, where the individual performs all steps of the testing and insulin administration themselves, and *assisted monitoring of blood glucose and insulin administration*, where another person assists with or performs testing and insulin administration for an individual.

Examples of settings where *assisted monitoring of blood glucose and insulin administration* may occur include:

- Hospitals or clinics
- Long term care settings such as nursing homes and assisted living facilities
- Senior centers
- Health fairs
- Correctional facilities
- Schools or camps

Unsafe Practices during Blood Glucose Monitoring and Insulin Administration

An underappreciated risk of blood glucose testing is the opportunity for exposure to bloodborne viruses (HBV, hepatitis C virus, and HIV) through contaminated equipment and supplies if devices used for testing and/or insulin administration (e.g., blood glucose meters, fingerstick devices, insulin pens) are shared.

Outbreaks of hepatitis B virus (HBV) infection associated with blood glucose monitoring have been identified with increasing regularity, particularly in long-term care settings, such as nursing homes and assisted living facilities, where residents often require assistance with monitoring of blood glucose levels and/or insulin administration.

Unsafe practices during assisted monitoring of blood glucose and insulin administration that have contributed to transmission of HBV or have put persons at risk for infection include:

- Using fingerstick devices for more than one person
- Using a blood glucose meter for more than one person without cleaning and disinfecting it in between uses
- Using insulin pens for more than one person
- Failing to change gloves and perform hand hygiene between fingerstick procedures

Best Practices for Assisted Blood Glucose Monitoring and Insulin Administration

The following are infection control recommendations that anyone who performs or assists with blood glucose monitoring and /or insulin administration should review to assure they are not placing themselves or persons in their care at risk.

Fingerstick Devices

Fingerstick devices are devices that are used to prick the skin and obtain drops of blood for testing. There are two main types of fingerstick devices: those that are designed for reuse on a single person and those that are disposable and for single-use.

- **Reusable Devices:** These devices often resemble a pen and have the means to remove and replace the lancet after each use, allowing the device to be used more than once. Some of these devices have been previously approved and marketed for multi-patient use, and require the lancet and disposable components (platforms or endcaps) to be changed between each patient. However, due to failures to change the disposable components, difficulties with cleaning and disinfection after use, and their link to multiple HBV infection outbreaks, CDC recommends that these devices **never** be used for more than one person. If these devices are used, it should only be by individual persons using these devices for self-monitoring of blood glucose.

- **Single-use, auto-disabling fingerstick devices:** These are devices that are disposable and prevent reuse through an auto-disabling feature. In settings where assisted monitoring of blood glucose is performed, single-use, auto-disabling fingerstick devices should be used.

Fingerstick devices should <u>never be used</u> for more than one person.

Blood Glucose Meters

- Whenever possible, **<u>blood glucose meters should be assigned to an individual person</u>** and not be shared.
- If blood glucose meters must be shared, the device should be cleaned and disinfected after every use, per manufacturer's instructions, to prevent carry-over of blood and infectious agents. If the manufacturer does not specify how the device should be cleaned and disinfected then it should not be shared.

If shared, blood glucose meters should be cleaned and disinfected after every use.

Insulin Administration

Insulin can be administered using an insulin pen that is designed for reuse on a single patient. It can also be administered using a needle and syringe after drawing up contents from an insulin vial.

- **Insulin Pens:** Insulin pens are pen-shaped injector devices for insulin that are intended for use by a single person. The pens have an insulin reservoir, or an insulin cartridge, that usually contains enough insulin for an individual to self-administer several doses (injections) of insulin before the reservoir or cartridge is empty. The individual changes the needle before each insulin injection. Insulin pens are designed to be safe for a single person to use a single pen multiple times, with a new needle for each injection.

- **Insulin pens should be assigned to individual persons** and labeled appropriately. They should **never** be used for more than one person.

- **Insulin Vials:** Multi-dose vials of insulin should be dedicated to a single person whenever possible. If the vial must be used for more than one person it should be stored and prepared in a dedicated medication preparation area outside of the patient care environment and away from potentially contaminated equipment. Insulin vials should always be entered with a new needle and new syringe. Needles and syringes should **never** be used to administer insulin to more than one person and should be disposed of immediately after use in an approved sharps container.

Injection equipment (e.g., insulin pens, needles and syringes) should never be used for more than one person

References

For more information regarding bloodborne pathogen transmission associated with unsafe practices during assisted monitoring of blood glucose, consult the following resources.

Centers for Disease Control and Prevention. Nosocomial hepatitis B virus associated with spring-loaded fingerstick blood sampling devices – Ohio and New York City, 1996. *MMWR* 1997;46:217-221.

Centers for Disease Control and Prevention. Transmission of hepatitis B virus among persons undergoing blood glucose monitoring in long-term-care facilities–Mississippi, North Carolina, and Los Angeles County, California, 2003-2004. *MMWR* 2005;54:220-223.

Counard CC, Perz JF, Linchancgo PC, et al. Acute hepatitis B outbreaks related to fingerstick blood glucose monitoring in two assisted living facilities. *J Am Geriatric Soc* 2010;58:306-311.

Khan AJ, Cotter SM, Schulz B, et al. Nosocomial transmission of hepatitis B virus infection among residents with diabetes in a skilled nursing facility. *Infect Control Hosp Epidemiol* 2002;23:313-318.

Klonoff DC, Perz JF. Assisted Monitoring of Blood Glucose: Special Safety Needs for a New Paradigm in Testing Glucose. *J Diabetes Sci Technol* 2010;4(5):1027-1031

Patel AS, White-Comstock MB, Woolard D, Perz JF. Infection Control Practices in Assisted Living Facilities: A Response to Hepatitis B Virus Infection Outbreaks. *Infect Control Hosp Epidemiol* 2009;30:209-214.

Polish LB, Shapiro CN, Bauer F, Klotz P, Ginier P, Roberto RR, Margolis HS, Alter MJ. Nosocomial transmission of hepatitis B virus associated with a spring-loaded finger-stick device. *N Engl J Med* 1992;326(11):721–5.

Quale JM, Landman D, Wallace B, Atwood E, Ditore V, Frucher G. Deja vu: nosocomial hepatitis B virus transmission and fingerstick monitoring. *Am J Med* 1998;105(4):296–301.

Southwick KL, Clement EJ, Konings F, VanZetta S, Johnson GS, Schaffzin JK. Cluster of hepatitis B infection among residents of an assisted living facility–New York, 2007. In Final Program and Abstracts. Sixth International Conference on Emerging Infectious Diseases. Atlanta, GA. March 16-19, 2008.

Thompson ND, Barry V, Alelis K, Gui D, Perz JF. Evaluation of the Potential for Bloodborne Pathogen Transmission Associated with Diabetes Care Practices in Nursing Homes and Assisted Living Facilities, Pinellas County. *JAGS* 2010;58:914-918.

Thompson ND, Perz JF. Eliminating the Blood: Ongoing Outbreaks of Hepatitis B Virus Infection and the Need for Innovative Glucose Monitoring Techniques. [PDF 445 KB] *J Diabetes Sci Tehnol* 2009;3(2):283-288.

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