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Method precision and frequent causes of errors in point-of-care glucose testing

Point-of-care glucose testing was developed for the self-monitoring of blood glucose by diabetic patients taking subcutaneous insulin. It has since expanded into the tertiary care setting and is often used interchangeably with blood glucose values. Therefore, accuracy in point-of-care (POC) testing is important, and understanding error rates and method imprecision is critical for the quality assurance of POC glucose testing programs. The authors conducted a study in which they assessed method imprecision, error rates, and explanatory causes that were identified in the Institute for Quality Management in Healthcare POC glucose proficiency testing (PT) program and compared them with results from laboratory glucose PT. They compared POC and laboratory glucose PT data from September 2009 to June 2011. The authors concluded that POC glucose coefficients of variation (CVs) were higher than laboratory method CVs (median CV, 4.5 and 1.6 percent, respectively). Furthermore, 0.59 percent of the POC glucose results exceeded limits, while all laboratory glucose results were within performance limits. The majority of discordant findings were due to pre- and postanalytical errors, including using wrong PT items, sample mixup on the bench, and reporting results for the wrong sample. Only 21 percent of the discordant findings were due to manufacturer issues. The authors concluded that method CVs and error rates were higher in POC than in laboratory glucose methods. They noted that the imprecision found with POC glucose measurements is likely due to the less stringent performance criteria permitted for POC testing. They also suggested that the increased number of error rates may be due to the varying levels of training and experience of the users of the POC system compared with laboratory personnel.

A slan B, Stemp J, Yip P, et al. Method precision and frequent causes of errors observed in point-of-care glucose testing. *Am J Clin Pathol.* 2014;142:857–863.

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Safety considerations for testing specimens suspected or known to contain Ebola virus

The treatment of Ebola virus disease first requires that plans be put in place to evaluate and contain patients suspected of having the disease. Laboratorians must be prepared to accept and test specimens from patients with suspected or confirmed Ebola virus disease (EVD). The CDC published guidelines that recommended that laboratories assess the potential for splashes, sprays, or aerosols generated by lab procedures involving these specimens and adjust their work practices, safety equipment, and personal protective equipment accordingly to provide a safe environment. The authors reviewed a risk assessment that was performed within their laboratories and that was focused on the potential for microdroplet or aerosol generation. In a previous assessment, the authors noted that core laboratories in which chemistry and hematologic testing takes place do not have facilities

that can safely handle EBV specimens. This is due to the processing of open tubes without a biosafety level-three cabinet, centrifugation without sealed rotors or safety cups, and a lack of available personal protective equipment. The authors identified contact with mucous membranes and eyes as the primary safety risk. They determined that only closed manual or automated chemistry and hematology analyzers were considered safe for testing blood containing specimens with potential EBV. The authors present a test menu for assays that can be done safely in the patient care biocontainment unit using POC instruments, the biosafety level-three laboratory, or the core laboratory. The authors concluded that this proposed test menu for EBV patient testing may be useful in tertiary medical centers to provide a baseline for further discussion.

Iwen PC, Smith PW, Hewlett AL, et al. Safety considerations in the laboratory testing of specimens suspected or known to contain Ebola virus. *Am J Clin Pathol.* 2015;143:4–5.

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