COMMENTS AND RESPONSES

Glucose Measurement: Confounding Issues in Setting Targets for Inpatient Management

Response to Mahoney and Ellison

We thank Mahoney and Ellison (1) for their interest in the study of glucose measurement in the hospital (2). We agree that not all devices using the same enzyme display the same degree of interference (3). Furthermore, the introduction of a third electrode does not always compensate for the interference (3). It is also true that some glucose oxidase devices show less oxygen dependence than others (4). Therefore, it is imperative that clinicians become familiar with the specifications of the individual point-of-care (POC) device used at their own institutions. Unfortunately, POC devices do not exclude unsuitable samples, and although the effect of each potential confounding variable is small, at a narrow therapeutic range the net result is clinically significant.

The major point stressed in the review with respect to systematic differences (i.e., specimen matrix and source) is that clinicians cannot always directly implement the same narrow therapeutic target glucose range used in large randomized studies unless they are using the same methodology. Glucose targets need to be adjusted for the type of methodology used. POC devices are not responsible for all systematic sources of error, particularly where venous or arterial samples are compared with central laboratory measurements. Capillary samples account for a substantial amount of the variability among POC devices, but capillary samples cannot be easily performed with central laboratory methods for comparison. However, POC devices do have a consistently larger coefficient of variation than central laboratory methods (5). Thus, POC devices should strive to meet the minimum standards set by the American Diabetes Association for total error (6).

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