

MEMORANDUM

 **METHODIST** The Pathology Center



February 12, 2016

Dear Providers,

Effective March 1st, 2016, The Pathology Center at Methodist and Women's Hospital will no longer offer serum and urine Acetone testing. The manufacturer has discontinued production of reagents.

Alternatively, the Pathology Center does offer a significant advancement in both analytic measurement and biologic assessment of ketosis and ketoacidosis by offering whole blood beta-hydroxybutyrate testing to assist with diagnosis and management of diabetic ketoacidosis (DKA).

Testing for BHB has been recommended by the National Academy of Clinical Biochemistry (NACB) (2), and is now strongly endorsed for DKA management in Guidelines from the UK (3). There are recommendations that base DKA therapy on blood BHB and serum glucose measurement; to help modulate insulin and other therapy in the face of recurring hyperglycemia or hypoglycemia during a DKA episode. (1, 3)

Ketosis, resulting from a variety of physiologic insults including diabetes, chemically represents increased blood and urine beta-hydroxybutyrate (BHB); much more than acetoacetate (the two major ketone moieties). There will be increased sensitivity to detect not only routine DKA, but also euglycemic DKA, which reportedly may occur in up to 10% of DKA episodes complicating pregnancy (1). Traditional chemical tests for ketones are insensitive to BHB, thus early ketosis may be missed by these assays.

ORDERING INFORMATION:

Test name: Beta Hydroxybutyrate, BHB

Specimen: heparinized whole blood

Stability: Testing is required within 30 minutes of collection

Availability: 24 hours per day/7 days a week

Reference Range: Less than 0.6 mmol/L (Abbott manufacturer literature) and (1)

Medical decision points for BHB approximate the following and vary throughout the references:

Diagnosis of DKA: > 3 mmol/L (1, 4) or >2 mmol/L (2), often >7 mmol/L when accompanied by other chemical findings of DKA (1)

Here are some other differences compared with (other, older) ketone tests:

- Use of traditional blood ketone testing to monitor treatment of DKA is discouraged. Non-BHB ketones, which are detected by traditional ketone testing, may actually increase as BHB decreases during successful DKA therapy. Discussed in (1, 2).
 - NACB discourages urine ketone testing.
 - At least one author suggests that decreased hospital stay, cost, and readmissions, with DKA, could be realized by proper use of BHB (1).
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REFERENCES:

1. Wallace TM, Matthews DR. Review: Recent advances in the monitoring & management of diabetic ketoacidosis. Q J Med 2004;97:773-780.
2. National Academy of Clinical Biochemistry: Guidelines & Recommendations for Analysis in the Diagnosis & Management of Diabetes Mellitus. 2011. Edited by David B. Sacks, M.D., Ph D. <http://www.aacc.org/members/nacb/LMPG/OnlineGuide/PublishedGuidelines/diabetesupdate/Documents/DiabetesEntireLMPG.pdf>
3. Joint British Diabetes Societies Inpatient Care Group. The Management of Diabetic Ketoacidosis in Adults, March 2010, NHS. <http://www.nelm.nhs.uk/en/NeLM-Area/News/2010---April/07/Joint-British-Diabetes-Societies-Inpatient-Care-Groupguidance-on-the-management-of-diabetic-ketoacidosis/>
4. Sheikh-Ali J, Karon BS, et al. Can serum betahydroxybutyrate be used to diagnose diabetic ketoacidosis? Diabetes Care 2008;31:643-7.

QUESTIONS: Contact Tom Williams, M.D., 402-354-4541

Please feel free to contact our Client Services Department at 402-354-4541.

Sincerely,

Methodist Hospital Pathology Center
