Whole Blood Ketones at PCH

February 2, 2022

This information applies to: *PCH Physicians and Nursing*

Ketone bodies are products of fat metabolism and include acetone, acetoacetate, and beta-hydroxybutyrate. Ketone production is an acid-producing process, and so excessive ketone production such as in poorly controlled diabetes mellitus, starvation, and alcoholism can led to 'ketoacidosis'. Rapid identification of ketoacidosis and its underlying etiology is critical for timely management.

Acetoacetate and acetone are routinely measured with urine dipsticks impregnated with nitroprusside reagent, and this provides a rapid screen for urinary ketones. However, a negative urinary ketone result does not rule out ketoacidosis because beta-hydroxybutyrate is the predominant ketone body produced during ketoacidosis, and urine dipsticks do not detect beta-hydroxybutyrate. Direct measurement of beta-hydroxybutyrate in blood is more sensitive and specific for ketoacidosis, and is particularly useful when urine ketones are negative or discordant with the clinical picture. Furthermore, beta-hydroxybutyrate levels in blood may indicate resolving ketoacidosis while urine ketones are expected to remain positive as they are eliminated.

As of February 8th, 2022 "Whole blood ketones" will be available in the Clinical Chemistry lab at Prince County Hospital. The test is specific for beta-hydroxybutyrate concentration in whole blood and is quantitative up to 7 mmol/L.

CIS orderable: Whole Blood Ketones

Specimen: Green top Plasma tube (Lithium Heparin)

Interpretation: <0.6 mmol/L is normal. Beta-hydroxybutyrate should not exceed 0.6 mmol/L after a 12 hour fast.

Please Note: "Whole Blood Ketones" are reported with greater lower reference limit versus QEH assay (i.e. <0.6 versus ≤0.3 mmol/L), and between assay values may be discordant when <1 mmol/L. For accurate results hematocrit must be within 25-60%.

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