

# Provincial Laboratory Services



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## Province Wide Roll Out of New Urinalysis Instrumentation – Ketone Implications

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*This information applies to: Island Physicians and Nurse Practitioners and Nurses*

Provincial Laboratory Services has implemented a new testing method for urinalysis. The laboratory will be using a new vendor which will result in some subtle differences via reporting and interferences.

Importantly, ketones will now report on different scales based on the laboratory site. The detection limit for urine ketones is  $\geq 25$  mg/L acetoacetate in patient urine, and the site specific reporting of ketones is summarized in Table 1 below. Recall that urine ketone detection is specific only for acetoacetic acid, and that acetone and  $\beta$ -hydroxybutyrate are not detected.

**Table 1 Urinalysis instrument response to known amounts of acetoacetate in patient urine. Column headers depict reporting scales used in different hospital laboratories and at the point of care.**

Urine Ketone Concentration	QEH/WH/PCH (Reported Range: Trace to +3)	KCMH/SH/CHO/PCH/Point of Care (Reported Range: Trace to +4)
500 mg/L	3+	4+
400 mg/L	3+	4+
300 mg/L	3+	3+
200 mg/L	2+	2+
100 mg/L	1+	2+
50 mg/L	Trace to 1+	1+
25 mg/L	Trace	Trace

Furthermore, all urinalysis dipstick testing is prone to interference; and a non-exhaustive summary follows for the new platforms (Table 2).

**Table 2 Summary of potential interferences with urinalysis dipsticks as provided by instrument manufacturer<sup>1</sup>**

Target	False Positives	False Negatives
Protein	Visibly bloody urine, highly buffered urines <sup>2</sup>	Non-albumin protein, high ionic strength <sup>2</sup>
Blood	Oxidizing contaminants (eg. Bleach), Microbial peroxidase	Captopril
Leukocytes	Vaginal discharge	Glycosuria, oxalic acid, tetracycline
Nitrite	Aged specimens	Shortened bladder incubation, nonreductive pathological microbes
Glucose	High ketones (>400 mg/L) can diminish glucose slightly	None reported
Ketones	Highly pigmented urines, levodopa metabolites, Mesna	None reported
pH	Bacterial growth in aged specimens	Bacterial growth in aged specimens
Specific gravity	Protein	Highly buffered alkaline urines
Bilirubin	Indican, Iodine metabolites	Early liver disease, Indican
Urobilinogen	Ehrlich's reagent	Formalin

<sup>1</sup> Siemens Multistix 10SG package inserts, <sup>2</sup> Robinson, Venner, Seiden-Long Clin Biochem 71; 77-78 2019

**FOR MORE INFORMATION PLEASE DO NOT HESITATE TO CONTACT:**

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