



UnityPoint Health

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To: UnityPoint Health Central Illinois Laboratory Clients
From: On behalf of the Laboratory/Pathology Clinical Service Group
Re: Standard Osmolality Calculation and Reference Range

UnityPoint Health laboratories currently report a calculated osmolality value with every chemistry panel. The current calculation in use is the Chalmers formula:

$$(NA*1.86) + (GLUC/18) + (BUN/2.8) + 9$$

Clinicians frequently calculate the osmolar gap (difference between the measured osmolality and the calculated osmolality) when volatile ingestion is considered. If the osmolar gap is > 10, treatment is often pursued including administration of expensive medications and dialysis.

Recent feedback from providers suggests that use of the Chalmers formula overestimates the osmolar gap (difference between the calculated and measured osmolality), and potentially leads to unneeded treatment(s).

Upon further investigation and review, and with endorsement from our Clinical Specialist Group and feedback from our ED / Hospitalist providers, our Laboratory/Pathology CSG has approved updating our standard osmolality calculation to the Worthley calculation:

$$(NA*2) + (GLUC/18) + (BUN/2.8)$$

With this change, we will also adopt a standard reference range for calculated osmolality across all laboratories:

275-295 mOsm/kg

These changes will go into effect on April 20, 2021. Please contact Carol Collingsworth at carol.collingsworth@unitypoint.org / 319-329-1494 or Laboratory Customer Services if you have questions. Thank you!

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