

Anion Gap

Bronson Test Code: AGAP, included in COMP, BMP, LYTE

Situation

Laboratory, Pharmacy and Medical Residents meet weekly as a Diagnostic Management Team (DMT) to discuss patient cases and any issues concerning diagnostic testing. At a recent meeting, the physicians noted that many normal patients were flagged as abnormally high for Anion Gap.

Background

Formula: The Anion Gap is a calculated value which represents unmeasured anions. It can be useful in diagnosis or monitoring of metabolic acidosis and other conditions. There are two formulas for Anion Gap:

- “With Potassium”: $(Na + K) - (Cl + CO_2)$, used by 30% of US labs. This is the formula Bronson used.
- “Without Potassium”: $Na - (Cl + CO_2)$, used by 70% of US labs and taught in medical schools.

Reference Range: A reference range should cover 95% of the normal/healthy population.

- Reference ranges for Anion Gap vary not only with the formula used, but also due to the analytic methods used at a particular laboratory.

Assessment

A review of apparently normal outpatient statistics showed over 25% of patients were reported with an elevated Anion Gap using the existing “With Potassium” formula and reference range of 8-18 mmol/L.

Recommendation/Change

- 1) The formula is being changed to the “Without Potassium” calculation to both match the majority of healthcare institutions and what is being taught in medical schools.
- 2) The reference range is being changed to 9-18 mmol/L. This range will cover approximately 95% of our normal/healthy population.