

Policy

Although the manufacturer does not note any particular interference with the performance of electrolytes on samples containing high levels of Total Protein, our internal studies and the literature have clearly shown that there is a negative bias on electrolyte results (sometimes classified as pseudohyponatremia) if the Total Protein exceeds or is equal to 10.0 g/dL, with some methods. The effect is a result of the methodology employed on the Beckman-AU, an Indirect ISE. It employs a sample dilution prior to analysis with the calculated assumption of body water per ml of patient sample.

To circumvent this issue, we have employed the use of the I-Stat to measure the Sodium and Potassium on these samples which contain high levels of Total Protein. The I-Stat utilizes a Direct ISE methodology where the sample is measured without sample dilution.

One of the challenges has been to identify these patients that have high levels of Total Protein. **If in any of the following scenarios, a Total Protein of ≥ 10.0 g/dL is obtained, the specified procedure which follows should be performed. Some of the steps we have taken include:**

- If the Total Protein is ordered, we have set the autoverification process on Remisol to “hold” any sample where the Total Protein concentration is greater than or equal to 10.0 g/dL. Remisol will also generate a comment to the Tech to notify them to perform IStat.
- If the Anion Gap is < 2 , a Total Protein will be performed via a reflex rule in Remisol. (no charge to patient)
- If a patient has been identified either through prior analysis or by diagnosis to be a Multiple Myeloma patient, a Total Protein should be performed, if not already ordered. If the result is ≥ 10.0 g/dL, the sample should be performed on the I-Stat.

Procedure

Once a sample has been determined to have a Total Protein concentration of ≥ 10.0 g/dL, the following actions should be taken.

- The sample should be analyzed on the I-Stat, following that procedure for Chloride, Sodium and Potassium.
- The I-Stat results obtained should then be manually entered as the reportable results in place of the results obtained on the AU, and the canned comment (@ISTA) added to the Sodium result. The phrase states, “Sodium, Potassium and Chloride results reported at this time/date were performed on the I Stat analyzer. Presence of high serum protein concentrations may interfere with accurate measurements of electrolytes on the Beckman Analyzer, which is the lab’s routine method.”
- If critical, the result should be called to the ordering physician as per protocol.