

## USE OF CAUTION WHILE INTERPRETATION OF ELECTROLYTE RESULTS (SODIUM AND POTASSIUM) WHEN PROCESSED ON ELECTROLYTE ANALYZER OR ON ARTERIAL BLOOD GAS ANALYZER

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### ABSTRACT

#### Objectives

Accurate electrolyte results are important for management of critically ill patients hence this retrospective study was planned to compare these results processed on different instruments using the same direct ion-selective electrode technology.

#### Material and Methods

This was a retrospective study conducted in the Central Biochemistry Laboratory (CBL) of Punjab Institute of Medical Sciences, Jalandhar, from March 2017 to September 2017. Paired samples of whole blood and serum were analyzed from 500 patients. ABG samples received in heparinized syringes were processed Medical Easy Stat ABG analyzer (Medica Corporation, Bedford, USA) and serum electrolytes were analyzed on Acculite electrolyte analyzer (AEA) by Compact diagnostics India Pvt. Ltd. The data were compared and analyzed using Microsoft Excel 2010. The inter-instrument comparison was also done using Bland-Altman plots.

#### Results

There was a total of 500 patients for comparative analysis 284 males and 216 females with a mean age of 54 years. The values for electrolytes were higher on electrolyte analyzer as compared to ABG analyzer for sodium they were  $136.70 \pm 9.28$  mEq/L and  $135.30 \pm 11.66$  mEq/L, ( $p < 0.01$ ) and for potassium they were  $4.26 \pm 1.10$  mEq/L and  $3.50 \pm 1.03$  mEq/L respectively ( $p < 0.05$ ). the difference observed in the two instruments was statistically significant.

#### Conclusions

The results of the ABG analyzer can be used as a guideline to initiate primary treatment for critically ill patients but decide on definitive treatment only after the availability of serum electrolyte results.

**KEYWORDS:** Critically Ill Patients, Paired Samples, Medica Easy Stat ABG Analyzer, Acculite Electrolyte Analyzer (AEA).