

## **Correlation of the Time and Temperature Effects upon Blood Gas Analysis in Diabetic Patients**

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### ***Abstract***

*Studies have shown that varying time and temperatures may have an adverse effect on Arterial Blood Gas (ABG) samples but fail to address the extent of the effect of these pre-analytical factors. (CDC, 2001).*

*Diabetic ketoacidosis (DKA) is one of the most prevalent metabolic disturbance of type 1 diabetes mellitus. DKA is identified in approximately 35% to 40% of children and teenagers at the time of diagnosis of type 1 diabetes mellitus (White, 2000). A blood gas analysis can be used to assist in diagnosing DKA. An increased anion gap is a predictor of the presence of metabolic acidosis, and the related degree of acidosis can be estimated by the size of the anion gap.*

*Globally, research have shown that the storage of anaerobic blood samples at room temperature (25°C) is acceptable when measurements are done within the first 20 minutes but is often undesirable in many laboratories due to significant elevation in the PO<sub>2</sub>, and thus a chilled specimen is preferred (approximately 0-4 °C). (Barker, (2008).*

*Ma et al (2003) have questioned the validity of those results produced, particularly with regard to accurately detect and predict clinical manifestation and thus influence the drugs selected to cure the patients' ailment mainly those of a diabetic status. According to Barker (2008) the validity of some work has shown that environmental standardization may generate spurious findings that either cannot be confirmed or can be confirmed only in samples maintained in specific highly controlled environments. An analogous issue arises in subclinical trials conducted in academic settings; the same benefits that are identified in randomized controlled trials are not always achieved in the real world of day-to-day clinical practice.*

**Keywords:** *Diabetic ketoacidosis, metabolic acidosis, anion gap.*