

Category : **Electrolyte disorders**

## **A6 - Dynamics and viability of venous blood samples in critical care patients**

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### **Introduction:**

During the COVID-19 pandemic laboratory resources have been exhausted, leading to longer waiting times before blood samples are delivered for sample analysis. Not much is known about how blood sample parameters behave when stored in room temperature or at ice for prolonged time.

Here we investigate the viability and clinical usability of blood samples drawn from critical care patients admitted ICU, and examine blood sample stability and dynamics over time.

### **Methods:**

Abnormal venous gas blood samples drawn from 30 patients admitted to the ICU at Northern Regional Hospital, were included in the study. 20 samples were drawn per patient at time zero. 9 samples were stored on ice and 9 samples at room temperature. Two samples were controls. Samples were turned every 5 minutes, and parameters (pH, v-pO<sub>2</sub>, v-pCO<sub>2</sub>, v-lactate, pH, and Base excess) were measured over the course of 180 minutes. Values were compared using 2-way ANOVA, and sample means compared as non-inferiority tests, with allowable lower limits for sample mean-mean differences.

### **Results:**

We find that values for pH, pCO<sub>2</sub> and pO<sub>2</sub> were within an acceptable margin for clinical decision-making until 162 minutes after time-zero when stored on ice, and for 72 minutes after time-zero when stored in room temperature. Additionally pH, pCO<sub>2</sub> and pO<sub>2</sub> follow a linear regression model during the initial 180 minutes for both ice stored and room stored samples, allowing for the conversion to values at time-zero.

### **Conclusion:**

Blood samples from critical care patients can be used as basis for clinical decision-making until 72 minutes after they are drawn when stored in room temperature, and until 162 minutes when stored on ice. These data suggest that there is a window of at least 60 minutes where blood samples can remain in room temperature before analysis and still be used for clinical decision-making.