



To investigate an association between blood gas laboratory location and accuracy of ED lactic acid samples” Brazg et al (2018).

Abstract:

Importance: Emergency Physicians often rely on Lactic Acid (LA) values to make important clinical decisions. Accuracy of LA values improve when blood gas analysis is performed in the emergency department (ED) as opposed to a satellite laboratory (SL).

Objective: To investigate an association between blood gas laboratory location and accuracy of ED lactic acid samples.

Methods: The study team evaluated lactic acid values from venous and arterial blood gas samples drawn between June 1, 2015 and September 30, 2016. The study was exempt from institutional review board approval. Samples were separated into two groups: those which were drawn prior to and after relocation of the blood gas laboratory to the ED. The data, including patient demographic characteristics, acute illness severity indices, and blood gas results were compared within and between each group using t-test for continuous variables and chi-square test for categorical variables. The primary outcome was the mean lactate value measured in the SL group in 2015 compared to the ED group in 2016. Potassium and creatinine values were measured between the two groups as secondary outcomes.

Results: Of the 21,595 consecutive samples drawn, 10,363 samples were from the SL group

and 11,232 from the ED group. The SL group included 5458 (52.7%) women; mean (SD) age was 61.8 (21.0). The ED group contained 5860 (52.2%) women; mean (SD) age was 61.7 (20.5). Mean Emergency Severity Index (ESI) were the same in each group at 2.31 and rates of Systemic Inflammatory Response Syndrome (SIRS) were also equivalent in each group at 22.2%. Significant differences were found between LA values in the SL group (mean 2.21 mmol/L) and in the ED group (mean 1.99 mmol/L) with a p value of <0.0001. There was a small statistical significance between the difference in potassium values in the SL group (mean 3.98 meq/L) compared to the ED Group (mean 3.96 meq/L) with a p value of 0.022. No significant difference was found between the creatinine values.

Conclusions and Relevance: These results suggest that mean lactate values decreased when measured in an ED blood gas laboratory and may provide more accurate LA results than blood gas samples analyzed at an SL blood gas laboratory within the same institution. Hospitals may consider moving blood gas laboratories to the ED to improve accuracy of one of the most important early blood markers used in the definition of sepsis and in the identification of the critically ill.

Reference:

Brazg, J., Huang, P., Weiner, C., Singh, G., Likourezos, A., Salem, L., Dickman, E. and Marshall, J. (2018) Relocation of blood gas laboratory to the emergency department helps decrease lactic acid values. *The American Journal of Emergency Medicine*. March 12th. .

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