Measuring Serum Lactate in Sepsis

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Abstract

Problem: Sepsis is the leading cause of hospitalized deaths in the United States and the leading cause of hospital readmissions. Each year, approximately 1.7 million Americans develop sepsis, and nearly 270,000 die due to sepsis. The purpose of this quality improvement project was to evaluate the acquisition time of initial and repeat lactate levels once a sepsis bundle was activated.

Methods: This quality improvement project used an observational, descriptive design utilizing a retrospective medical record review and the Plan-Do-Study-Act (PDSA) to evaluate code sepsis activations in a Midwestern, suburban, Level II trauma ED from November 1st, 2020, through January 31st, 2021. All adults, 18-years of age or older, and patients who met at least two of the SIRS criteria were included.

Results: A two-tailed paired samples z-test was conducted to compare acquisition times of the initial and repeat lactate levels. The result was significant based on an alpha value of 0.05 ($z = -5.82, p < .001$). A two proportions z-test was conducted to compare the ED repeat lactate acquisition time to the inpatient acquisition time for each month. Based on an alpha value of 0.05, in November and December, the result was significant ($z = 4.36, p < .001, 95\%$). In January, the result was not significant ($z = -0.33, p = .744, 95\%$).

Implications: The initial lactate was drawn nearly two-hours after activation and repeat lactates nearly four-hours from the initial lactate acquisition. This did not meet recommendations by the Surviving Sepsis Campaign (SSC). The initiation of a reflexing repeat lactate three-hours after abnormal initial lactate may be helpful.

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