Western Surgical Association
2020 Annual Meeting

Monday, November 9, 2020
4:00pm – 6:15pm Pacific Time
-- Virtual Meeting --

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21. IMPROVING SEPSIS SCREENING IN TRAUMA PATIENTS: DEACTIVATING SIRS ALERTS FOR 48 HOURS POST-INJURY

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Background: Trauma patients often meet criteria for Systemic Inflammatory Response Syndrome (SIRS) due to response to injury. In many electronic medical records (EMRs), SIRS vitals trigger alerts used to screen for sepsis. However, the utility of SIRS criteria in detecting sepsis in the initial post-injury period is low in trauma patients. In addition, false positive EMR alerts lead to unnecessary testing and alert fatigue in providers. Based on these factors, our automated SIRS alert system was deactivated for all trauma patients for the first 48 hours after admission. We hypothesized that this 48-hour deactivation period would improve the specificity and positive predictive value of the SIRS alert system without changing the sensitivity.

Methods: We included all patients >18 years old admitted to the trauma surgery services in the 90 days before and after the SIRS alert system change. Data were collected on the total number of SIRS alerts, total number of patients admitted to trauma surgery, and the number of patients who were diagnosed with sepsis during admission. The sensitivity, specificity, positive predictive value, and negative predictive value of the SIRS alerts during these periods were compared using chi square tests.

Results: There were 619 patients admitted to trauma surgery in the 90 days before the change and 540 patients admitted in the 90 days after. Eighteen patients in the pre group (3%) and 15 in the post group (3%) developed sepsis. The total number of SIRS alerts decreased by half, from 2510 before to 1277 after. The number of patients with false positive alerts decreased by 31%, from 385 to 267. The specificity increased from 38% to 51% (p<0.0001) while the sensitivity remained unchanged (100% before, 93% after, p=0.45). Both the positive predictive value and the negative predictive value were unchanged at 5% before and after (p=0.7) and 100% before and after (p=1.0).

Conclusion: By deactivating automated SIRS alerts in the initial 48 hours of hospitalization in trauma patients, we were able to reduce the total number of SIRS alerts in trauma surgery patients by 49% and decrease the number of patients with false positive alerts by 31%. This intervention increased the specificity of the SIRS alerts from 38% to 51%. However, the positive predictive value remained low at 5%. Further work is needed to determine how to best detect the early stages of sepsis in trauma patients.