

Effectiveness of Prehospital Lactate Levels in Early Identification of Hypoperfusion in Adult Trauma Patients

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Purpose: To determine if there is a relationship between lactate levels drawn in the prehospital environment and occult hemorrhagic injuries

Background: Clinical signs and symptoms are unreliable for detecting early occult hemorrhage. Hypotension typically occurs after a patient has lost 20% of circulating blood volume. Lactate is an acceptable marker of global tissue hypoperfusion. Until recently, the measuring of lactate levels was time consuming. With new technology, such as point of care testing (POCT), lactate levels can now be measured within minutes at the patient's bedside.

Methods: Adult trauma patients (18 years and older), that were prehospital transports via Life Flight Helicopter to Stanford Hospital and Clinic's Emergency Department (ED) were enrolled in the study. Patients were excluded if they were pregnant, suffered from burn injuries or had Lactated Ringers as an intravenous infusion. A lactate level was drawn during transport and a second lactate level was drawn upon arrival to the ED. Data that were collected included patient demographics, time of incident, time lactates were drawn, results of lactates, differences in values, highest and lowest heart rates and blood pressures prior to each lactate drawn, intake and outputs prior to each lactate draw, AIS and ISS, and hospital disposition.

Results: To date, 13 subjects are enrolled. Demographic data are as follows:

- All blunt trauma
- 10 males, age ranges 20 to 63
- 3 female, age ranges 18 to 49
- 1st lactate level ranges 0.44 to 12.73
- 2nd lactate level ranges 0.91 to 9.16
- 6 patients with head/neck injuries
- 6 patients with extremities fractures
- 5 patients with chest trauma, mainly rib fractures
- 1 patient with internal organ injury

Discussion: Will continue study until 200 patients are enrolled. We need a substantial number of patients with internal organ injury, since these types of injuries tend to present as occult hemorrhage. Once 200 patients have been entered into the study, we will evaluate data to ascertain if more patients need to be enrolled.

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