

## **Evaluation of pre-hospital point of care testing for lactate in sepsis and trauma patients by enhanced care paramedics in the North East Ambulance Service**

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### **Background**

North East Ambulance Service NHS Foundation Trust (NEAS) covers the north east of England and employs around 1,000 accident and emergency staff across 57 locations who serve a population of 2.6 million people. As part of the NEAS drive to improve patient care we introduced a sepsis screening tool (SST) into practice in April 2012. One of the criteria for severe sepsis on the SST is a lactate of  $>2\text{mmol/L}$ . This study was designed to evaluate the feasibility and potential impacts of introducing point of care testing (POCT) for lactate. The primary objective was to evaluate the practicality of lactate testing in the pre-hospital environment. The secondary objective was to investigate what impact adding POCT lactate would have on the SST

### **Methods**

Nine enhanced care paramedics were trained to use the Nova StatStrip Lactate Xpress and used this device in practice between June and December 2013. Participants were directed to test the lactate of all patients with suspected sepsis or patients who met the NEAS major trauma criteria. Results were recorded in the patient records and also on separate evaluation forms. Feedback on the lactate monitor was recorded from participants at the end of the trial.

### **Results**

114 patients (58% female, mean age 70, range 6-100) had lactate levels recorded, 109 patients with suspected sepsis (61% female, mean age 71, range 6-100) and 5 trauma patients (100% male, mean age 51, range 10-74). The 3 most common chief complaints where lactate readings were taken were 'Non-specifically Unwell' (40%), 'Breathing Problems' (17%) and 'Abdominal Problems' (11%). Lactate values ranged from 0.7-11.2mmol/L with a mean of 2.6mmol/L. 53% (n=58) of the sepsis patients met the criteria for severe sepsis according to the SST. 60% (n=35) of the severe sepsis patients met the criteria on lactate alone. All the participants felt confident using the device with the majority reporting that lactate would influence their decision in patient treatment and that patients would benefit from paramedics having this capability.

### **Conclusions**

POCT for lactate in the pre-hospital environment has been shown to be feasible. POCT of lactate may benefit patients by identifying more cases of severe sepsis which allows paramedics to start the appropriate treatment earlier. The population encountered, and the range of lactate values recorded, are in accordance with figures reported in the current literature. The low number of trauma cases was not unexpected and is a population that needs to be studied separately. Further work is needed to examine the impact of adding lactate to the paramedic toolbox and its place in the SST. Concerns were identified with staff conducting quality control checks around POCT in the pre-hospital environment which requires further investigation.