

Serum Lactate in the Treatment of Sepsis



The Royal Liverpool and
Broadgreen University Hospitals
NHS Trust

The Royal Liverpool & Broadgreen University Hospitals NHS Trust (RLBUHT) identified an opportunity to improve the early diagnosis of patients with sepsis.

Evidence suggests that the sickest sepsis patients have high levels of serum lactate. Timely measurement of serum lactate levels in patient pathways can improve early diagnosis which will lead to improved outcomes. RLBUHT have successfully implemented a process to capture serum lactate measurement and flag high risk patients.

Background:

What is serum lactate?

Lactate is a chemical naturally produced by the body to fuel the cells during times of stress. Its presence in elevated quantities is commonly associated with sepsis and severe inflammatory response syndrome.

Why is serum lactate important?

- A serum lactate level measures the amount of lactic acid in the blood and is a fairly sensitive and reliable indicator of tissue hypoperfusion and hypoxia.
- Serum lactate is an important indicator of the septic patient's prognosis
- Lactate can be used as a guide for determining the severity of the septic patient's illness, and the effectiveness of their treatment.

Early diagnosis

The trust has an all-encompassing programme to improve the early diagnosis and treatment of sepsis. In the early stages of the AQ programme, the sepsis team identified that the measurement of serum lactate was delayed in many cases. Reasons for this included:

- Lack of available arterial blood gas (ABG) machines with lactate sensors
- Lack of education on the importance of serum lactate as a marker of prognosis

Aim

Improve the timeliness of serum lactate measurement for patients suspected of having sepsis

Actions:

The trust analysed the data collected as part of the AQ programme to investigate timeliness of lactate sampling and applied Quality Improvement methodology to improve the process. The trust:

Introduced
lactate sensors to all
ABG machines

Provided a shared vision
for improvement to all
staff alongside
education on serum
lactate testing

Routinely monitored the
timeliness and
prevalence of lactate
testing to ensure it is
embedded into everyday
patient monitoring

Results:

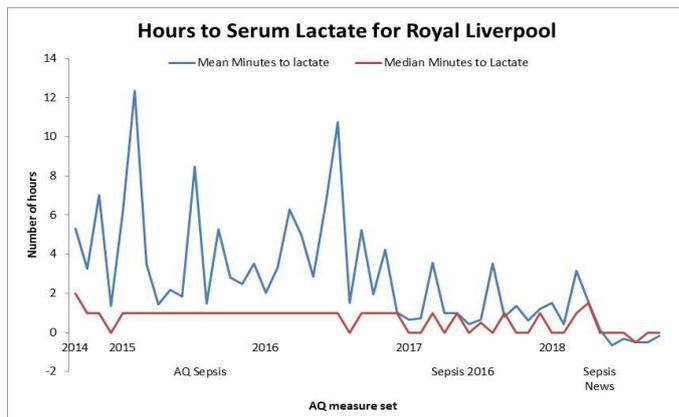


Figure 1. demonstrates the monitoring and improvement in lactate sampling since the introduction of the AQ programme.

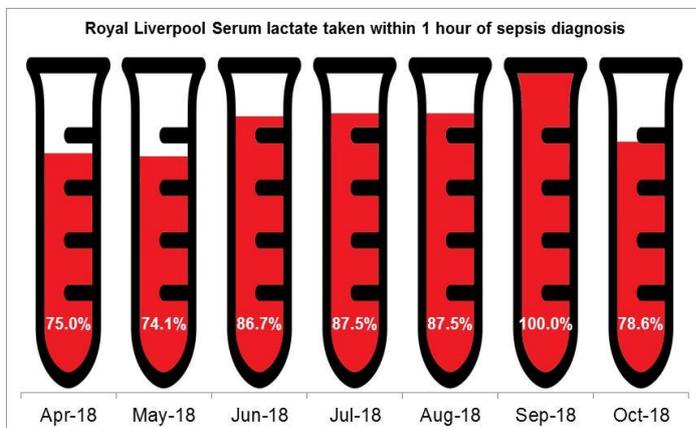


Fig 2. shows an increase in the percentage of patients having a serum lactate taken within one hour of sepsis diagnosis.

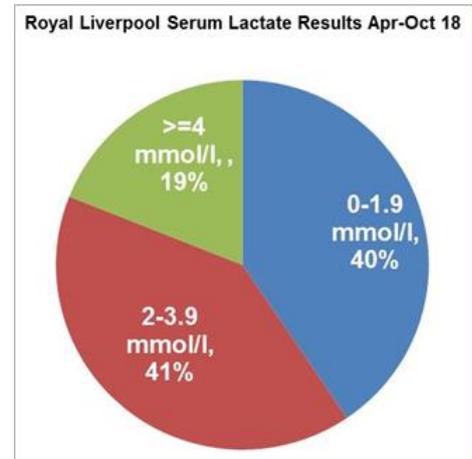


Fig 3. Serum lactate results from April - October 2018 after the introduction of Sepsis AQ measure set.

Amendments to practice:

- All ABG machines now have a lactate sensor
- Education about importance of lactate and interpretation of results
- Building venous lactate measurement into triage when venous bloods are taken

Learning

- RLBUHT have evidenced improved serum lactate sampling.
- Clinical leadership has ensured collaboration across clinical care settings.
- Prompt identification of the 'sickest' patients to clinicians, and management plans reflect the results.

Further Information:

This case study has been produced by the Advancing Quality Alliance on behalf of Health Education England.

For more information please contact:

advancing.quality@nhs.net or visit www.aquanw.nhs.uk