Introduction of a Sepsis Screening Tool to an Ambulance Service

The Parliamentary and Health Service Ombudsman’s report ‘Time to Act’ (2013) highlighted ten cases where patients had died from sepsis. Failings in the care of these patients mainly occurred in the first few hours following the onset of sepsis, when the rapid recognition and initiation of treatment are critical to a patient’s chances of survival.

The North West Ambulance Service (NWAS) recognised that they are in a key position, as first responders, to undertake early assessment of patients, determine diagnosis and ensure appropriate treatment. NWAS wanted to prioritise the treatment of sepsis and put in place processes to provide appropriate and timely care.

Background:

NWAS is one of the largest ambulance trusts in England; providing services to around seven million people across approximately 5,400 square miles. The trust handles over a million emergency calls each year and provides three million patient journeys.

Aims:

- Establish sepsis as a key clinical priority for NWAS
- Devise evidence based guidance to support patient-facing staff to consistently provide appropriate and timely care
- Refine how to recognise and respond to severe infection
- Partner more closely with provider organisations to improve handover and escalation
- Evaluate sepsis screening tool, ensuring reflection of national guidance
- Quality Improvement approach to ensure sustainability in development throughout the life of the programme based on small-scale measureable changes

Actions:

- **Establish Resource:** NWAS developed a Quality Improvement (QI) team to ensure that a QI approach was utilised throughout the duration of the programme.
- **Leadership:** Named clinical leaders, including an Advanced Paramedic and Consultant Paramedic, drove improvements and promoted the programme across patient pathways.
- **Education:** A management of sepsis education programme was devised and delivered to provide teams with awareness and learning from real-life sepsis cases.
- **Pre-alert:** Devised a clinical tool to support the better detection of sepsis, ascertainment of severity and understanding intervention, including the need to pre-alert (see appendix 1).
- **Communication & Engagement:** Through local presentations, monitoring dashboards and driving enthusiasm for the programme of work.
**Audit and analysis:** Implemented a bespoke audit process to provide internal assurance, performance and benchmarking. Designed to provide assurance that the screening tool is being used and delivering benefit to NWAS patients.

**Results:**
- Successfully implemented a sepsis screening tool across NWAS footprint that reflects national recommendation and supports standardised assessment of patients.
- 72% of patients with confirmed sepsis survived until discharge.
- Increase from 11-66% in standbys for patients with suspected sepsis.
- Training template used in sepsis education adopted by Learning & Development.
- In the first phase of the adult project 93% of staff were trained.
- Awarded special commendation by the Chairman at the NWAS Star Awards.

**Learning:**
- Improvement needs to be adequately resourced with available capacity for teams to undertake learning.
- Effective clinical leadership ensures improvement is promoted and embedded so that NWAS consistently provides safe and efficient care.
- Standardised, evidence based data is key to identifying opportunities for improvement and evidencing the impact of interventions.
- Collaborative working in partnership with provider organisations is integral in the early diagnosis of sepsis.

**Next Steps:**
- Development of Paediatric and Neonatal Sepsis Screening Tool
- Feasibility study of the Tool commenced
- Regular checkpoints - review usage, success and evaluate what the data is telling us
- Training package
- Final evaluation and recommendation report

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

For further information about the content contact:

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Appendix 1:
NWAS Adult Sepsis Screening Tool
**Adult Sepsis Screening Tool**

**Risk Factors (See Glossary of Terms)**

- **Age ≥ 75**
- **Chemotherapy <6 weeks**
- **Surgical procedure <6 weeks**
- **Line/catheter in situ**
- **Peri-partum**
- **Chemotherapy <6 weeks**
- **Age ≥ 75**

**Red Flags**

- **New confusion (according to relatives) or disorientation**
- **Single NEWS2 parameter ≥ 5**
- **Known to have antibiotic resistant bugs**
- **Previous diagnosis of sepsis**
- **IV drug user**

**Suspected sepsis**

- **Inadequate urine output as judged by change in weight**
- **Requires oxygen to maintain saturations > 92%**
- **RR > 25**
- **HR ≤ 40 bpm**
- **HR > 130bpm**

**In the absence of any risk factors, if there is clinical concern, please discuss community-based referral is advocated to MTS or medical pathfinder.**

**Glossary of Terms**

**NEWS2 Score**

- **≥ 5**

**INSC Score**

- **≥ 5**

**Fever (within 6 days of admission)**

Between 2011 and 2013 infection or sepsis caused 12.7% of pregnancy-related deaths in the UK. Pregnancy-associated sepsis requires early detection, accurate diagnosis, and aggressive treatment. A recent study (2015) reported that “sepsis is currently the leading cause of maternal death in the UK.”

**Leucocytosis in site**

Any catheterization in this site is considered to be due to the single fact that it provides direct access for bacteria to enter the site. A higher rate of sepsis with any indwelling line etc.

**Surgical Procedure**

Surgery is a procedure that affects your body in many ways. Surgery exposes your body to infection and a fair number of complications, some of which could develop into sepsis. If recent surgery does not convey this, it is documented on the PRF. Escalate if patient deteriorates. Continue to monitor patient en-route, noting changes in patient’s medical presentation or condition and amending the management to reflect this. Ensure this is noted on the exit tool and refer to MTS or medical pathfinder.

**Drug User**

A high index of suspicion is required for this patient group because of non-aseptic injections and a generalised poor lifestyle. A higher index of suspicion with any indwelling line etc.

**Previous diagnosis of sepsis**

Sepsis is an independent predictor of recurrent infections. Hospitalization for other reasons and death in the post-septic period. A patient has a higher chance of becoming septic if they have previously had the same diagnosis. Sepsis is currently the leading cause of maternal death in the UK. Pregnancy-associated sepsis requires early detection, accurate diagnosis, and aggressive treatment. A recent study (2015) reported that “sepsis is currently the leading cause of maternal death in the UK.”

**Known to have antibiotic resistant bugs**

This patient will go on to have a higher mortality due to the antimicrobial resistance aggressive treatment is advocated.

**Could the patient have a needle/implantation or site that is unusual?**

**Adul t Sepsis Screening Tool - NEWS2**

**Calculate NEWS2**

**NEWS Score ≥ 5**

- **Red Flages**

**NEWS Score < 5**

- **NO Flages**

**Any risk factors or clinical concern?**

- **NO**

**Give sepsis screening for low risk patients only**

**Yes clinical concern from clinician or carers)**

**Red Flags**

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**Glossary of Terms**

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** Safety Netting - This advice is for low risk patients only**

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