ADVANCING QUALITY
INSIGHT REPORT

IMPROVING SEPSIS CARE BY REDUCING VARIATION
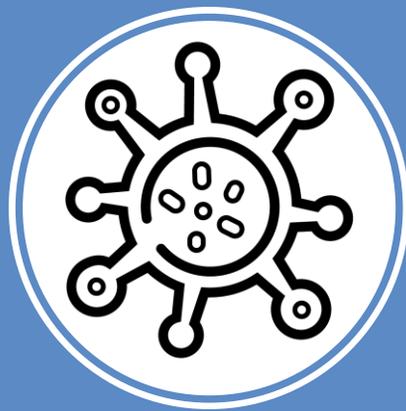
Analysis by the UK Sepsis Trust shows that there are nearly a quarter of a million cases of sepsis in the UK every year and 48,000 deaths. Amongst those who survive, 78,000 people every year suffer life-changing after effects.[1]

Sepsis is a severe condition requiring urgent care. 37,000 people are hospitalised with sepsis in north west England every year and around 1 in 5 die in hospital.[2] The Advancing Quality (AQ) programme, part of the Advancing Quality Alliance (Aqua) collects data on these patients with the aim of improving care and outcomes. Participating trusts audit either their whole sepsis population or a statistically significant sample, checking each patient and excluding those who don't have a confirmed diagnosis.

The AQ measures, developed by specialist clinicians and following national best practice, define what good care looks like for a sepsis patient.

The AQ measures	
SEP-11	NEWS2 recorded within 1 hour of arrival
SEP-12	Blood cultures within 1 hour of diagnosis
SEP-13	Antibiotics within 1 hour of diagnosis
SEP-14	Serum lactate within 1 hour of diagnosis
SEP-15	IV fluids within 1 hour of diagnosis
SEP-16	Senior review within 2 hours of diagnosis
SEP-17	Care pathway commenced

Our robust, validated dataset enables AQ to generate unique insights into the details of sepsis care, spotlighting what works and also showing opportunities for improvement. Our work demonstrates that there is excellent care in north west England, but there is also significant variation. If every provider could be as good as the best, lives could be saved and resources better used. This report shares some of those insights.

If you would like to know more about the AQ programme and the work we do, you'll find our contact details at the end of the report.
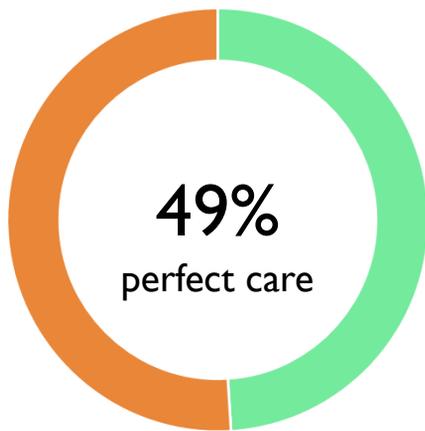
49% perfect care

We define 'perfect care' as a patient getting all the assessments, interventions and consultations they were eligible for on our pathway. Between January 2020 and June 2021, only 49% of AQ patients received perfect care.[3] Scaled up to the whole north west and allowing for exclusions, this suggests that more than 12,000 patients are not receiving perfect care every year.

Measure performance varies
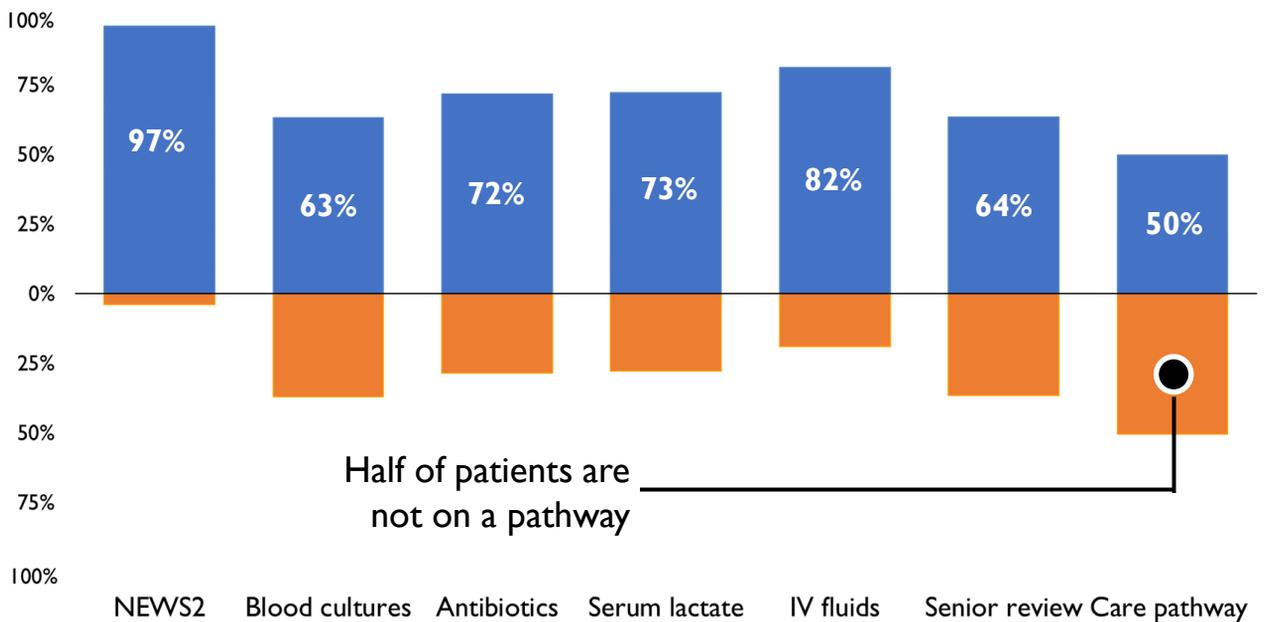
This chart shows AQ measure performance. Blue shading shows the proportion passing the measure and orange shading shows the proportion failing between January 2020 and June 2021.

The pass rate is highest for NEWS2, suggesting that its recording is embedded. Performance is also good for IV fluids, which around 8 out of 10 eligible patients receive within one hour of sepsis diagnosis.

Care pathway is the most challenging measure, with over half of patients failing. Not being on a care pathway after sepsis diagnosis has a detrimental effect on performance in the other AQ measures and overall care quality.[3] The importance of being on a pathway is explored in more detail next.

Being on a pathway makes a difference

Patients on a care pathway have better care across the AQ measure set. They are 15% more likely to get serum lactate an hour either side of diagnosis and 19% more likely to have timely blood cultures taken. Patients on a pathway are 15% more likely to receive overall perfect care.[3]

|	
NEWS2	**+ 3%**
Blood cultures	**+ 19%**
Antibiotics	**+ 11%**
Serum lactate	**+ 15%**
IV fluids	**+ 4%**
Senior review	**+ 7%**

compared to patients not on a pathway

## Wide variation between trusts in care pathway rates
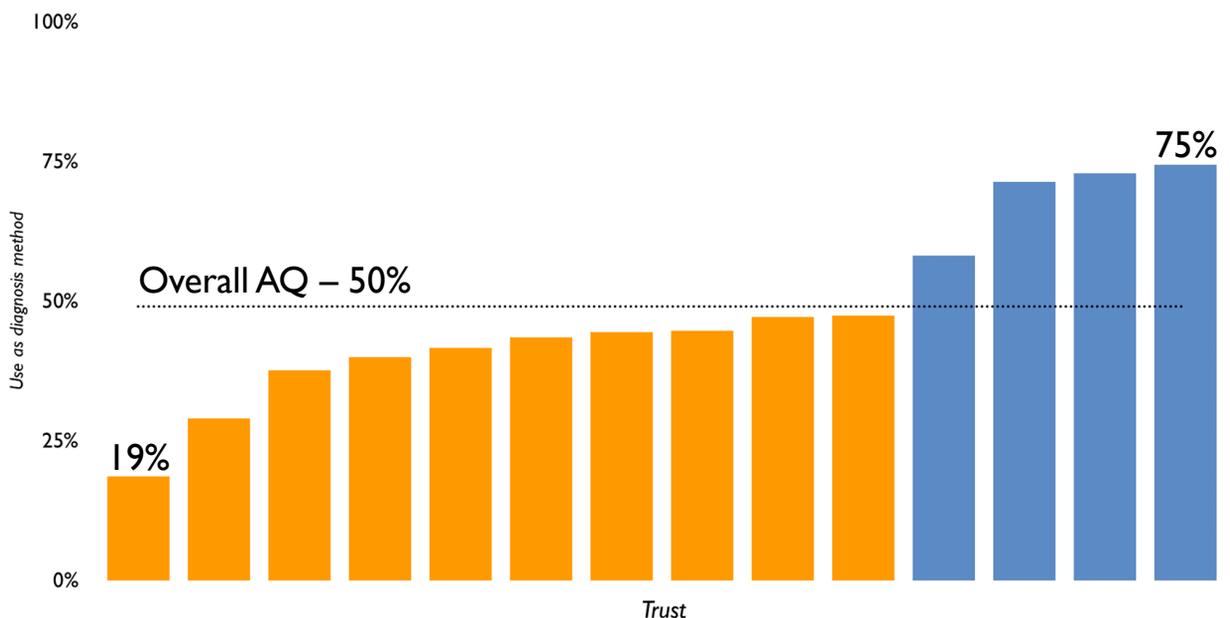
Behind the overall 50/50 split between sepsis patients on and not on a care pathway, we find considerable variation between providers. At the highest performing trust, 3 out 4 of patients are on a pathway. At the lowest performing trust, less than 1 in 5 is.[3]

## Different diagnosis day, different likelihood of being on pathway
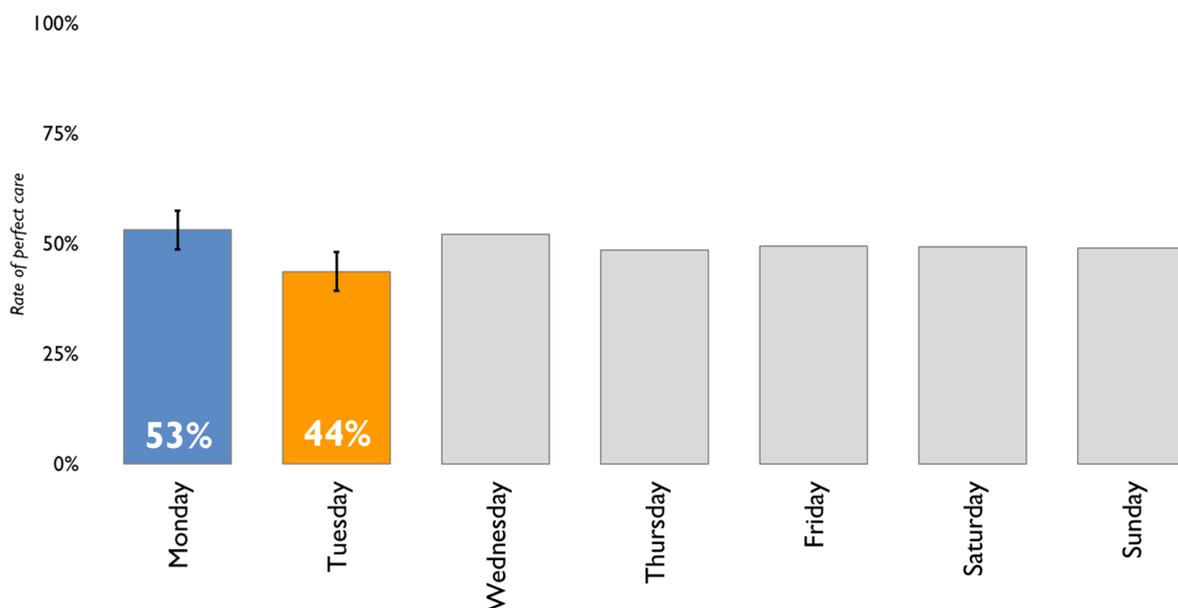
44% of patients diagnosed with sepsis on a Tuesday are put on a care pathway and receive the associated benefits already described. By contrast, 53% of patients diagnosed on a Monday are put on a pathway. With non-overlapping confidence intervals, the difference between Mondays and Tuesdays is statistically significant. This discrepancy in care could be caused by factors such as staffing levels and resource allocation.[3] The AQ programme will be investigating this question further.

Better results from NEWS diagnosis
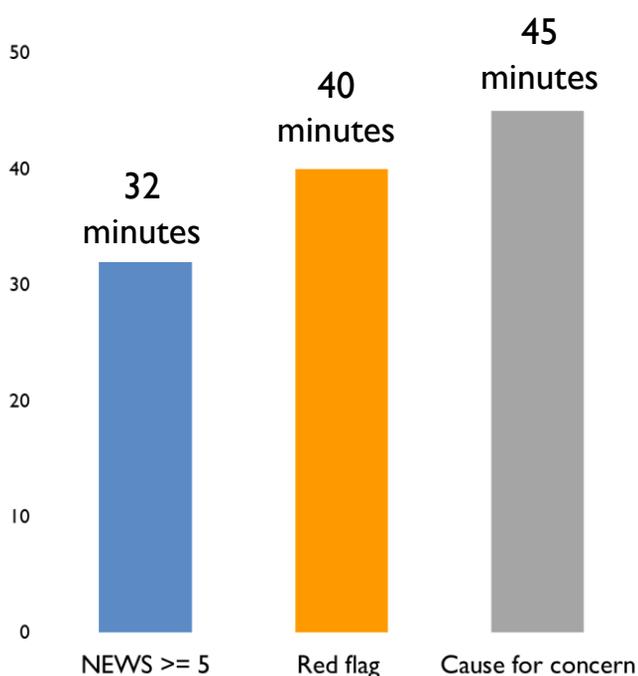
Where NEWS is used for diagnosis, we see better quality care. The median time to antibiotics from diagnosis, for example, is 32 minutes, compared where NEWS is used for diagnosis, compared to 40 minutes for 'red flag' and 45 minutes for significant cause for concern. NEWS is recorded in 96% of AQ cases and is widely available as a diagnostic tool. However, only 1 in 4 sepsis patients are diagnosed using NEWS.[3]

NEWS hardly used for diagnosis at some trusts
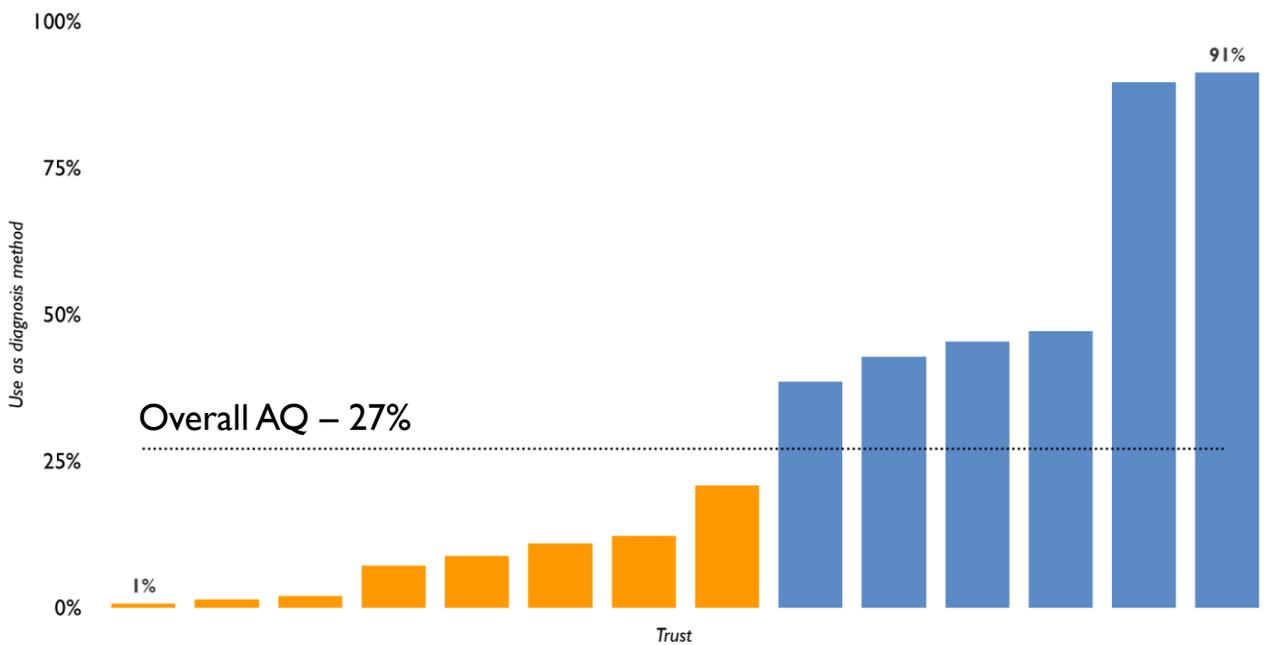
The benefits of using NEWS for quick diagnosis and treatment are not utilised equally. North west trust rates of using NEWS ranged from 91% to 1% between January and June 2021 and the overall rate was 27%. In most cases where a patient wasn't diagnosed using NEWS, they could have been. 1 in 10 of patients diagnosed using 'significant cause for concern' had a NEWS $\geq$5. 6 out of 10 'red flag' patients had NEWS $\geq$5.[3]

AQ participants have lower mortality
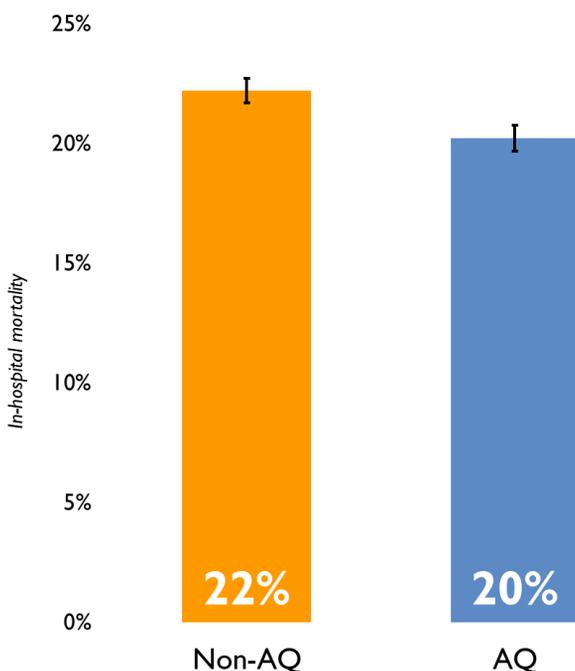
The AQ dataset is validated and includes only patients with a confirmed sepsis diagnosis. However, the benefits of the structured AQ approach extend to patients where sepsis was suspected and who were treated as having sepsis. Mortality for patients coded as sepsis in January 2020 - June 2021 NHS Digital data was 2% lower at trusts participating in the AQ sepsis programme. With non overlapping confidence intervals, this difference is statistically significant.[2]

Where do we need to improve?

AQ analysis highlights the following areas for improvement:

1. **Increase the level of perfect care:** only half of sepsis patients in north west England receive all the AQ measures they are eligible for.

2. **Put more patients on pathways:** patients on a pathway get better care, but pathways aren't used consistently.

3. **Use NEWS for diagnosis:** patients diagnosed using NEWS receive more timely care. AQ can support embedding NEWS into pathways.

4. **Investigate variation between days of week:** sepsis patients diagnosed on a Tuesday are less likely to be on a structured pathway

5. **Take a structured approach:** trusts following the AQ methodology have statistically significantly lower mortality for sepsis. AQ provides a framework for improvement. Ways we can support include:

   - process mapping
   - convening clinicians
   - capturing best practice
   - improvement coaching
   - attendance at clinical team meetings
   - guidance on embedding measures

The AQ approach: 4 pillars of quality improvement

1 Gain Consensus on Care Standards

What does good look like?
Measure sets aligned to national guidelines; involvement of clinical experts and regional networks

2 Identify Unwarranted Variation

Where do we need to improve?
Monthly data collection; regular, bespoke and thematic reporting highlighting regional differences

3 Improve Quality of Care

How do we improve?
Plans on a page; bespoke improvement support; consultancy work to support improvement

4 Learn and Share Best Practice

What has worked?
Case studies and papers; virtual learning events and collaboratives; resource repository

The AQ pillars underpin everything we do, supporting our work of reducing unwarranted clinical variation to help prevent avoidable hospitalisation, ill health and premature death.

References

1. UK Sepsis Trust (2021) References and Sources.
2. Secondary Uses Service (SUS; 2021) Secondary Uses Service data. TIS DW Data Warehouse.
3. AQ (2021) Advancing Quality Programme data. TIS DW Data Warehouse.

Further reading

The AQ insight report Sepsis: a decade of change summarises the progress that has been made in the north west over the last decade in the timely diagnosis and treatment of people with sepsis, as well as improvement in outcomes.

Our case studies on the identification and management of sepsis in adults, produced in partnership with Health Education England provide examples of initiatives to improve the recognition of, and response to, sepsis in a range of settings.

AQ's Patient Intelligence and Quality System (PIQS) is our data collection and reporting system. You'll find more details of our sepsis measure set there, including the reasons why we measure what we do.

Get in touch

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Sepsis: improving care by reducing variation
The Advancing Quality Programme