

# Evaluating Sepsis Improvement Programmes

## The Suspicion of Sepsis Dashboard

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### Summary

- Sepsis quality improvement relies on accurate consistent data on scale, frequency and outcomes
- Sepsis data has been prone to swings (Fig 1)
- The innovative Suspicion of Sepsis (SOS) Insights Dashboard avoids confounding effect of swings
- Visualises Hospital Episodes Statistics (HES) showing clinical data, trends and insights at hospital, regional and national levels
- Provides reliable measure for impact of improvement measures.

### What are we trying to accomplish?

Determining sepsis numbers and outcomes in a hospital population from administrative data has been an extremely challenging and wicked problem [1-3] compounded by:

1. The absence of a single, stable sepsis definition: Definition based on SIRS(a), NICE(b), RFS(c), qSOFA(d), NEWS(e) have been variably used across England in the last three years
2. The absence of a gold standard test for sepsis
3. Poor consistency of coding practice amongst clinicians and coders

As a consequence attempts to measure sepsis over time have shown large swings in numbers (Fig 1)

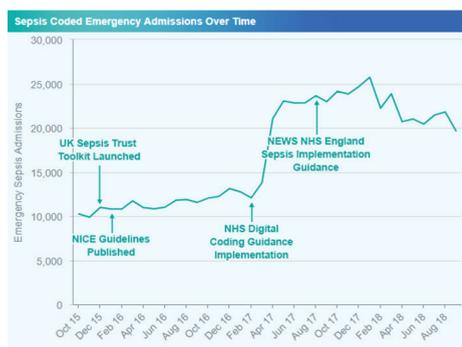
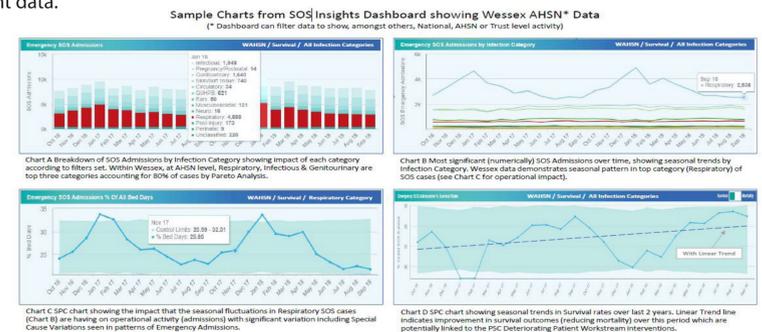


Fig 1.

### What did we achieve?

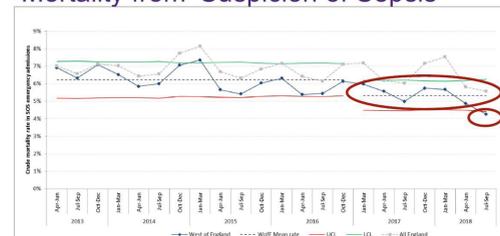
At least six regional Patient Safety Collaboratives have engaged and adopted the use of the SOS Dashboard with positive responses from clinicians throughout. The Dashboard has also received growing interest from multi professional organisations.

Example of how one region (Wessex Patient Safety Collaborative) used the dashboard to track improvement data.



Example of how one region (West Of England Patient Safety Collaborative) used the SOS Dashboard to demonstrate the impact of improvement measures on mortality.

### Mortality from 'Suspicion of Sepsis'



HES: Hospital Episodes Statistics  
PSMU: Patient Safety Measurement Unit NHSI

Defining and measuring suspicion of sepsis: an analysis of routine data

### Benefits of SOS Dashboard for evaluating improvement programmes

- Easily reproducible stable population for monitoring improvement programmes
- Easily accessible data from existing HES based on ICD 10 codes [4]
- Ability to evaluate sepsis improvement interventions and compare data at hospital, regional and national levels
- State of the art visualisation, data management and innovative approach to definition of sepsis cohort
- Excellent barometer for monitoring deterioration-60% of mortality and ~38% of emergency admissions covered by SOS

### Objectives

The SOS Dashboard is a collaboration project between Imperial College Health Partners (ICHP), NHS Improvement, and NHS South, Central and West Commissioning Support Unit. Initiated in February 2017, with an England-wide launch in the September 2018

The objectives of the SOS Dashboard are to provide:

- Reliable data to monitor and assess the impact of improvement work on sepsis
- Cutting-edge visualisation for Suspicion of Sepsis data at hospital, regional, and national levels
- A starting point for the wider discussion on tracking and monitoring of deterioration
- National data on Suspicion of Sepsis and sepsis supporting a truly national conversation.

### What did we do?

#### Methods

- SOS is a group of 200 clinically validated ICD-10 codes relating to bacterial infection that lead to an emergency hospital admission
- This dashboard uses HES data based on the stable population of those admitted to hospital with infection (SOS)
- The dashboard uses advanced visualisation technology and presents national data by Trust, Patient Safety Collaborative, STP footprint, and other selected geography
- The dashboard also includes sepsis-specific ICD-10 codes A40 and A41 (and their derivative subsection codes A40.1, A40.1, A40.3, A40.8, A40.9 and A41.1–A41.9)
- The dashboard received input from patients and clinicians through workshops
- Piloted in 12 hospitals across England.

Imperial College Health Partners  
Patient Safety Collaborative

### What did we learn?

#### Challenges

- Engaging clinicians to adopt a different approach to sepsis data
- Risk of misinterpretation and sensationalism from making national outcome data accessible publicly online
- Magnitude of the task of raising awareness of the innovative tool across an entire nation

#### Lessons

- Involve as many stakeholders as possible as early as possible
- Do not ignore the political and cultural aspects of a project with national ramifications

### What next?

- We are currently consulting clinicians across the nation on developing a brief for the next version of the dashboard
- We are also in the process of spreading the dashboard across regions in England
- We are seeking collaborations with professional associations and regional organisations to facilitate spread.



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