Oxford AHSN case study

Date: Q2 2017/18

Programme/Theme: Patient Safety

Title Defining and measuring suspicion of sepsis

Supportive quotes

"Working together regionally for a common goal has resulted in a pathway we are happy to use to save lives from sepsis"

Amanda Pegden, Acute Medical Consultant and sepsis clinical lead, Great Western Hospitals NHS Foundation Trust, Swindon

Overview summary

The lack of suitable outcome measures for sepsis has hampered evaluation of local and national campaigns and improvement programmes. The Oxford AHSN has developed a simple and effective means of measuring the impact of sepsis programmes.

A methodology was developed to identify patients with 'suspicion of sepsis' who are the critical target group both for clinical intervention and for sepsis detection and improvement programmes. The methodology uses routine administrative data to assess and compare patient outcomes (e.g. mortality, length of stay, readmission rate, intensive care admissions) over time and across organisations. The team developed a 'how to' guide which was shared across the Oxford AHSN region and their work was published in BMJ Open. The 'suspicion of sepsis' methodology is now being adopted by other organisations, including researchers and NHS England to further evaluate the burden of sepsis and impact of interventions.

Challenge identified

Sepsis, defined as a 'life-threatening organ dysfunction caused by a dysregulated host response to infection', is one of the leading causes of death. The incidence of sepsis is thought to be increasing with estimates of up to 300 cases per 100,000 population.

Worldwide awareness of sepsis has been increasing due to high-profile media attention, coupled with reports from the surviving sepsis campaign and a multitude of national regulators and expert bodies. The early detection and treatment of sepsis has been highlighted as a major focus for improvement. For example, in the UK, the identification and early treatment of sepsis is the target of a major national campaign and also a focus in Commissioning for Quality and Innovation for 2015-2018 - a financial incentive system.

However, a lack of suitable metrics for sepsis has hampered evaluation of sepsis improvement programmes.

Actions taken

A team consisting of a clinician, researcher, data analyst and patient safety expert Prof Charles Vincent worked together to define the target population for sepsis programmes and develop a methodology for monitoring patient outcomes.

They identified that most sepsis campaigns and improvement programmes do not target the treatment of fully developed sepsis but instead are aimed at the rapid detection and treatment of patients with suspicion of sepsis. Clinicians do not wait to diagnose sepsis but act promptly on suspicion. The target population is therefore suspicion of sepsis and not sepsis. To evaluate sepsis programmes the 'suspicion of sepsis' group needs to be defined and the outcomes of these patients monitored.

A list of 200 clinically validated ICD- 10 codes that relate to bacterial infection (the 'suspicion of sepsis' coding set) was developed to allow the identification of patients with suspicion of sepsis. The data source for the project was Hospital Episode Statistics (HES) data for all acute trusts in the Oxford AHSN region for 2012-2016. The HES dataset was analysed to identify all adult patients admitted to hospital with a diagnosis listed in the suspicion of sepsis coding set.

Impacts/outcomes

Our methodology for identifying suspicion of sepsis uses easily reproducible routine administrative data for assessing the SOS burden and comparing patient outcomes (e.g. mortality, length of stay, readmission rate, intensive care admissions) over time and across organisations. The analysis also allowed the most common and the most high-risk infections to be identified.

A short practical guide has been developed to allow other organisations to reproduce the dataset http://www.patientsafetyoxford.org/wp-content/uploads/2017/05/How-to-sepsis-guide-final.pdf and the work has been presented at a number of regional and national patient safety events including at the Sepsis Trust's 2016 conference.

Nationally, the methodology is now being used by NHS England to review national data.

This methodology has helped to inform cross-system sepsis programme board and change guidance on coding for sepsis, NHS Digital April 2017 Sepsis Coding Standards ICD-10 standard DChS.I.1: Sepsis, septic shock, severe sepsis and neutropenic sepsis
https://www.england.nhs.uk/ourwork/part-rel/sepsis/

An open access publication in BMJ Open (May 2017) describes the project in more detail. Inada-Kim M, Page B, Maqsood I & Vincent C.: Defining and measuring suspicion of sepsis: an analysis of routine data. *BMJ Open* 2017;7:e014885
http://bmjopen.bmj.com/content/bmjopen/7/6/e014885.full.pdf

Priorities addressed

AHSNs

- Promoting health equality and best practice
- Speeding up adoption of innovation into practice to improve clinical outcomes
- Building a culture of partnership and collaboration
- Treating people in a safe environment and protecting them from avoidable harm.

NHS England

- Care and quality
- Funding and efficiency
- Health and wellbeing

Future plans

This work is being extended within the Oxford region by matching the HES data with microbiology blood culture data to validate the suspicion of sepsis methodology and refine it further. We are also working with the acute trusts in our region to understand local trends and extending the work to understand subpopulations such as patients suspected of having sepsis who are admitted by ambulance, and those admitted to critical care.

Tips for adoption

- Close collaboration with informatics teams and information governance leads is essential for data analysis and to establish effective data-sharing agreements.
- Producing a simple 'how to' guide helps to share the approach.

Contact

- Jo Murray, Patient Safety Manager, Oxford AHSN jo.murray@oxfordahsn.org Tel. 01865 784969
- http://www.patientsafetyoxford.org/clinical-safety-programmes/sepsis/