Quality of Sepsis Management in North West England
Is there a Weekend Effect?

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Introduction

The Advancing Quality Sepsis Programme is an established approach to reducing variation and improving outcomes of sepsis in the North West of England. It aims to improve clinical care by producing and implementing evidence-based bundles of care across a collaborative network of hospitals. Data is collected, analysed and fed back enabling monitoring and comparison of quality of sepsis care in the form of an Appropriate Care Score (ACS), mortality rate and length of stay.

Between September 2014 and 2016 data from 25,358 patients who generated an inpatient sepsis code (CDI10) were collected. Of these 11,301 patients had confirmed sepsis (Sepsis 2 criteria) at presentation. 5207 patients were either hypotensive (SAP <90mmHg) or hyperlactatemia (Lactate >4mmol/L) at presentation.

ACS, mean time to antibiotics, blood cultures and lactate measurement were calculated for each day of the week. Mortality and length of stay were measured, enabling comparison of weekday and weekend presentation. Data was analysed using SPSS software.

Methods

The Advancing Quality sepsis programme aims and measures were devised using an established AQ framework.

AQ Sepsis Measure set (Appropriate Care Score)

SEPS-01 Early Warning Score recorded within 60 minutes of hospital arrival
SEPS-02 Evidence of sepsis screen
SEPS-03 Blood cultures taken within 3 hours of hospital arrival
SEPS-04 Antibiotics administered within 3 hours of hospital arrival
SEPS-05 Serum lactate taken within 3 hours of hospital arrival
SEPS-06 Second litre of IV fluids commenced within 4 hours of hospital arrival
SEPS-07 Oxygen therapy administered within 4 hours of hospital arrival
SEPS-08 Fluid Balance Chart commenced within 4 hours of hospital arrival
SEPS-09 Senior Review or assessment by Critical Care within 4 hours of hospital arrival

Measurement

Sepsis care is assessed by using performance on individual measures and an Appropriate Care Score (ACS) – the percentage of patients who received all eligible measures. Performance results were published on a monthly basis and shared with collaborating hospitals.

Results

• Comparing weekend to weekday presentation did not reveal any significant differences in appropriate care score, time to antibiotics, blood cultures or lactate measurement.
• Mortality rates and length of stay were not significantly different between the groups. There does not appear to be a weekend effect in sepsis care for this cohort of patients. There were more patients with hypotension and/or hyperlactatemia presenting on a Monday.
• The odds ratio for in-hospital mortality when admitted on a weekend compared to a weekday was 0.909 (95% CI 0.798–1.033, p<0.001).
• Therefore there was no significant difference between the chance of a patient dying in hospital whether they were admitted on a weekday or the weekend.
• There was no difference in quality of care by day of the week, but completion of the care bundle as defined by AQ (see above table) did reduce the odds of in-hospital death.
• The odds of death are reduced with successful completion of the appropriate care score bundle (OR = 0.852, 95% CI 0.798 – 0.909, p<0.001).

Conclusion

• Quality of sepsis care was not significantly different between weekend and weekday presentation for patients in this cohort.
• There were no significant differences in mortality or length of stay when comparing weekday or weekend presentation.
• There were more septic patients with hyperlactatemia and/or hypotension presenting on a Monday, which may indicate a reluctance of septic patients to present over the weekend.
• Continued effort in terms of workforce and clinical care is required to ensure quality of care remains consistent throughout the week.

References and Acknowledgements

UK Sepsis Trust http://sepsistrust.org/
Surviving Sepsis Campaign Guidelines 2016 http://www.sccm.org/
British Medical Journal
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