

Management of Sepsis in Clinical Haematology Unit (CHU)

Dr. Md Imran Hossain, Dr. Sharadha Sundarabharman, Dr. Erum Mazhar

Affiliation: The Royal Wolverhampton NHS Trust

Introduction

- In the United Kingdom, there are
 - more than 250,000 episodes of sepsis annually, with
 - at least 44,000 people dying as a result.¹
- Incidence of sepsis is rising by approximately 11.5% each year ('Hospital Episode Statistics (HES)' data)¹
- NHS Cost each year: (YHEC estimated)
 - £1.5 to £2 billion on sepsis treatment
 - £11 to £15.6 billion on wider economy due to sepsis.¹
- The 2006 landmark study by Anand Kumar showed an increase in mortality of 7.6% for every hour's delay in administration of appropriate antibiotic therapy.¹
- As overall mortality has reduced with time, the magnitude of this effect might have reduced, but studies still largely concur that each hour's delay increases the risk of death by 2-5%.¹

Definitions

- Trigger:** Temperature higher than 38°C or NEWS trigger (New EWS ≥ 5 or Single Parameter > 3) or Clinically unwell/ sick
- Neutropaenic Sepsis:** Neutropaenic sepsis is defined as a temperature higher than 38°C or symptoms and/or signs of sepsis, in a person with a neutrophil count of $0.5 \times 10^9/L$ or lower. (NICE 2015)¹

Aims

Our aim was to ensure appropriate management of patients who developed sepsis in Clinical Haematology Unit (CHU) in all cases (100%) in terms of

- ✓ Appropriate use of sepsis tool
- ✓ Management as per Sepsis 6
- ✓ Trigger to Needle time less than 60 min

Method

- Inclusion Criteria:**
 - CHU Inpatient
 - Aged over 18 years
 - Who developed sepsis during inpatient stay
- Exclusion Criteria:** Patients Admitted With
 - Sepsis
 - Neutropaenic sepsis
 - Febrile neutropaenia
- Duration of Study Period:**
 - Audit: 01 January 2019 to 30 April 2019 (04 Months)
 - First Intervention
 - Re-audit post intervention: 01 May 2019 to 31 July 2019 (03 Months)

Baseline/ Audit Data

- 3 out of 17 patients had a trigger to needle (TTN) time over 60 minutes, all of which (100%) were
 - ✓ Out of hours with
 - ✓ No as required first stat dose of antibiotic prescribed.
- Non-compliance with sepsis 6 also noted in terms of
 - Inadequate use of sepsis toolkit,
 - Use of lactate in treatment decisions,
 - Intravenous fluid prescription and
 - Measurement of urine output.



Interventions

- As required first stat dose of antibiotic (if sepsis/ spikes) & intravenous fluid (if hypotensive or lactate >2) for neutropaenic & post chemo patients
- Sepsis toolkit on vital Pac
- Sepsis pack on ICE system
- Staff education to junior doctors & nursing staffs on sepsis 6 protocol details

Re-Audit Post Intervention

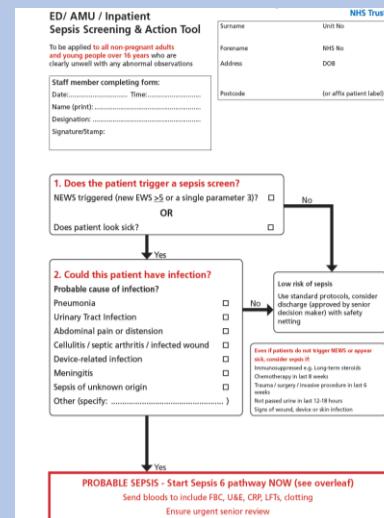
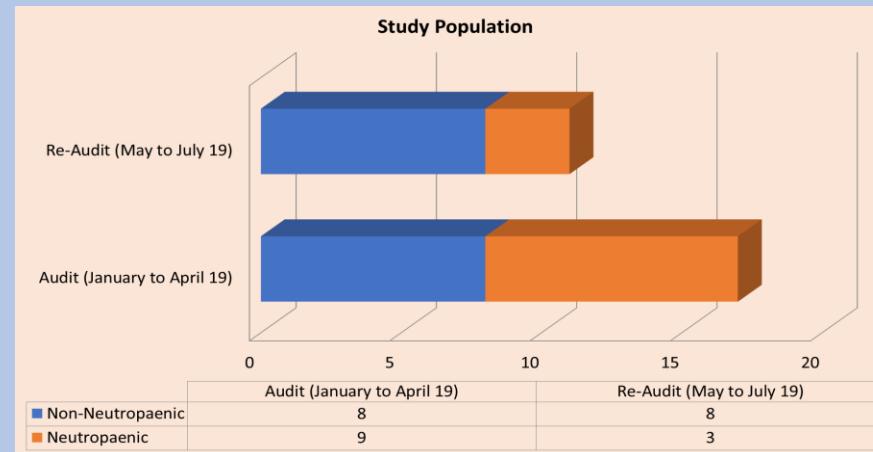
- Following intervention, improvement was noted in trigger to doctor (TTD) time. But it did not impact on trigger to needle time (TTN).
- Similar to pre-intervention, all cases of TTN over 60 minutes (100%) had no as required first stat dose of antibiotic prescribed.
- The failure to improve the use of sepsis 6 toolkit was due to change from paper to complex online system without adequate staff awareness & training.

Discussion

- Sepsis is poorly managed out of hours and when sepsis toolkit is not routinely used.
- All Cases of TTN > 60 both in both data cycles happened out of hours and no as required first stat dose of antibiotic prescribed.
- Improving trigger to doctor time does not impact on TTN.

Conclusions

- The most effective way to improve trigger to needle time was found to be prescribing as required first stat dose of antibiotic to high risk patients (neutropaenic & post-chemo patients) with triggers clearly mentioned & nursing staff aware.
- To improve compliance with sepsis 6, sepsis online toolkit should be simplified along with regular staff training.



To be applied to all adults and young people over 16 years of age with suspected or confirmed Sepsis

Action (complete ALL within 1 hour)

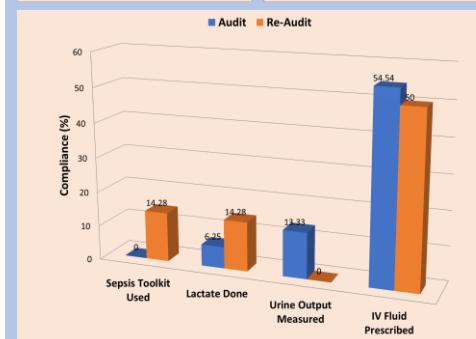
- Administer oxygen
- Take blood cultures
- Give IV antibiotics
- Give IV fluids
- Check serial lactates
- Measure urine output

Important blood numbers:

- Medical SpO₂ - 94%
- Surgical SpO₂ - 97%
- Respiratory rate over 25 breaths per minute
- Lactate not reducing



Trigger to Needle Time



- The Sepsis Manual, 5th Edition, 2019 by The UK Sepsis Trust
- NICE – CKS: Neutropaenic Sepsis Definition (Revised July 2019): <https://cks.nice.org.uk/topics/neutropaenic-sepsis/#:~:text=Neutropaenic%20sepsis%20is%20a%20potentially,109%2FL%20or%20lower.>