



# Improving the immediate management of suspected neutropenic sepsis (SNS) in the Epsom Hospital Emergency Department (ED): Audit of door to delivery time for antibiotics following the implementation of a SNS immediate management proforma and audit tool.

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## Background

The NCEPOD report 'For better, for worse?'<sup>1</sup> provided a critical review of the care of cancer patients who died within 30 days of receiving systemic anti-cancer therapy and provided the impetus for development of the Acute Oncology Model.

A principle recommendation was to ensure emergency departments had a policy for the management of suspected neutropenic sepsis (SNS) and this was subject to regular audit.

During 2007<sup>2</sup> and 2010<sup>3</sup>, local audit demonstrated that only approximately 20 percent of patients presenting to Epsom Hospital ED with neutropenic sepsis received antibiotics within 1 hour of arrival.

In August 2011, a new SNS immediate management policy was introduced, utilising an integrated management proforma and audit tool (see Box 1) and practice change measures (see below).

## Aim

This audit was undertaken to assess the effectiveness of the new SNS policy on the timeliness of antibiotic delivery in the Epsom Hospital ED.

## Methods

Audit data was obtained from the SNS immediate management proforma that was completed prospectively for each patient with SNS who attended the ED.

The presented data relates to patients who presented to Epsom ED with SNS between September-December 2011 and January-June 2013.

Cases were identified, either being within 6 weeks of chemotherapy and presenting with infective symptoms, or known haematological malignancy and presenting with infective symptoms.

## Practice Change

### Proforma

### Patient education

### Patient advice card (see opposite)

### Staff Training

### Acute oncology Service

### Streamlined referral system

### Dedicated specialist nurses

### Liaison with local cancer unit

## Patient advice card

<p>This Patient is on <b>CYTOTOXIC CHEMOTHERAPY</b></p> <p><b>Information for patients:</b></p> <p>You MUST contact your hospital team URGENTLY if you feel unwell or develop:</p> <ul style="list-style-type: none"> <li>shortness of breath or breathing difficulties</li> <li>temperature greater than 38°C (100°F)</li> <li>chilling rigors</li> <li>flu-like symptoms</li> <li>gem / more bleeds or unusual bruising</li> <li>mouth sores that stop you eating or drinking</li> <li>Parasitent vomiting</li> <li>Four or more bowel movements in 24 hrs</li> <li>Come into contact with either a hingles or chicken pox</li> </ul>	<p><b>Information for health care professionals:</b></p> <ul style="list-style-type: none"> <li>This patient is at risk of neutropenic sepsis</li> <li>Febrile neutropenic patients require URGENT inpatient treatment with IV antibiotics according to local clinical guidelines and fluid replacement</li> <li>Even if afebrile, unwell neutropenic patients should be admitted and treated as above</li> <li>Take full blood count and cultures</li> </ul> <p>For further advice and to keep the patient's oncologist, haematologist, or healthcare professional informed please contact these numbers immediately</p> <p>Office hours: _____</p> <p>Out of hours: _____</p>
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## Results

In the 2011 audit period (immediately following implementation of the new policy), 9 cases of SNS were identified; 67% had antibiotics within 1 hour, (Graph 1) 89% within 2 hours. Of 3 cases with confirmed neutropenia, 2 had antibiotics within the hour.

Repeat audit during January-June 2013 identified 15 cases of SNS; 80% had antibiotics within 1 hour (Graph 1) and 100% within 2 hours. Of 8 cases with confirmed neutropenia, 6 had antibiotics within the hour. (see Graphs of Results)

In this 2013 audit, mean time to antibiotics was 54.2 minutes (range 28-104) (Graph 2), 53% of those with suspected neutropenic sepsis were neutropenic (Graph 3) with a range of primary diagnoses shown in Graph 4.

## Conclusion

Implementation of NCEPOD and National Chemotherapy Advisory Group (NCAG)<sup>4</sup> recommendations has resulted in improved 'door to delivery' time for antibiotic administration in patients with SNS presenting to Epsom Hospital ED.

## References

1. NCEPOD, (2008) For better or worse: A review of the care of patients who died within 30 days of receiving systemic anti-cancer therapy.

<http://www.ncepod.org.uk/2008sact.htm>

2. Okera, M., et al., (2011) A prospective study of chemotherapy-induced febrile neutropenia in the South West London Cancer Network. Interpretation of study results in light of NCAG/NCEPOD findings, British Journal of Cancer, 104;3, 407-12.

3. Higgins, Anne, and Alison Hill, (2012). "Effectiveness of a neutropenic sepsis clinical pathway." Cancer Nursing Practice 11.10.

4. National Chemotherapy Advisory Group, (2009) Chemotherapy Services in England: Ensuring quality and safety a report from the National Chemotherapy Advisory Group.

<http://ncat.nhs.uk/sites/default/files/NCAG%20Report.pdf>

## Management Protocol (Box 1)

SNS audit proforma v1 date 10.0.11

### Suspected Neutropenic Sepsis Immediate Management Protocol

Patient Name: \_\_\_\_\_ DOB: \_\_\_\_\_  
Date: \_\_\_\_\_ Time of arrival in ED: \_\_\_\_\_ Weight: \_\_\_\_\_ Kg

**Identification of patients at risk – Seen by: \_\_\_\_\_ Time: \_\_\_\_\_**

- Received chemotherapy within the previous 6 weeks and temperature >38°C or symptoms/signs suggestive of infection **Y / N**
- Known haematological malignancy or immunodeficiency and temperature >38°C or symptoms/signs suggestive of infection **Y / N**

**Patients meeting either of these criteria should undergo fast-track assessment and receive urgent empirical antibiotic therapy as detailed below**

Malignant diagnosis: \_\_\_\_\_ Temp \_\_\_\_\_ °C

Chemotherapy regimen and date of last cycle: \_\_\_\_\_

**Rapid assessment - Seen by: \_\_\_\_\_ Time: \_\_\_\_\_**

Patients identified as suspected neutropenic sepsis should be fast-tracked to a bed in A&E majors for urgent assessment and treatment:

- Clinical assessment
  - Pulse: \_\_\_\_\_ BP: \_\_\_\_\_ Respiratory rate: \_\_\_\_\_
  - Fluid resuscitation and vasopressor support as necessary
  - Physical examination
- Cannulate and take bloods for
  - FBC, U&E's, LFT's, CRP, serum lactate (if septic)
  - Blood cultures – Peripheral and central if CVC present (label samples accordingly)

**Patients should receive antibiotic therapy as soon as blood cultures have been taken. Do not delay antibiotics whilst awaiting blood results.**

**Delivery of empirical intravenous antibiotic therapy within 1 hour of arrival**

Recommended immediate antibiotic therapy		
No penicillin allergy	Non-immediate penicillin allergy	*Immediate penicillin allergy
Tazocin 4.5g IV qds + Gentamicin at 5mg/kg od	Meropenem 1g IV tds + Gentamicin at 5mg/kg OD	Ciprofloxacin 400 mg bd + Teicoplanin 400 mg 12 hrly x3 doses then 400mg daily + Gentamicin at 5mg/kg OD

Consider the addition of teicoplanin in patients with possible line sepsis  
\*Contact microbiology to discuss ongoing antimicrobial therapy

Circle regimen given, time of 1<sup>st</sup> dose: \_\_\_\_\_ WCC: \_\_\_\_\_ Neutro: \_\_\_\_\_ Pit: \_\_\_\_\_

Time of decision to admit/discharge: \_\_\_\_\_

Circle outcome: Admitted to ward / Admitted to HDU/ITU / Discharged home

**Please complete all areas in red and place in the SNS audit file**

## Graphs of Results

