Doncaster and Bassetlaw Teaching Hospitals NHS Foundation Trust

Febrile Neutropenic Patients Management Guidelines

This procedural document supersedes: PAT/EC 5 v.4 – Febrile Neutropenic Patients Management Guidelines

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Approved By (Committee/Group)	Haematology/SPC Clinical Governance/ Policy Approval and Compliance Group
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Target Audience	Trust-Wide

Amendment Form

Version	Date	Brief Summary Of Changes	Author
Version 5 (amended 1 Nov 2018)	1 November 2018	• Early Warning Score (EWS) replaced with National Early Warning Score (NEWS2). • Appendix 1 – Early Warning Score, has been removed. Staff should refer to Trust policy PAT/T 33 – Physiological Observations and prevention of deterioration in the acutely ill adult.	Stacey Nutt
Version 5	16 June 2017	• Section 6.2 - Section made more succinct to make it easier to follow • Section 6.2 - Lactate added to investigations • Previous Appendix 1 removed as not relevant	Stacey Nutt
Version 4	18 March 2015	• Section 6.1. added: - Hypothermia <35.0^{0}C on two readings 1 hour apart. • Section 6.2 – patients presenting to A/E added: - If no bed available at WPH and the patient is fully clerked by medical team the patient can go direct to Haematology Ward if a bed is available • Any reference to haematology CNS changed to Acute Oncology Nurses	Stacey Nutt Nicky Godfrey
Version 3	November 2012	• New style and format included. • This document has been reviewed taking into account recommendations from NICE clinical guideline 151 (2012) • All references to Ward 27 have been replaced with 'Haematology Ward' • Section 3 – neutrophil count redefined to 0.5x10^9/l • Section 6 – pyrexia redefined as 38.0^{o}C Specific guidance on patients who become afebrile within 48 hours who recover their neutrophils to >0.5x10^9/l • Section 6.2 – oncology patients to be cared for by the admitting acute physicians. • Section 6.4 – Antibiotic treatment removed and link added for 'Policy for treatment of febrile neutropenic sepsis'	Stacey Nutt

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1. INTRODUCTION

Any infection in a neutropenic patient is a life threatening event, with or without the presence of pyrexia. Any sudden deterioration in a patient who is neutropenic is almost always due to infection and unless there is another obvious cause of the decline, prompt hospitalisation and initiation of broad-spectrum antibiotic therapy should be instigated without any delay (Bodey 2000, MPS Education and Publications 2003, Dellinger et.al 2004).

These guidelines are specifically aimed at haematology and oncology patients who become neutropenic following cancer chemotherapy. However, it may be applicable for other haematology and medical patients who develop neutropenia for other reasons. Where possible such patients should be discussed with a consultant haematologist and/or microbiologist.

The guideline should be used in conjunction with the following Trust approved documents:

- Febrile Neutropenic Sepsis Policy– Mar 2016
- Neutropenic Sepsis – IPOC
- PGD 72 – Administration of first dose IV antibiotics for patients with suspected neutropenic sepsis (post chemotherapy).

2. PURPOSE

The purpose of this document is to ensure that the safest and most appropriate action is taken in the management of patients who are febrile and neutropenic, as a consequence of anti-cancer treatment. It is a cancer peer review requirement that there is a clear admission pathway for the management of emergencies such as neutropenic sepsis. This should be directly to an area that has nurses specifically trained in the recognition and management of neutropenic sepsis, so that rapid assessment and administration of first line antibiotics can be achieved within **1 hour** of presentation.

3. DEFINITION - NEUTROPENIA

Neutropenia is defined as a 'neutrophil count of $<0.5 \times 10^{9/}$l (Ribton 2008).

Do not treat on total WBC count – UNLESS THE TOTAL COUNT IS $<1.0 \times 10^{9/}$l

This would avoid doctors waiting for the differential count in severely neutropenic patients, where the machine may not issue an automated differential count and a manual count may take several hours, or days during weekends.

In general, the risk of infection increases with the severity and duration of neutropenia, neutropenic sepsis is the commonest haematological emergency and can be fatal. Early diagnosis and prompt antibiotic treatment can prevent death (Bower and Waxman 2006).

4. EQUALITY IMPACT ASSESSMENT

An Equality Impact Assessment (EIA) has been conducted on this procedural document in line with the principles of the Equality Analysis Policy (CORP/EMP 27) and the Fair Treatment For All Policy (CORP/EMP 4).

The purpose of the EIA is to minimise and if possible remove any disproportionate impact on employees on the grounds of race, sex, disability, age, sexual orientation or religious belief. No detriment was identified. (See Appendix 1).

5. DUTIES AND RESPONSIBILITIES

Nursing staff to inform the relevant junior doctor if a case of neutropenic sepsis is likely.

Assessing doctor or nurse in charge to escalate to relevant consultant haematologist or oncologist once neutropenic sepsis is confirmed.

If the patient has a solid tumor cancer and is under the care of Sheffield Teaching Hospitals (STH) then contact the on-call oncology registrar at Weston Park Hospital (WPH) immediately.

Non-haematology patients (i.e. solid tumour patients) with neutropenic sepsis due to chemotherapy should be transferred to WPH soon after the administration of first dose antibiotics. If for any reason they cannot be transferred, they should be admitted to the Haematology Ward under the care of the admitting consultant physician, with advice from WPH.

Acute Oncology Nurses to ensure appropriate training of PGD 72 – for first dose antibiotic administration.

Acute Oncology Nurses to ensure compliance of PGD 72 by maintaining and completing the attached audit.

6. PROCEDURE

6.1 Signs of Infection in Neutropenic Patients

Any one of:

- Pyrexia >38.0^{o}C on a single reading.
- Hypothermia <35.0^{o}C on two readings 1 hour apart.
- Rigor or other signs of fever (cold, sweating, shivering).
- Any signs of infection (sore throat, cough, urinary symptoms, and skin lesions).
- Diarrhoea.
- Unexplained hypotension.
- Unexplained tachycardia.
- Any unexplained clinical deterioration, even in the absence of fever.
- Unexplained abdominal pain.

Focal signs of infection may or may not be present.

The oncology or haematology team responsible for the patient should be made aware as soon as possible that the patient has been admitted for suspected neutropenic sepsis.

6.2 Initial Management of Neutropenic Patients

Patients must be admitted immediately and urgently assessed by staff experienced in managing neutropenic patients. If in any doubt, immediate medical advice should be sought from the on-call consultant haematologist/oncologist.

Any patient suspected of being neutropenic should be treated as Neutropenic until the blood count is known.

Patients suspected of being neutropenic must be admitted to the Haematology Ward at Doncaster Royal Infirmary or if no bed is available to AMU. This includes patients who present to all Emergency departments within the Trust and to The Chatsfield Suite.

Patients admitted to Bassetlaw Hospital should be stabilised and treated before being transferred quickly and to the appropriate hospital / ward.

Oncology Patients Doncaster

- **Patients commonly present to the following areas:**
    - **Chatsfield Suite**
    - **AMU**
    - **A/E both sites**
- **Patients will** be assessed urgently by the Acute Oncology Nurses and treated as per Trust Antimicrobial policy for the management of febrile Neutropenic sepsis (March 2016). Once stabilised immediate contact should be made with the on-call oncology registrar at WPH to arrange transfer. However, if there is no bed available at WPH (document so in the notes) the patient should be transferred to the Haematology Ward or to AMU at Doncaster Royal Infirmary. The patient will remain under the care of acute physicians for the episode of neutropenic sepsis with advice from the patient's oncologist.

  The following investigations should be undertaken immediately, along with clinical examination, careful history taking and nursing assessment. Look for local signs of infection. All results must be clearly documented in the IPOC for neutropenic sepsis.

    - Blood samples for FBC, U+E, LFT, Coagulation screen, CRP, lactate, Group and Save and Calcium – samples for FBC and U+E must be 'fast tracked' as urgent.

- Blood cultures from central venous catheter; including each lumen (and clearly identified on labelling which lumen).
- Peripheral blood cultures – these should be taken within 2 hours of blood cultures from the central venous access device.
- Record vital signs and record National Early Warning Score (NEWS2) as per Trust policy (PAT/T 33).
- Urinalysis
- Sputum specimen – if productive.

Any patient who is suffering from sepsis should be discussed urgently with the on call haematology/oncology consultant and the department of critical care.

If clinically indicated also order the following:

- Chest X-Ray
- Swab from Hickman/PICC line site, skin lesions, mouth
- Stool specimen if diarrhoea is present with request for ***Clostridium difficile***
- During the flu season – all patients admitted with a temperature should have a throat swab sent for respiratory virus.

Avoid invasive procedures, including blood gas analysis, urinary catheterisation, PR examination and IM injections. These are all contraindicated in patients who are neutropenic.

6.3 Central Venous Catheter

Central Venous Catheters (CVC) must be assessed for signs of infection, as the use of these devices increase the risk of infection (Johnson et.al 2000). Signs of infection can include:

- Inflamed exit site/tunnel
- Pyrexia/rigors post flushing
- Previous history of line infection
- Other soft tissue infection
- Where possible the access line should be used for IV antibiotics – if a CVC infection is suspected refer to Antibiotic lock guidelines and/or discuss with Microbiologist.
- Any patient with a CVC must be on the Trust CVC IPOC.
- Venous access catheters must not be removed without discussion with the treating consultant. If it is decided the appropriate action is to remove the CVC immediately, the on-call surgical registrar should be contacted.

6.4 Treatment and Management of Neutropenic Patients

If the patient is neutropenic, intravenous fluids, antibiotic therapy and all prescribed medical treatment must be commenced immediately, without waiting for results from investigations. Waiting for results before initiating antibiotics could result in a rapid deterioration in the patient's condition. If neutropenic sepsis is a firm clinical suspicion then a first dose broad spectrum antibiotic should be administered immediately (within 1 hour of presentation). The risk of harm to the patient from delayed antibiotic therapy is far greater than that of unnecessary treatment. Full guidance on antibiotic therapy can be found in the Trust policy 'Febrile Neutropenic Sepsis Policy (policy available via following hyperlink DBH ANTIMICROBIAL)

6.5 Low Risk Patients

Switch from intravenous to oral antibiotic therapy after 48 hours of treatment in patients whose risk of developing septic complications has been reassessed as low by a haematology consultant.

6.6 Ongoing Assessment of Patients

1. Nursing staff must ensure that vital signs and NEWS2 are recorded and escalated as per Trust policy PAT/T 33. **If the patient has an elevated NEWS2 the on-call consultant haematologist MUST also be informed.**
2. If the patient is prescribed blood or platelet transfusions, they should be administered as early in the day as possible. If they are pyrexial prior to transfusion the transfusion must go ahead as it is more imperative in the septic patient that they receive blood product support.
3. A strict record of fluid intake and output must be maintained.
4. Transfers to the Department of Critical Care (DCC) may be necessary following consultation with the on-call haematology consultant and the DCC consultant.
5. Patients with neutropenic sepsis can occasionally appear to have an acute abdomen. The surgical team should only be involved after discussion with the on-call haematology consultant.

6.7 Supportive Management for the Neutropenic Patient

Prompt recognition of early clinical features of infection is crucial in the management of these patients so that infectious complications can be diagnosed early and treatment can be initiated immediately (Dellinger et.al 2004).

1. Monitor full blood count, biochemical profile and clotting screen daily.
2. Assess intravenous sites daily for any signs of infection.

3. Assess the patient's oral status every 12 hours (minimum) using a recognised oral assessment guide and monitor for the presence of a sore throat.
4. Assess the patients' skin daily for breakdown, lesions and rashes. Assess any wounds for signs of infection and educate the patient on the importance of scrupulous personal hygiene.

5. Assess for any change in urinary function including frequency, dysuria and haematuria. A routine urine dipstick should be performed daily and acted on accordingly.

6. Assess for any changes in bowel habit.

7. Assess female patients for vaginal candidiasis; instruct patients to avoid the use of tampons.

8. Assess patients for any signs of peri-anal infection.

6.8 General Guidelines for In-Patient Care

1. Patients will be cared for in an environment that minimises the risk of infection from other patients, hospital staff and visitors, preferably in a single, en-suite room.

2. Protected isolation must be clearly indicated by appropriate signage and protective isolation measures taken in accordance with infection control policy.

3. Educate the patient and relatives about the need to restrict visitors who have transmissible illnesses; e.g bacterial infections, herpes, colds, influenza, chickenpox, shingles or measles. Patients must also avoid contact with people who have been recently vaccinated with live or attenuated virus vaccines because of the risk of disseminated disease.

4. Careful hand washing is the single most important action of the health professional, patient, the patient's family and visitors, in preventing cross infection (Johnson et.al 2000).

5. Fresh flowers and plants should not be placed in the patient's room as pathogens could flourish in stagnant water. Denture mugs and soap dishes should also be removed.

6. Food may be a source of infection and dietary restrictions may be necessary (Johnson et.al 2000). Offer the patient a copy of the Leukaemia and Lymphoma Research booklet for guidance on foods to avoid and handling advice whilst neutropenic. Relatives must be informed of food restrictions when bringing food onto the ward that has been ready prepared – it cannot be re heated in a microwave. Patients and relatives should also be informed not to have 'fast food' brought in for them. Weigh the patient twice a week (recording their MUST score) and refer to the dietician as appropriate.

7. Face cloths should be avoided and disposable wipes should be provided.
8. Sanitary towels should be used instead of tampons.
9. Ensure patients are encouraged/assisted to shower daily (the shower should be cleaned and disinfected before and after use).
10. Washbowls must be cleaned with hot and soapy water and dried thoroughly.
11. The rooms should be cleaned at least daily and all surfaces damp dusted.

6.9 Discharge of Patients

Patients should not be discharged without agreement of the responsible haematologist/oncologist.

Once the neutrophil count is greater than 0.5 x 10^9/l, persistence or recurrence of infection and fever are reduced (Dellinger et.al 2004). Antibiotic treatment should be continued until cultures are negative, sites of infection are resolved and the patient is free of signs and symptoms of neutropenic sepsis. If the patient becomes afebrile within 48 hours and the patient is clinically well, antibiotics can be changed to oral and the patient discharged home. Upon discharge ensure the patient's follow-up appointment in the Chatsfield Suite or relevant out patient clinic is arranged.

For haematology patients please also inform the haematology clinical nurse specialists.

7. TRAINING AND SUPPORT

The Acute Oncology Nurses will train nurses identified by the Ward manager or Chatsfield Suite Manager in the use of PGD 72.

Lead Chemotherapy Nurse to ensure all nurses trained in the administration of chemotherapy are familiar with the admission process and management of febrile neutropenic patients.

New junior doctors to be made aware of the policy during induction.

8. MONITORING COMPLIANCE WITH THE PROCEDURAL DOCUMENT

What is being Monitored	Who will carry out the Monitoring	How often	How Reviewed/Where Reported to
Compliance with 1 hour antibiotic administration	Acute Oncology Nurses	Annually	To be reported back to chemotherapy sub-group and reported as part of QST process
Use of protected empty bed	Ward Manager	Ongoing	Ongoing monitoring daily. Exceptions are to be incident reported (via DATIX) and fed back via clinical governance

9. ASSOCIATED TRUST PROCEDURAL DOCUMENTS

Mental Capacity Act 2005 Policy and Guidance, including Deprivation of Liberty Safeguards (DoLS) - PAT/PA 19

Privacy and Dignity Policy – PAT/PA 28

Antibiotic Lock Therapy Policy 2012

Physiological observations and prevention of deterioration in the acutely ill adult - PAT/T 33.

10. REFERENCES

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APPENDIX 1 – EQUALITY IMPACT ASSESSMENT - PART 1 INITIAL SCREENING

Service/Function/Policy/Project/ Strategy	Care Group/Executive Directorate and Department	Assessor (s)	New or Existing Service or Policy?	Date of Assessment
Febrile Neutropenic Patients Management Guidelines	Speciality Services Care Group	Stacey Nutt/Kate Mair	Existing policy	12/4/2017

1) Who is responsible for this policy? Name of Care Group/Directorate**:** Speciality Services Care Group

2) Describe the purpose of the service / function / policy / project/ strategy? – Trust-wide Guidance

3) Are there any associated objectives? Legislation, targets national expectation, standards – Local and National Standards

4) What factors contribute or detract from achieving intended outcomes? - None

5) Does the policy have an impact in terms of age, race, disability, gender, gender reassignment, sexual orientation, marriage/civil partnership, maternity/pregnancy and religion/belief? - No

- **If yes, please describe current or planned activities to address the impact** [e.g. Monitoring, consultation]

6) Is there any scope for new measures which would promote equality? [any actions to be taken - No

7) Are any of the following groups adversely affected by the policy?

Protected Characteristics	Affected?	Impact
a) Age	No	
b) Disability	No	
c) Gender	No	
d) Gender Reassignment	No	
e) Marriage/Civil Partnership	No	
f) Maternity/Pregnancy	No	
g) Race	No	
h) Religion/Belief	No	
i) Sexual Orientation	No	

8) Provide the Equality Rating of the service / function /policy / project / strategy – tick (✓) outcome box

Outcome 1 ✓	Outcome 2	Outcome 3	Outcome 4

If you have rated the policy as having an outcome of 2, 3 or 4, it is necessary to carry out a detailed assessment and complete a* **Detailed Equality Analysis form in Appendix 4

Date for next review: March 2020

Checked by: Stacey Nutt Date: 12/4/2017