Whittington Health NHS

NEUTROPENIC SEPSIS IN ADULTS

Subject:	Management of Neutropenic sepsis/febrile neutropenia
Policy Number	
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Policy Executive Owner:	Dr Pauline Leonard, Michael Kelsey, Simon Wan
Designation of Author:	Consultant
Name of Assurance Committee:	Clinical Guidelines Committee
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Target Audience:	Emergency department staff, Medical Admissions unit staff and all ward cover teams
Key Words:	Neutropenia, febrile & sepsis

Version Control Sheet

Version	Date	Author	Status	Comment
1.0	Sept 2007	Natalie Griffith & Jill Ireland		
2.0	Sept 2009	Natalie Griffith & Jill Ireland		
3.0	19.11.2012	Dr Pauline Leonard	Cons	

➢ Criteria for use

For the treatment of adult patients with febrile neutropenia/neutropenic sepsis.

➢ Background/ introduction

For the purposes of this guideline febrile neutropenia and neutropenic sepsis are interchangeable.

Febrile neutropenia/Neutropenic sepsis is a common complication of chemotherapy treatments in haematology and oncology patients. If not treated promptly and appropriately it may be fatal. Prompt treatment saves lives.

Within **<u>one hour</u>** of presentation to the emergency department the patient should:

- Be managed according to the neutropenic sepsis algorithm (page 2)
- Be assessed by a doctor
- Receive the first dose of antibiotics
- The DMR should be informed

The appropriate haematology/oncology specialist should be informed within 24hrs of presentation.

➢ Definitions

Neutropenia is an absolute neutrophil count (ANC) less than $< 0.5 \times 10^{9}$ L.

Patients who present with an ANC of > 0.5 and less than 1.0 and it is unclear whether the ANC may continue to fall (within one week of systemic anticancer chemotherapy) – treat as febrile neutropenia

Fever is a temperature greater than > or = to 38^{o}C

<u>NB:</u> In some patients a fever may be the ONLY sign of infection. If the patient is neutropenic and has a fever treat as neutropenic sepsis. For others they may not have enough white cells to produce a fever so if neutropenic and clinically suspicious treat as neutropenic sepsis.

Any patient who presents with rigors or hypotension and neutropenia should also be treated as neutropenic sepsis

➢ Triage

When an oncology/haematology patient suspected of neutropenic sepsis presents to the emergency department they need to be triaged as a cateogory 2 patient and the neutropenic sepsis algorithm followed.

At triage patient needs:

- Observations: pulse, blood pressure, temperature, oxygen saturation and respiratory rate.

- Blood tests: full blood count (FBC), clotting screen, urea & electrolytes (U&E), liver function tests, c-reactive protein, blood cultures (peripheral and central, if central line in situ).

➢ History and examination

It is important to enquire about recent treatment with chemotherapy and ask the patient if they have brought their chemotherapy record booklet (purple book) with them, which contain information on the chemotherapy the patient has received. Look for signs of infection in the following sites:

- Systemic: rigors

- Lungs: shortness of breath, cough, sputum

- Genito-urinary symptoms e.g. loin pain, dysuria or discharge

- Presence of or recent use of central line or Peripherally Inserted Central Catheter (PICC) line (examine exit site and take cultures from ALL individual lumens and a peripheral site)

	Please see Whittington Health Guideline: **'Taking Blood Cultures'** http://whittnet/document.ashx?id=802

- ENT problems especially involving sinuses

- GI: diarrhoea

- Skin (consider generalised herpes, varicella zoster, pseudomonas, fungal)

- CNS (meningism)

- Any wounds

- Ensure full drug history to screen for myelosuppressive medications other than actual cytotoxic chemotherapy regimens e.g. prophylactic use of Septrin in haemato-oncology patients, treatment with Ganciclovir.

➢ Treatment

DO NOT WAIT FOR THE RESULTS OF ANY OTHER INVESTIGATIONS. IF FBC RESULTS ARE NOT AVAILABLE TREAT AS NEUTROPENIC SEPSIS UNTIL PROVEN OTHERWISE.

First line treatment:

- Monotherapy using Piperacillin & Tazobactam 4.5g intravenous QDS

There is no role for the routine use of an aminogylcoside as first line treatment unless there is specific local microbiological guidance to do so

- If a patient has a central line or central access device in situ there is **NO** role for the routine use of Vancomycin 1g IV BD or Teicoplanin 400mg OD.

For penicillin allergic patients:

- Ciprofloxacin 400mg IV BD & Vancomycin 1g IV BD

All patients admitted with neutropenic sepsis need to be reviewed daily. FBC & U&E must be checked every day. A referral to the Acute Oncology team via ICE should be made for all Oncology patients and for those with a haematological admission need to be referred to the Haematology Specialist registrar (Haem SpR).

For patients who remain pyrexial, but are clinically stable, continue first line antibiotics and take blood cultures when Temp >38°C

For patients who are pyrexial with signs of cardiovascular instability consider additional or second line anti-microbial treatment following discussion with the Microbiology team, e.g.

- Meropenem 1g IV TDS for all patients including those with **penicillin allergy**

For patients who present with a suspected line infection treat with Vancomycin 1g BD – discuss with microbiology team whether a “line lock” should be employed

Whittington Health Febrile Neutropenia/Neutropenic Sepsis Algorithm

PLACE THIS COMPLETED SHEET IN PATIENTS HOSPITAL NOTES

Patient name……. DOB……/……../…….. Hospital number……

Tick — Chemotherapy in last 21 days?

NO → Normal Triage

YES → Triage 2, urgent obs & weight, protective isolation and sepsis screen

NO

Tick — Does patient meet severe sepsis criteria?

YES → Follow severe sepsis guidelines
If ANC>0.5 give monotherapy with piperacillin & tazobactam 4.5g IV & Filgastrim 300mcg sc stat

NO

Tick — Bloods: Urgent point of care (POC)* test
FBC,U&E,LFT,CRP, Clotting, G&S, blood cultures – peripheral & central line, urine/MSU
*If no POC: assume ANC .0.5

Tick — Absolute neutrophil count (ANC) <or = 0.5 or no POC available

NO → Patient not neutropenic:
Manage as clinically indicated

Tick — Fever > or = 38°C or fever at home

NO → Manage as clinically indicated

Treat with Piperacillin & Tazobactam 4.5g IV Time given ……..

For Penicillin allergic patients treat with Ciprofloxacin 400mg IV plus Vancomycin 1g IV

Time given ……..

Supportive Care:

- IV fluids
- High risk patients should be treated with GCSF Filgastrim 300mcg sc:
    - Age >65yrs
    - ANC < or =0.1
    - Concurrent hypotension
    - Uncontrolled primary disease
    - Concurrent pneumonia

- **If patient remains febrile after 96 hours consider anti-fungal therapy after discussion with microbiology team**

➢ When to stop antibiotics

If cultures are positive: treat with sensitive antibiotics

If cultures are negative and patient is:

afebrile for more than 48 hours

and ANC is > or =0.5

There is no need to complete a course of oral antibiotics unless an organism or focus of infection has been found.

NOTE: if patient on regular Paracetamol be mindful of masking effect on fever. If this is the case check other inflammatory markers.

➢ Further Investigations and Management

Full infection screen including urine dipstick, mid-stream specimen of urine, sputum, and stool cultures for MC+S

Chest x-ray only if clinically suspicious

PICC or central line exit site swab

Ensure blood cultures have been sent: peripheral and all lumens of central/PICC line

Naso-Pharyngeal Aspirate if coryzal symptoms and suspicion of RSV / Influenza A / Para influenza

Throat swab

Avoid unnecessary urinary catheterisation because of transient bacteraemia

Avoid intramuscular drugs because thrombocytopenia / coagulopathy may be present

Rectal administration of drugs should not be used because of the risk of inducing bacteraemia through damage to the bowel wall (includes use of aperients)

Rapid access to a protective isolation side room should be facilitated thus reducing exposure time to multiple patients in either ED or MAU.

➢ General Nursing

Patient should be **nursed** in protective isolation units on MAU or Mercers ward.

A protective isolation sign should be visibly displayed on the door.

Minimum 4 hourly **monitoring of vital signs** (temperature, pulse, blood pressure, respiratory rate) **Increase to hourly if vital signs enter 'trigger zones'.**

Oral hygiene and assessment screen 4 hourly to screen and intervene in relation to chemotherapy induced mucositis

Strict Fluid balance detailing hourly cumulative balances to compare against set limits

Stool Chart

Care of central line using aseptic non-touch technique and closed IV system

Ensure exclusion of visitors with current or recent cold and flu type illness and or exposure to infection with communicable virus such as chicken pox and measles.

Prohibit gifts of flowers and plants due to risk of exposure to fungal spores.

➢ Contacts

- Acute Oncology Team via ICE or bleep 3351 or Dr Leonard mobile 07879115199
- Haematology SpR (bleep 3060 and 3037)
- Microbiology SpR and Microbiology Team (bleep 3069)
- Oncology Pharmacist (Bleep 2947)

➢ Compliance with this guideline (how and when the guideline will be monitored e.g. audit and which committee the results will be reported to) Please use the tool provided at the end of this template

- Prospective audit and presentation at Grand Round
- Annual audit (pharmacy)
- Results reported to Antimicrobial steering group and Chemotherapy unit monthly meeting/ lead clinician for Cancer Services Dr Pauline Leonard

➢ References

1. NICE (2012) Neutropenic sepsis: prevention and management of neutropenic sepsis in cancer patients NICE. (CG151). Available from: http://guidance.nice.org.uk/CG151 [accessed 3 December 2012)

2. National Chemotherapy Advisory Group (2009) Chemotherapy services in England: ensuring quality and safety Department of Health. Available from: http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/DH_104500 [accessed 3 December 2012]

3. National Confidential Enquiry into patient Outcome and Death (2008) Systemic anti-cancer therapy: for better, for worse? NCEPOD Available from: http://www.ncepod.org.uk/2008sact.htm [accessed 3 December 2012]

To be completed and attached to any procedural document when submitted to the appropriate committee for consideration and approval

		Yes/No	Comments
1.	**Does the procedural document affect one group less or more favourably than another on the basis of:**		
	• Race	No	
	• Ethnic origins (including gypsies and travellers)	No	
	• Nationality	No	
	• Gender	No	
	• Culture	No	
	• Religion or belief	No	
	• Sexual orientation including lesbian, gay and bisexual people	No	
	• Age	No	
	• Disability - learning disabilities, physical disability, sensory impairment and mental health problems	No	
2.	**Is there any evidence that some groups are affected differently?**	No	
3.	**If you have identified potential discrimination, are any exceptions valid, legal and/or justifiable?**	No	
4.	**Is the impact of the procedural document likely to be negative?**	No	
5.	**If so can the impact be avoided?**	N/A	
6.	**What alternatives are there to achieving the procedural document without the impact?**	N/A	
7.	**Can we reduce the impact by taking different action?**	N/A	

If you have identified a potential discriminatory impact of this procedural document, please refer it to the Director of Human Resources, together with any suggestions as to the action required to avoid/reduce this impact.

For advice in respect of answering the above questions, please contact the Director of Human Resources.

Checklist for the Review and Approval of Procedural Document

To be completed and attached to any procedural document when submitted to the relevant committee for consideration and approval.

	Title of document being reviewed:	Yes/No	Comments
1.	**Title**		
	Is the title clear and unambiguous?	Yes	
	Is it clear whether the document is a guideline, policy, protocol or standard?	Yes	
2.	**Rationale**		
	Are reasons for development of the document stated?	Yes	
3.	**Development Process**		
	Is it clear that the relevant people/groups have been involved in the development of the document?	Yes	
	Are people involved in the development?	Yes	
	Is there evidence of consultation with stakeholders and users?	Yes	
4.	**Content**		
	Is the objective of the document clear?	Yes	
	Is the target population clear and unambiguous?	Yes	
	Are the intended outcomes described?	Yes	
5.	**Evidence Base**		
	Are key references cited in full?	N/A	
	Are supporting documents referenced?	N/A	
6.	**Approval**		
	Does the document identify which committee/ group will approve it?	Yes	
7.	**Dissemination and Implementation**		
	Is there an outline/plan to identify how this will be done?	Yes	
8.	**Document Control**		
	Does the document identify where it will be held?	Yes	
9.	**Process to Monitor Compliance and Effectiveness**		
	Are there measurable standards or KPIs to support the monitoring of compliance with and	Yes	

	Title of document being reviewed:	Yes/No	Comments
	effectiveness of the document?		
	Is there a plan to review or audit compliance with the document?	Yes	
10.	**Review Date**		
	Is the review date identified?	Yes	
	Is the frequency of review identified? If so is it acceptable?	Yes	
11.	**Overall Responsibility for the Document**		
	Is it clear who will be responsible for co-ordinating the dissemination, implementation and review of the document?	Yes	

Executive Sponsor Approval			
If you approve the document, please sign and date it and forward to the author. Procedural documents will not be forwarded for ratification without Executive Sponsor Approval			
Name		Date	
Signature			
Relevant Committee Approval			
The Director of Nursing and Patient Experience's signature below confirms that this procedural document was ratified by the appropriate Governance Committee.			
Name		Date	
Signature			
Responsible Committee Approval – only applies to reviewed procedural documents with minor changes			
The Committee Chair's signature below confirms that this procedural document was ratified by the responsible Committee			
Name		Date	
Name of Committee		Name & role of Committee Chair	
Signature			

Tool to Develop Monitoring Arrangements for Policies and guidelines

What key element(s) need(s) monitoring as per local approved policy or guidance?	Who will lead on this aspect of monitoring? Name the lead and what is the role of the multidisciplinary team or others if any.	What tool will be used to monitor/check/observe/Asses s/inspect/ authenticate that everything is working according to this key element from the approved policy?	How often is the need to monitor each element? How often is the need complete a report ? How often is the need to share the report?	What committee will the completed report go to?
Element to be monitored	**Lead**	**Tool**	**Frequency**	**Reporting arrangements**