

## Guidelines for the Management of Febrile Neutropenia in Adults following Cytotoxic Therapy

### Version History

Version	Date	Summary of Change/Process
2.0	10.10.08	Approved by Governance Committee following minor amendments
2.1	18.11.11	Circulated to Nicky Adams for review.
2.2	28.11.11	Reviewed and updated by Nicky Adams
2.3	01.12.11	With comments from Lara Barnish. Forwarded to Nicky Adams for reviewcomment
2.4	08.12.12	With Nicky Adams for review
2.5	29.12.12	Circulated to Haematology and Chemotherapy Network Site Specific Groups, Oncologists and Marilyn McKoy for review
2.6	03.02.12	Comments received from Dr Suhail Anwar and final revision undertaken by Nicky Adams
2.7	13.02.12	With comments by Alison Rowe for response by Nicky Adams
2.8	13.02.12	Amendments Nicky Adams
3.0	16.02.12	Reviewed and endorsed by Network Governance Committee

<b>Date Approved by Network Governance</b>	<b>February 2012</b>
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<b>Date for Review</b>	<b>February 2015</b>
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### Changes made during the review process in 2011

Additional information on neutropenia included

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## 1. Scope of the guideline

This guideline has been produced to support:

- the management of all patients likely to experience treatment or disease related neutropenia
- the management of patients who are unwell or are febrile and likely to be neutropenic

This guideline has been reviewed in light of best practice. Nationally a consistent and uniform approach will be achieved with the release of NICE guidance in September 2012 and this document will be revised following publication of the NICE guidance.

## 2. Guideline background

- 2.1 Neutropenia is defined as a neutrophil count of  $<1.0 \times 10^9/l$ . The risk of developing infection is directly related to severity and duration of neutropenia and is most significant for patients who have an absolute neutrophil count of less than  $0.5 \times 10^9/l$ . The incidence of bacteremia and death is greatest among patients with a neutrophil count of less than  $0.1 \times 10^9/l$ . Infection remains a leading cause of morbidity and mortality for patients undergoing cancer chemotherapy and bone marrow transplantation.
- 2.2 Concerns about the safety of patients who develop neutropenic sepsis after receiving cytotoxic treatment are outlined within the National Confidential Enquiry into Patient Outcomes and Deaths (NCEPOD 2008). These concerns are reiterated in the National Chemotherapy Advisory Group report 'Chemotherapy Services in England: Ensuring quality and safety' (NCAG 2009).
- 2.3 Febrile neutropenia is defined as any fever of  $38^\circ\text{C}$  or more maintained for over an hour or  $\geq 38.5^\circ\text{C}$  on one occasion. A raised temperature may be the only sign of infection in a neutropenic patient. Conversely a patient may be septic and not have a raised temperature, especially if they are on corticosteroids or have taken paracetamol in the preceding few hours
- 2.4 In addition to these patients there are others who may be very immunosuppressed with a normal neutrophil count (e.g. post allogeneic bone marrow transplant). These patients should also be treated with a high index of suspicion of sepsis.
- 2.5 Neutropenic sepsis is a medical emergency, with incidence risk of death increasing by 7.6% every hour that antibiotics are delayed (Kumar 2006).
- 2.6 Neutropenic sepsis and suspected neutropenic sepsis must be treated without delay. The first dose of antibiotics must be administered within 1 hour of suspicion of neutropenic sepsis.

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### 3. Guideline statements

- 3.1 This guideline should be read in conjunction with the Network Granulocyte Colony Stimulating Factors (G-CSF) guideline which is available at <http://www.birminghamcancer.nhs.uk/patients/leaflets/chemotherapy>
- 3.2 All patients likely to experience disease or treatment related neutropenia should be identified (at diagnosis or before first treatment) and provided with verbal and written information about the risks of neutropenia. Pan Birmingham Cancer Network patient information should be given to each patient at their chemotherapy pre-assessment visit. This is available at: <http://www.birminghamcancer.nhs.uk/patients/leaflets/chemotherapy>
- 3.3 All patients should have alert cards or information that can be carried at all times which includes personal information, identifies them as being at risk, and advises clinical staff that the local neutropenia policy should be implemented if neutropenic sepsis suspected. The information should include emergency contact numbers and the main signs and symptoms. Patients should be encouraged to present the alert card to health care professionals who are assessing them when they are unwell.
- 3.4 The written and verbal information should make clear to the patients what to do in the event of becoming unwell or developing a temperature.
- 3.5 All Trusts should have in place protocols for the medical management of these patients including antibiotic, antiviral and antifungal treatment.
- 3.6 All Trusts should have in place measures to ensure that those staff likely to encounter patients presenting with possible neutropenic sepsis (in particular those in A&E) have awareness of local and national recommendations. This will require providing targeted training to key professionals and updating local policies on the intranet in accordance with the National Cancer Action Team Manual of Cancer Standards - Acute Oncology Measures 2011.
- 3.8 Local (Trust) policies on the management of neutropenic sepsis should be updated at intervals specified by the Trust (no less than every other year). These policies should reflect Network guidance. Reviewed Network guidance will be discussed through the appropriate NSSG's and cascaded to Trusts.
- 3.9 Local policies should incorporate the principles outlined in section 4.
- 4.0 Febrile or unwell patients who are known to be at risk of neutropenia, presenting to a health care professional, should be managed as though they have a neutropenic sepsis until proven otherwise.**
- 4.1 Local policies should be in place to ensure:
- a) that an urgent assessment that includes; clinical examination, septic screen and investigations takes place.

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- b) the **commencement of IV antibiotics within 1 hour of suspected neutropenic sepsis.**
- c) that in line with the 'surviving sepsis' initiative<sup>1</sup> patients not considered to be neutropenic but who have the following signs and symptoms are managed as for sepsis. Patients with a history suggestive of a new infection and two or more of the following are considered to be septic:
  - i. temperature greater than 38<sup>0</sup>C or less than 36<sup>0</sup>C
  - ii. heart rate greater than 90 beats per min
  - iii. respiratory rate greater than 20 per minute
  - iv. WBC count greater than 12 or less than 4
  - v. blood pressure systolic less than 90 or mean less than 65
  - vi. chills/rigors or headache or neck stiffness
  - vii. In addition, those with Myalgia, confusion or non-blanching rash will require careful assessment
- d) that there is notification to the patient's oncology or haematology team on the morning of the next working day (as per Acute Oncology guidelines)

### **Monitoring of the guideline**

Adherence to the Network guidelines may, from time to time, be formally monitored. The National Chemotherapy Advisory Group (NCAG) (2009) recommendation, '1 hour door to needle time' is subject to clinical audit and compliance with peer review for the acute oncology service (AOS).

### **References**

- 1 [www.survivingsepsis.org/introduction/pages/default.aspx](http://www.survivingsepsis.org/introduction/pages/default.aspx)
- 2 *For better, for worse?* National Confidential Enquiry into Patient Outcome and Death, November 2008
3. National Cancer Peer Review Programme  
Manual for Cancer Services:Acute Oncology - Including Metastatic Spinal Cord Compression Measures 2011
4. National Chemotherapy Advisory Group (2009) *Chemotherapy Services in England: Ensuring Quality and Safety*. London. National Cancer Action Team.
5. Kumar, A., Roberts, D., Wood, K et al (2006) Duration of hypertension before initiation of effective antimicrobial therapy is the critical determinant of survival in human septic shock . *Critical Care Medicine*, 34 (6), 1589-1595

### **Authors of Versions 1 and 2**

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