# Initial Medical Management of Neutropenic Sepsis / Febrile Neutropenia in Adult Oncology Patients Procedure

Effective: 16 October 2018

## 1. Guiding Principles

Neutropenic patients are at risk of developing severe, life-threatening infection.

'Neutropenic precautions' refer to additional nursing and general care practices that can be put in place to reduce this risk to inpatient, neutropenic patients. Neutropenic precautions are required when the total white cell count is <1.0 and/or neutrophil count < 1.0.

Neutropenic sepsis, with or without fever, is a medical emergency. All clinical sign indicating sepsis need to be acted on immediately and management of febrile neutropenia commenced.

WA Country Health Service (WACHS) has endorsed the Cancer Institute of NSW eviQ guidelines and the Australian Guidelines for the Prevention and Control of Infection in Healthcare.

## 2. Procedure

**Neutropenic sepsis, with or without fever, is a medical emergency. All clinical signs indicating sepsis need to be acted upon immediately. Any delay in the commencement of antibiotics may cause increased morbidity and mortality.**

The elderly or those on steroids may not become febrile, despite neutropenic sepsis.

Information on the management of neutropenic patients can be found at the WACHS endorsed Cancer Institute of NSW eviQ web site, including:

- Immediate management of febrile neutropenia

## 3. Definitions

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| **Neutropenia** | An absolute decrease in the number of circulating neutrophils to less than 1.0 ($x10^9$/L). |
| **Febrile neutropenia** | Temperature of at least 38.3°C (or at least 38°C on two occasions) and neutrophil count of less than 0.5 x $10^9$ cells/L, or less than 1.0 x $10^9$ cells/L and predicted to fall to lower than 0.5 x $10^9$ cells/L, or if such a patient is systemically unwell with a clinical suspicion of sepsis. |

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# 4. Roles and Responsibilities

## 4.1 Admitting Doctor

**Step 1**

- Resuscitation / stabilisation of patient, as required.
- Consider oxygen and intravenous fluids.

**Step 2**

- Perform septic workup. **Do not wait for results**. Optimally obtain blood cultures first, but **do not delay** the commencement of antibiotics:
  - Blood cultures
    - if no central venous catheter (CVC): two sets (aerobic and anaerobic bottles) from separate peripheral sites
    - if CVC: 1 set from each lumen of CVC and one set from peripheral blood
  - Full blood count
  - Urea and electrolyte
  - Liver function test
  - Mid-Stream Urine / Catheter Specimen Urine
  - Sputum (if clinically indicated)
  - Faeces (if clinically indicated)
  - Swab of CVC exit site (if clinically indicated)
  - Swab of any other suspicious wounds/focal lesions (if clinically indicated)
  - Make arrangements for chest x-ray.

**Step 3**

- Commence empiric intravenous antibiotic therapy. **The first dose is to be given within one (1) hour of presentation or within 30 minutes of presentation if the patient has systemic compromise**.
  (This is initial therapy only and subsequent treatment remains at the discretion of the treating clinician.)

Drug Doses Below are for Adults Only:

- **First line therapy** (ensure patient is not penicillin allergic)
  - Piperacillin / Tazobactam (Tazocin®) 4g + 0.5g 6-8 hourly
- **Non-life threatening penicillin allergy** (e.g. rash)
  - Ceftazidime 2g 8 hourly
- **Life threatening penicillin / beta lactam allergy:**
  - Ciprofloxacin 400mg 12 hourly + Vancomycin (dose guided by renal function)

**Add** Gentamicin 5-7mg/kg ideal body weight daily if the patient has systemic compromise. Refer to Additional Resources for use in Clinical Practice eTG Complete Electronic Therapeutic Guidelines for dose adjustment for renal function.

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Special cases

- If the patient is colonised with a multi-resistant organism, he is at risk of developing an infection with the same organism. In this case, early discussion with an infectious disease specialist is recommended.
- If the patient has systemic compromise (see high risk) – ensure gentamicin is part of the initial regime, and consider the addition of vancomycin.
- If patient has obvious cellulitis / CVC infection / is colonized with MRSA and has skin breakdown, add vancomycin.
- If patient has features of abdominal or perineal infection, metronidazole may be required.

**Step 4**

- Ensure Consultant Physician, or their registrar, is phoned to review the patient (via switch), and the chemotherapy unit is aware of admission (9892 2494). If unavailable, the Oncology on call consultant from Fiona Stanley Hospital can be contacted for advice. Seek a consultant opinion about the use of G-CSF (filgrastin or pegylated filgrastim – see Step 9).
- Assess likelihood of complications and document this in the notes.

Low risk of complications:

- Appears well.
- Systolic blood pressure (BP) greater than 100mmHg, or blood pressure same as patient's usual BP.
- No dyspnoea / hypoxia.
- Eating and drinking well.
- No signs of focal infection.

High risk of complications:

- Systolic BP less than or equal to 90 mmHg, or 30 mmHg below patient's usual BP, or patient requiring vasopressor support.
- Room air PaO2 less than or equal to 60 mmHg, or O2 saturation less than or equal to 90%, or requirement for mechanical ventilation.
- Confusion or altered mental state.
- Disseminated intravascular coagulation, or new abnormal PT / APTT.
- New organ failure.
- New cardiac arrhythmia.

**Step 5**

- Arrange admission, as care is to be as an inpatient for a minimum of 24 – 48 hours, or longer depending on assessment of risk of complications. A single room, labelled as 'neutropenic precautions' is required.
- Refer to the following procedures for the nursing and additional infection control precautions required on the ward.
    - Infection Control Link Nurse Role and Responsibilities - Procedure - Albany Hospital
    - Inpatient Management of the Neutropenic Patient – Procedure – Albany Hospital.

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**Step 6**

- Follow up any positive culture results. Modification of the initial empiric antibiotics may be required.
- Avoid paracetamol unless significant symptoms from fever as it may mask ongoing temperature spikes and make following treatment response more difficult.

**Step 7**

- Decide on **duration of IV antibiotic** therapy
  - Low risk patients with solid malignancies are to receive IV antibiotics for 48 hours prior to considering change to oral antibiotics (e.g. Amoxicillin – clavulanate + ciprofloxacin if no penicillin allergy; clindamycin + ciprofloxacin if penicillin allergy; single agent amoxicillin – clavulanate if fluoroquinolone allergy)

**Step 8**

- Decide on **total duration of antibiotic** therapy
  - If patient continues to be low risk, and becomes afebrile within 3 – 5 days, but still has a neutrophil count less than 0.5 × 109 / L, continue antibiotics for minimum of 7 days.
  - If fever recurs while neutropenic and on oral antibiotics, IV therapy is to be reinstituted.
  - If patient has become afebrile and neutrophil count now greater than 0.5 × 109 / L, antibiotic therapy can be ceased.

**Step 9:**

- Consider the **use of Granulocyte Colony Stimulating Factor** (G-CSF)
  - This would be a decision made in consultation with a physician or oncologist.
  - Choice of G-CSF product:
    - If the patient fits the PBS Criteria and the patient is an outpatient or day patient, then Pegfilgrastim is to be used as a single dose (unlikely as patient will usually be admitted).
    - If the patient does not fit the PBS Criteria and/or is an inpatient, then filgrastim (daily dosing) is to be used.

## 4.2 All Staff

All staff are required to work within policies and guidelines to make sure that WACHS is a safe, equitable and positive place to be.

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## 5. Compliance

Failure to comply with this policy document may constitute a breach of the WA Health Code of Conduct (Code). The Code is part of the Employment Policy Framework issued pursuant to section 26 of the *Health Services Act 2016* (HSA) and is binding on all WACHS staff which for this purpose includes trainees, students, volunteers, researchers, contractors for service (including all visiting health professionals and agency staff) and persons delivering training or education within WACHS.

WACHS staff are reminded that compliance with all policies is mandatory.

## 6. Evaluation

Monitoring of compliance with this document is to be carried out by the Great Southern Rural Cancer Nurse and the Medical Registrar, every admission using the following means / tools:

- Audit of compliance with guidelines using designed audit tool, and presented quarterly at the Cancer Leadership Meeting.

## 7. Standards

National Safety and Quality Health Service Standards (Second edition 2017) - Std 8

## 8. References

Cancer Institute NSW eviQ Standard Cancer Treatments
Immediate management of febrile neutropenia

'Australian Consensus Guidelines for the management of neutropenic fever in adult cancer patients'. Internal Medicine Journal 2011; 41 (Suppl 1)

**This document can be made available in alternative formats on request for a person with a disability**

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| **Contact:** | Regional Medical Director (Dr A.M.Reddy) | | |
| **Directorate:** | Medical Services | **EDRMS Record #** | ED-CO-13-24931 |
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