Blackpool Teaching Hospitals NHS
NHS Foundation Trust

| | | |
|---|---|---|
| **Document Type:**<br>**PROTOCOL** | | **Unique Identifier:**<br>CORP/PROT/323 |
| **Title:**<br>**Management of Suspected Neutropenic Sepsis in Oncology (Solid Tumour) Patients** | | **Version Number:**<br>1.2 |
| | | **Status:**<br>Ratified |
| **Target Audience:**<br>Trust Wide | | **Divisional and Department:**<br>Haematology and Oncology |
| **Author / Originator and Job Title:**<br>Susan Faul, Acute Oncology Nurse Specialist<br>Sin Lau, Consultant Oncologist<br>Pavel Bezecny, Consultant Oncologist<br>Alison Melvin, Acute Oncology Nurse Specialist | | **Risk Assessment:**<br>Not Applicable |
| **Replaces:**<br>New document | **Description of amendments:**<br>05/07/2017 – Version 1.1 review dated updated as this document should be reviewed every 2 years, not 3.<br>16/10/2017 – Version 1.2 - Confirmation received, this can have a 3 year review date. | |
| **Validated (Technical Approval) by:**<br>Acute Oncology Team meeting | **Validation Date:**<br>27/08/2015 | **Which Principles of the NHS Constitution Apply?**<br>1 - 4 |
| **Ratified (Management Approval) by:**<br>Medicine Management and Incident Review Committee | **Ratified Date:**<br>17/12/2015 | **Issue Date:**<br>17/12/2015 |
| *Review dates and version numbers may alter if any significant changes are made* | | **Review Date:**<br>01/12/2018 |

Blackpool Teaching Hospitals NHS Foundation Trust aims to design and implement services, policies and measures that meet the diverse needs of our service, population and workforce, ensuring that they are not placed at a disadvantage over others. The Equality Impact Assessment Tool is designed to help you consider the needs and assess the impact of your policy in the final Appendix.

## 1 PURPOSE

1.1 **To describe the initial recognition, investigation, and management of Oncology patients with suspected neutropenic sepsis irrespective of whether they are febrile**.

For the purpose of this protocol oncology patients are classified as those with solid tumours. Haematology patients are not included within this protocol.

1.2 This protocol is applicable to patients who have received systemic anti-cancer treatment or immunological therapies which can suppress the ability of the bone marrow to respond to infection.

1.3 For Haematology patients also see: “Admission of Patients with Suspected Neutropenic Sepsis following administration of Chemotherapy of following Allogeneic Bone Marrow Transplant. – CORP/PROC/060”.

1.4 This protocol does not describe the management of patients with suspected neutropenic sepsis beyond the first 24 hours.

## 2 TARGET AUDIENCE

All grades of medical and nursing staff trust wide.

## 3 PROTOCOL

### 3.1 Background

Neutropenic sepsis is the major cause of treatment-related mortality in patients undergoing chemotherapy. The risk of infection is increased when the neutrophils decrease to $<1.0 \times 10^9$/l and rises rapidly when $<0.5 \times 10^9$/l. The most serious pathogens are gram-negative bacteria. Gram-negative septicaemia may rapidly lead to shock, multi-organ failure, and death in neutropenic patients. It is therefore imperative that suspected neutropenic sepsis is managed as an emergency and empiric first-line antibiotics are targeted against gram-negative bacteria.

### 3.2 Responsibilities

#### 3.2.1 Nursing staff are responsible for:

- Monitoring the condition and wellbeing of patients with suspected neutropenic sepsis (who are likely to have received chemotherapy within the last 6 weeks);
- Alerting medical staff to the possibility of neutropenic sepsis with or without fever;
- Collection of relevant samples (for haematology, biochemistry, and microbiology);
- Prompt administration of intravenous antibiotics. DO NOT wait for the results of blood tests if neutropenic sepsis is suspected whether the patient is febrile or not.

### 3.2.2 Medical staff are responsible for:

- The recognition of possible neutropenic sepsis in patients who are unwell and have received chemotherapy or immunological therapies;
- The medical review within one hour of referral of patients with suspected neutropenic sepsis and the associated documentation of the referral;
- Arranging initial blood tests, blood and other cultures;
- Prompt prescription of initial empiric antibiotic therapy. DO NOT wait for the results of blood tests if neutropenic sepsis is suspected whether the patient is febrile or not.
- Contacting the on-call microbiologist as necessary.
- Contacting the Acute Oncology team during working hours or (if out of hours) by the beginning of the next working day.

### 3.2.3 Nursing staff are responsible for:

Ensuring that first line antibiotics are immediately available at all times on the Oncology Day Case unit, Accident and Emergency department, and Acute Medical Unit.

### 3.2.4 It is the responsibility of both the nursing and medical staff caring for the patient to

Ensure that antibiotics are administered within one hour of admission to hospital.

## 3.3 Recognition of Neutropenic Sepsis

3.3.1 Neutropenic sepsis is defined as an oral temperature of 38.00C or more in a patient with neutrophil count less than $0.5x10^9$/l (although as stated above patients can still be at risk if the neutrophil count is between $1.0x10^9$/l and $0.5x10^9$/l).

3.3.2 It is important to remember that fever may be absent in some infected neutropenic patients, particularly if dehydrated or taking steroids. Hence, the possibility of infection must be considered in any suspected neutropenic patient who is unwell e.g. rigors, unexplained hypotension or hypoxia, signs or symptoms of chest infection or infective diarrhoea. Furthermore the neutrophil count may fall rapidly in the days following chemotherapy and neutropenic sepsis can develop within 24 hours of a normal neutrophil count.

3.3.3 Although fever may also be a complication of blood transfusion it must never be assumed that this is the cause of the fever in neutropenic patients.

## 3.4 Initial Assessment

Any patient with suspected neutropenic sepsis must be reviewed by a doctor within one hour irrespective of whether they are febrile.

### 3.4.1 The initial assessment should include:

- A history and examination of the patient, including pulse rate, blood pressure, assessment of urine output, and also document current medications, any drug allergies, and recent chemotherapy;
- An attempt to identify a focus of infection should include assessment of the oropharynx, chest, abdomen, indwelling venous catheter sites, skin, and perianal areas;
- A set of peripheral blood cultures using the aseptic no-touch technique;
- A set of central blood cultures from the lumens of any indwelling venous catheters;
- Blood sampling for Full Blood Count (FBC), Urea and electrolytes (U&E), Liver Function Tests (LFTs), and C-reactive protein (CRP);
- Administration of first-line empiric antibiotic therapy – this should occur within 60 minutes of admission. DO NOT wait for the results of blood tests if neutropenic sepsis is suspected whether the patient is febrile or not.
- Further advice can be sought from the on-call microbiologist.
- Ensure that the Acute Oncology team are informed by the beginning of the next working day.

### 3.4.2 Radiological assessment

A chest x-ray is not routinely indicated for patients with suspected neutropenic sepsis. It should be requested if there is hypoxia, cough and sputum, chest pain, or if there are signs on clinical examination. The prescription and administration of antibiotics must never be deferred whilst waiting for the results of x-rays.

## 3.5 Initial Empiric Antibiotic Therapy

3.5.1 In the absence of penicillin allergy the doctor must prescribe intravenous Piperacillin-Tazobactam (Tazocin) 4.5 g tds.

3.5.2 Gentamicin SHOULD NOT be administered to oncology patients unless clinical signs of severe sepsis are present (hypotension, hypothermia, tachycardia, tachypnoea, hypoxia, or altered mental state). Renal function may be compromised with certain chemotherapy drugs.

3.5.3 If there is a history of an allergic reaction to penicillin other than anaphylaxis, the doctor must prescribe intravenous Meropenem 1 g tds.

3.5.4 If the patient is admitted to the Oncology Day Case Unit or Accident and Emergency (A&E) with suspected neutropenic sepsis they may be managed according to Patient Group Directive. This allows designated nursing staff to administer the first dose of Piperacillin-Tazobactam 4.5 g prior to review by medical staff. Even if the first dose antibiotic is administered by nursing staff, medical staff remain responsible for the medical review of the patient as soon as possible.

3.5.5 If there is a history of adverse reactions to penicillin the doctor must establish whether other beta lactam antibiotics have been prescribed without incident. If so the doctor should prescribe Meropenem 1g tds. If an anaphylactic reaction following beta lactam antibiotic use has occurred or if no history is available then the management should be discussed with the on-call microbiologist.

3.5.6 It is the responsibility of the nurse to administer the prescribed antibiotics without delay.

3.5.7 Additional antibiotic therapy may be appropriate in certain circumstances:

If there is cellulitis at the exit site of indwelling venous catheters then add Teicoplanin dosed at 10mg/kg 12hrly for the first 24 hours then daily thereafter.

If there are skin vesicles add intravenous acyclovir 5 mg/kg 8 hourly. Note that for disseminated zoster / herpes simplex or herpes infection of the central nervous system a minimum of 10 days and up to 14-21 days of treatment is required at a dose of 10 mg/kg 8 hourly.

If there is clinical or radiological evidence of pneumocystis carinii pneumonia (hypoxia, cough, fever, bibasal crepitations, and hilar pulmonary infiltrates) discuss with the on-call microbiologist.

3.5.8 First line antibiotics must be administered as soon as possible and definitely within one hour of admission to hospital.

## 3.6 Supportive Care

3.6.1 Patients with neutropenic sepsis are prone to hypovolaemia which will exacerbate hypotension. Prescribe intravenous fluids if there is existing volume depletion, vomiting, diarrhoea, or if the patient is unable to drink sufficiently.

3.6.2 If there are features of septic shock, e.g. systolic blood pressure <100 mmHg, then the patient must be aggressively resuscitated with intravenous fluids. Management in the Intensive Care or High Dependency Unit is appropriate for many patients with neutropenic sepsis and if there is persisting hypotension, hypoxia, or renal failure then the Critical Care Team should be contacted.

3.6.3 If the platelet count is $<10x10^9$/l then a unit of platelets should be transfused. If there are coagulation abnormalities or if the patient has bleeding or bruising then advice should be sought from the on-call haematologist.

### 3.7 Ongoing Care

3.7.1 Despite prompt delivery of antibiotic therapy the condition of patients with neutropenic sepsis may deteriorate rapidly. Trust protocol for Nursing Management of Neutropenic Patients (Haem/Proc/001) must be followed. Nursing staff must monitor the patient's observations closely, at least every 4 hours, including an assessment of urine output, and conscious and mental state. Any deterioration should be reported to the medical staff for prompt review.

3.7.2 The ongoing management and antibiotic therapy of neutropenic sepsis will depend on many factors, such as performance status; diagnosis and prognosis; response to initial treatment; and microbiology culture results, and must be supervised by a clinician experienced in the care of patients with neutropenic sepsis. It is the responsibility of the medical staff to ensure the patient has been referred to the Acute Oncology team by the next working day.

### 3.8 Key Performance Indicators

3.8.1 100% of the patients admitted to the hospital with suspected neutropenic sepsis should receive their first-line antibiotics within one hour of presentation.

| **4 ATTACHMENTS** | |
|---|---|
| **Appendix Number** | **Title** |
| Appendix 1 | Equality Impact Assessment |

| **5 PROCEDURAL DOCUMENT STORAGE (HARD AND ELECTRONIC COPIES)** |
|---|
| Electronic Database for Procedural Documents |
| Held by Procedural Document and Leaflet Coordinator |

| **6 LOCATIONS THIS DOCUMENT ISSUED TO** | | |
|---|---|---|
| **Copy No** | **Location** | **Date Issued** |
| 1 | Intranet | 17/12/2015 |
| 2 | Wards, Departments and Service | 17/12/2015 |

| **7 OTHER RELEVANT / ASSOCIATED DOCUMENTS** | |
|---|---|
| **Unique Identifier** | **Title and web links from the document library** |
| CORP/PROC/060 | Admission of Patients with Suspected Neutropenic Sepsis following administration of Chemotherapy of following Allogeneic Bone Marrow Transplant http://fcsharepoint/trustdocuments/Documents/CORP-PROC-060.docm |

| **8 SUPPORTING REFERENCES / EVIDENCE BASED DOCUMENTS** |
|---|
| **References In Full** |
| NICE guideline CG151 – Neutropenic sepsis: prevention and management of neutropenic sepsis in cancer patients (September 2012) |

| 9 CONSULTATION / ACKNOWLEDGEMENTS WITH STAFF, PEERS, PATIENTS AND THE PUBLIC | | |
|---|---|---|
| **Name** | **Designation** | **Date Response Received** |
| Sarah Wilding | Oncology Ward Manager | 27/08/2015 |
| Diane Higgins | Oncology Sister | 27/08/2015 |
| Falalu Danwata | Consultant Oncologist | 27/08/2015 |
| Raj Kumar | Consultant Oncologist | 27/08/2015 |
| Shabbir Susnerwala | Consultant Oncologist | 27/08/2015 |
| Caroline Boardman | Lead Oncology/Haematology Pharmacist | 01/10/2015 |

| 10 DEFINITIONS / GLOSSARY OF TERMS | |
|---|---|
| A&E | Accident and Emergency |
| CRP | C-reactive protein |
| FBC | Full Blood Count |
| LFTs | Liver Function Tests |
| U&E | Urea and electrolytes |

| 11 AUTHOR / DIVISIONAL / DIRECTORATE MANAGER APPROVAL | | | |
|---|---|---|---|
| **Issued By** | Susan Faul | **Checked By** | Sin Lau |
| **Job Title** | Acute Oncology Sister | **Job Title** | Consultant Oncologist |
| **Date** | 27/08/2015 | **Date** | 27/08/2015 |

## APPENDIX 1: EQUALITY IMPACT ASSESSMENT FORM

| **Department** | Haematology and Oncology | **Service or Policy** | CORP/PROT/323 | **Date Completed:** | August 2015 |
|---|---|---|---|---|---|

**GROUPS TO BE CONSIDERED**

Deprived communities, homeless, substance misusers, people who have a disability, learning disability, older people, children and families, young people, Lesbian Gay Bi-sexual or Transgender, minority ethnic communities, Gypsy/Roma/Travellers, women/men, parents, carers, staff, wider community, offenders.

**EQUALITY PROTECTED CHARACTERISTICS TO BE CONSIDERED**

Age, gender, disability, race, sexual orientation, gender identity (or reassignment), religion and belief, carers, Human Rights and social economic / deprivation.

| **QUESTION** | **RESPONSE** | | **IMPACT** | |
|---|---|---|---|---|
| | Issue | Action | Positive | Negative |
| What is the service, leaflet or policy development?<br>What are its aims, who are the target audience? | See Purpose | | | |
| Does the service, leaflet or policy/ development impact on community safety<br>• Crime<br>• Community cohesion | No | | | |
| Is there any evidence that groups who should benefit do not? i.e. equal opportunity monitoring of service users and/or staff. If none/insufficient local or national data available consider what information you need. | No | | | |
| Does the service, leaflet or development/ policy have a negative impact on any geographical or sub group of the population? | No | | | |
| How does the service, leaflet or policy/ development promote equality and diversity? | No | | | |
| Does the service, leaflet or policy/ development explicitly include a commitment to equality and diversity and meeting needs? How does it demonstrate its impact? | No | | | |
| Does the Organisation or service workforce reflect the local population? Do we employ people from disadvantaged groups | No | | | |
| Will the service, leaflet or policy/ development<br>i. Improve economic social conditions in deprived areas<br>ii. Use brown field sites<br>iii. Improve public spaces including creation of green spaces? | No | | | |
| Does the service, leaflet or policy/ development promote equity of lifelong learning? | No | | | |
| Does the service, leaflet or policy/ development encourage healthy lifestyles and reduce risks to health? | No | | | |
| Does the service, leaflet or policy/ development impact on transport? What are the implications of this? | No | | | |
| Does the service, leaflet or policy/development impact on housing, housing needs, homelessness, or a person's ability to remain at home? | No | | | |
| Are there any groups for whom this policy/ service/leaflet would have an impact? Is it an adverse/negative impact? Does it or could it (or is the perception that it could exclude disadvantaged or marginalised groups? | No | | | |
| Does the policy/development promote access to services and facilities for any group in particular? | No | | | |

## APPENDIX 1: EQUALITY IMPACT ASSESSMENT FORM

| | | | | |
|---|---|---|---|---|
| Does the service, leaflet or policy/development impact on the environment<br>• During development<br>• At implementation? | No | | | |

| **ACTION:** | | | |
|---|---|---|---|
| **Please identify if you are now required to carry out a Full Equality Analysis** | ~~**Yes**~~ | **No** | **(Please delete as appropriate)** |

| | | | |
|---|---|---|---|
| **Name of Author:**<br>**Signature of Author:** | | **Date Signed:** | |
| | | | |
| **Name of Lead Person:**<br>**Signature of Lead Person:** | | **Date Signed:** | |
| | | | |
| **Name of Manager:**<br>**Signature of Manager** | | **Date Signed:** | |
| | | | |