Management of Sepsis in Haematology & Oncology Patients (Adults)

CLINICAL GUIDELINES ID TAG	
Title:	***Management of sepsis in haematology & oncology patients (Adults)***
Author:	*Dr Martin Brown, Mrs Ann McCorry, Dr Kathyrn Boyd, Dr Judith Carser*
Speciality / Division:	*Microbiology, Pharmacy, Haematology, Oncology*
Directorate:	*Acute*
Date Uploaded:	3rd October 2014
Review Date	1st October 2016
Clinical Guideline ID	CG0021

Neutropenic sepsis is a potentially life threatening condition which must be considered in the differential diagnosis of any haematology or oncology patient who is unwell, particularly if they have had recent chemotherapy (within 6 weeks). These patients will be immune suppressed as a result of their disease and/or treatment and those who are neutropenic (absolute neutrophil count (ANC) $<1x10^9$ /L) in case of illness require ***urgent*** medical assessment as septic shock in immunocompromised or neutropenic patients is life threatening. It needs to be recognised as a Time Dependent Condition, with early therapeutic intervention required to reduce morbidity and mortality.

- The 'First 60 Minutes' component of the NICaN guideline should be implemented in the ED and Acute Receiving Units to achieve a maximum "door to needle" time for IV antibiotics of 60 minutes.
- The 'First 48 Hours' component should be used by clinicians managing patients in hospital neutropenic sepsis beds.

Management: Follow flow charts and complete care pathway:

- Monitor vital signs →follow 'MEWS chart' protocol, temp, pulse, BP, RR, O_2 sats, AVPU. Temperature is tympanic measurement.
- Establish IV access with urgent bloods: FBC, U&E, CRP, LFTs, venous lactate.
- Blood cultures (peripheral first then central if relevant).
- If sepsis is suspected (any of: temp >38 or $<36^0$C, pulse >90bpm, RR>20/min) proceed with first dose of antibiotics before blood results available; check most recent U&E. See flow chart for antibiotics.

- Severe sepsis indicated by altered mental state *or* hypoxia (O_2 sats <94%) *or* shock (SBP <90mmHg). See flow chart for antibiotics.

- Ensure a full history and examination (inspect mouth, skin, central line exit site, perianal area if symptoms related, ENT, CVS, chest, abdomen and neurological examination).

- Investigations: urinalysis, cultures/swabs from sputum/faeces/throat/skin lesions and CXR if clinically appropriate.

- Check - any recent bacterial culture & susceptibility results and blood group

- GCSF *should not be used* for the treatment of uncomplicated febrile neutropenia or in cases where pegfilgrastim has already been given as part of the patient's chemotherapy regimen.

  Contact consultant haematologist / acute oncology team (or oncology registrar on call, BCH) for advice regarding GCSF. It may be considered under the following circumstances:
  - Profound neutropenia (ANC<0.1 x 10^9/L) with expectation of prolonged neutropenia
  - Persistent fever >48 hrs despite appropriate antibiotics and/or antifungals
  - Invasive fungal infection
  - Pneumonia
  - Unwell patients particularly in the presence of sepsis syndrome (hypotension and multi-organ dysfunction)
  - Uncontrolled primary disease.

- When GSCF is appropriate, standard (non-pegylated) filgrastim 30 million units once daily subcutaneously should be prescribed until neutrophils >1.0 x 10^9/L for two consecutive days.

- **Inform Consultant Haematologist / acute oncology team of patient's admission.**

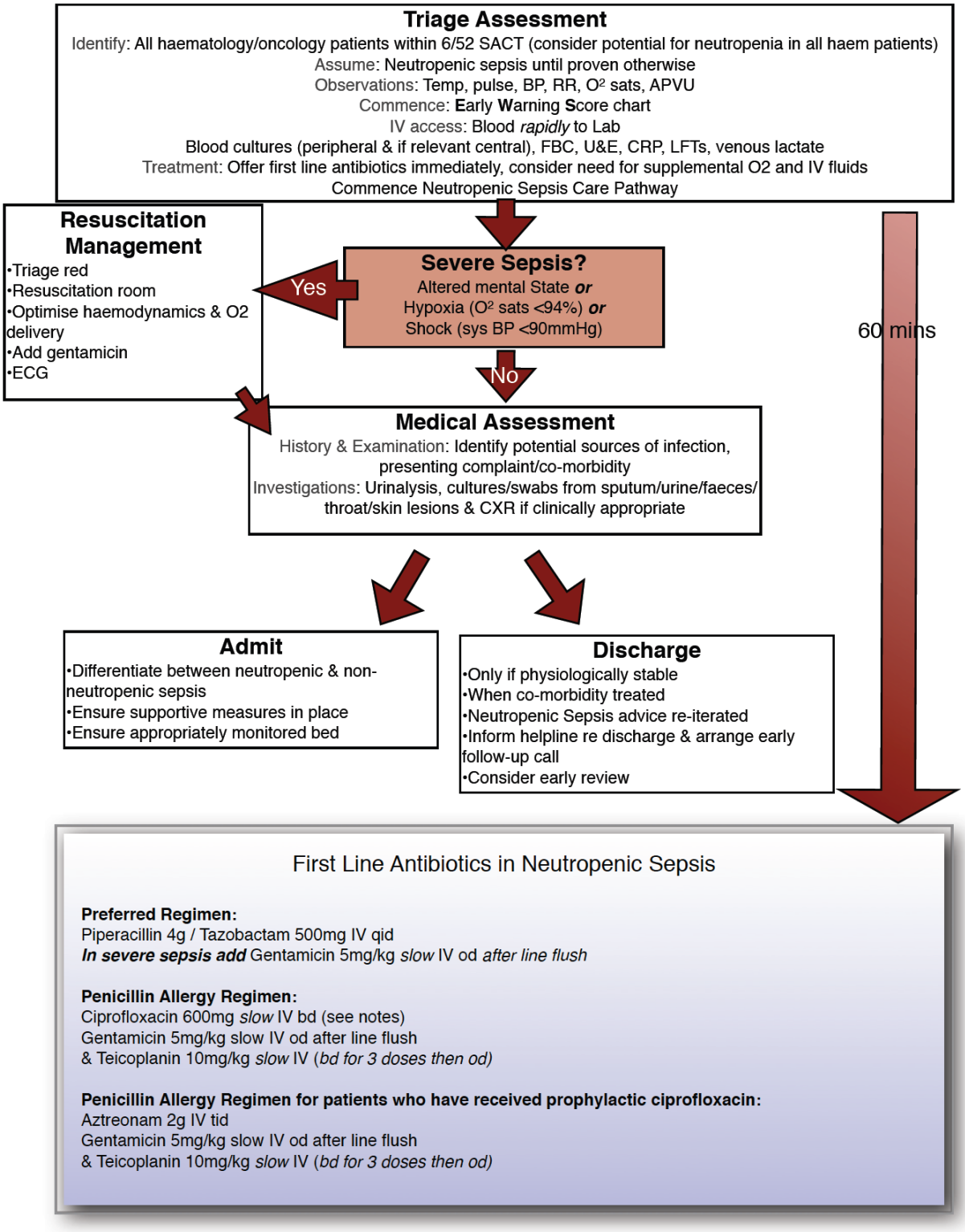
<u>Indications for Change in Management</u>

- Temperature: If temperature persists beyond 48 hrs or condition deteriorates, discuss antibiotic regimen and management with Consultant Microbiologist.

- Pulse/BP and Fluid balance: Use volume expander (crystalloid fluids) to treat hypotension. Insert catheter and monitor output. If despite fluid challenge hypotension persists for 45 minutes or recurs seek senior advice urgently as per MEWS protocol

- Systemic complications: Observe for evidence of bacterial endocarditis, thrombocytopenia, DIC. If anaemic or thrombocytopenic or DIC develops discuss transfusion support with a Consultant Haematologist.

NICaN Neutropenic Sepsis Guideline (First 60 minutes)



****Patients who have received prophylaxis with a quinolone are at a higher risk of being infected with more resistant organisms. Please consider a lower threshold for escalation for adding gentamicin in such patients****

NICaN Neutropenic Sepsis Guideline (First 48 hours)

First 24 hours	24-48 hours
Monitoring	
EWSC every 30 minutes until stable; thereafter 4 hourly	EWSC x 4 daily Fever partial response: consider mucositis
Systemic anti-cancer therapy	
Stop systemic anti-cancer therapy & contact the working day for a decision on continuing	treating haematologist/oncologist within one treatment
Antimicrobials	
Clear evidence of a specific focus of infection? Consider liaising with microbiology before altering regimen Consider addition of *Teicoplanin* where: Clinically evident serious soft tissue infection, indwelling catheter infection, or MRSA +ve Ensure therapeutic monitoring & dose adjustment of antimicrobials if relevant	If improving consider switching to oral antibiotics after 48 hours treatment If clinical deterioration consider liaising with microbiology and switching to second line antimicrobials as well as viral and fungal infections Ensure therapeutic monitoring & dose adjustment of antimicrobials if relevant
Fluid & Electrolyte Balance	
Aggressive fluid replacement in dehydration Hourly urine output measurement Replace electrolytes judiciously Early critical care management if deterioration	Maintenance fluids as required Continue to monitor electrolytes daily
Neutropenia	
GCSF should **NOT** be used for the treatment of uncomplicated febrile neutropenia Consider GCSF in patients with a high risk of complications **only** on instruction from a haematology/ oncology consultant/registrar/associate specialist or staff grade High risk features include; *profound neutropenia (<0.1x109/l) expected to be prolonged (>10 days)* *persistent fever despite appropriate antimicrobials* *evidence of invasive fungal infection* *pneumonia* *sepsis syndrome (hypotension & multi-organ dysfunction)* *uncontrolled primary disease* *haemodynamic compromise*	

Second Line Antibiotics in Neutropenic Sepsis
Consider discussion with microbiology
If not allergic to penicillin
Meropenem 1g slow IV tds
& Amikacin 15mg/kg slow IV od
+/- Teicoplanin 10mg/kg slow IV (bd for 3 doses then od) - indications above

References

- Infectious Diseases Society of America. 2002 Guidelines for the use of antimicrobial agents in neutropenic patients with cancer. *Clinical Infectious Diseases* 2002:34:730-51
- NICAN Guidelines for the management of oncology/haematology adult patients with neutropenic sepsis August 2013.