Initial Management of Neutropenic Sepsis or Sepsis of Unknown Source in Immunocompromised Adults

NHS Greater Glasgow and Clyde

PATIENT DEFINITION

All patients who have received RECENT CHEMOTHERAPY (<3 weeks) that have ANY of the following signs/symptoms MUST be assumed to be neutropenic and septic:

- Fever >38.0°C OR > 37.5 °C on 2 occasions 30 minutes apart (measured at home, by ambulance or in hospital) *or*
- Hypothermia <36.0°C *or*
- Chills, shivers or sweats *or*
- Other symptoms suggestive of an infection

All patients with: Neutrophil count ≤ 0.5 x 10^9 **PLUS** fever/ hypothermia or SIRS or sepsis/ septic shock

All OTHER Immunocompromised patient groups clinically unwell with UNDIFFERENTIATED infection with normal neutrophil count e.g. previous transplant (solid organ or stem cell), high dose corticosteroid therapy (e.g. prednisolone > 15 mg/ day for > 2 weeks), other immunosuppressive agents (e.g. anti-TNF, cyclophosphamide) or primary immunodeficiency disease.

IMMEDIATE CLINICAL MANAGEMENT

Neutropenic sepsis is a life-threatening medical emergency. Patients should not remain untreated whilst awaiting confirmation of neutropenia. ALL patients should be assessed by experienced clinical staff within 15 minutes of presentation to hospital and resuscitation should be commenced following the Sepsis 6 care bundle below. **COVID-19 infection should also be considered in the assessment and differential diagnosis in this clinical presentation.**

1. Blood cultures (& any other relevant samples)
2. Antibiotic administration
3. Oxygen to maintain target saturation
4. Bloods; FBC, U&Es, LFTs, Lactate and CRP
5. IV fluids
6. Monitor urine output

Contact acute oncology / haematology/ specialist team as soon as possible
If clinical deterioration seek urgent senior review

EMPIRICAL ANTIBIOTICS

Start IV antibiotics as soon as possible.

NB. Neutropenia in the absence of signs of infection does not require treatment

Is patient a stem cell transplant or receiving chemotherapy for acute leukaemia?

NO

Does patient have septic shock or NEWS ≥ 7?

NO

STANDARD RISK

IV Piperacillin/ Tazobactam 4.5g 6 hrly

If recent/current infection/ colonisation with MRSA or suspected line or skin/soft tissue infection

ADD IV Vancomycin*

If true penicillin/ beta-lactam allergy

IV Gentamicin*❖ (Max 4 days)
AND IV Vancomycin*

❖ If renal transplant replace gentamicin with ciprofloxacin

YES

HIGH RISK

IV Piperacillin/ Tazobactam 4.5g 6 hrly
AND IV Gentamicin*❖ (Max 4 days)

If recent/current infection/ colonisation with MRSA or suspected line or skin/soft tissue infection

ADD IV Vancomycin*

If true penicillin/ beta-lactam allergy

IV Gentamicin* ❖(Max 4 days)
AND IV Vancomycin*
AND IV Ciprofloxacin 400mg 8 hrly

❖ If renal transplant replace gentamicin with ciprofloxacin

Consider IVOST when clinical improvement~

YES

Does patient have septic shock or NEWS ≥ 7?

NO

CRITICAL RISK

First line including penicillin allergy (NOT anaphylaxis)
IV Meropenem 1g 8 hrly
AND IV Amikacin*
AND IV Vancomycin*

If true penicillin/ beta-lactam ANAPHYLAXIS

IV Amikacin*
AND IV Vancomycin*
AND IV Ciprofloxacin 400 mg 8 hrly

YES

ADDITIONAL antimicrobials and advice for specific infection risks:

- See Adult Infection Management Guideline, (via Staffnet or Medicines App) for management of other anatomically defined infections.
- ~Consider IVOST if: clinical improvement (afebrile, reduction in NEWS Score, improving Sepsis), oral route is reliably available, microbiology results or alternative diagnosis (e.g. treatment related symptoms) and following discussion with senior / specialist team.
- *IV Amikacin, IV Gentamicin and IV Vancomycin dosing as per Therapeutics handbook. All other doses based on normal renal/ hepatic function. See BNF for dose adjustments.
- Check previous microbiology culture and sensitivity results as may modify antibiotic choice (e.g. history of Ciprofloxacin resistant Gram negatives)
- Previous ESBL infection/carrier use a carbapenem in place of piperacillin/ tazobactam.
- Consider the possibility of COVID-19, fungal infection or opportunistic infections such as PCP or reactivation of previous infection e.g. CMV, VZV. Discuss with appropriate specialist/ Microbiologist/ Infectious Disease physician.

Approved by NHSGGC Antimicrobial Utilisation Committee; Aug 2020. Expires Aug 2023.