ONCOLOGY/TRANSPLANT PATIENT – FEVER OR SUSPECTED SEPSIS – INITIAL MANAGEMENT

PRACTICE GUIDELINE©

DOCUMENT SUMMARY/KEY POINTS

NSW Ministry of Health Clinical Practice Guideline

Initial Management of Fever/Suspected Sepsis in Oncology /Transplant Patients

http://www0.health.nsw.gov.au/policies/gl/2015/pdf/GL2015_013.pdf

- The above linked document is a clinical guideline developed by the Office of NSW Kids and Families.
- Infection in paediatric oncology/Stem Cell Transplant patients presents most commonly with fever. Some patients with serious infection may present without fever or with hypothermia. **Prompt administration of antibiotics (within 60 minutes of presentation)** will reduce morbidity and mortality.
- The guideline is designed to provide assistance within the critical first 60 minutes of presentation to hospital and provide further guidance for the following 24 hours.
- Continued re-evaluation of these patients is critical to their successful outcome. The child's treating oncologist or oncologist on call should be contacted as soon as practicable after initiation of treatment.
- Decisions regarding subsequent changes to and duration of antibiotic therapy are beyond the scope of this guideline and are the responsibility of the treating oncologist within the scope of local antimicrobial stewardship programs.
- The Emergency Departments will continue to use current triage practices for these patients. Clinically stable and no signs of toxicity patients will receive a triage category 3; unstable patients or those with severe sepsis will receive triage category 1 or 2 as clinically indicated.
- **Note:** all oncology/transplant patients with fever/suspected sepsis should receive gentamicin without waiting for the neutrophil account, unless they are at risk of ototoxicity eg patients with brain tumours or those who have received cisplatin

Approved by:	SCHN Policy, Procedure and Guideline Committee	
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Team Leader:	Senior Staff Specialist	**Area/Dept:** SCH & CHW Emergency Depts

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chemotherapy. These patients should be discussed with the oncology fellow or consultant on-call.

- For quick reference, a copy of the initial management algorithm and the empiric antibiotic table has been provided on the following pages.

Related Documents

CHW Guideline

- CHW Empiric Parenteral Antibiotics (Swing Card)
  http://chw.schn.health.nsw.gov.au/o/groups/drug_therapy/resources/abs4kids/antibiotics_card-2016.pdf

SCH Guideline

- Empiric Antibiotic Guidelines- SCH
  http://chw.schn.health.nsw.gov.au/o/documents/policies/policies/2012-7004.pdf

CHANGE SUMMARY

- N/A - New SCHN coversheet to NSW MoH Guideline.

READ ACKNOWLEDGEMENT

- All clinical staff in SCHN Emergency Departments and Oncology/Transplantation services should read and acknowledge they understand the contents of the Guideline.

Initial Presentation/Triage Algorithm

Minimum Triage Category 2 for patients presenting to the ED

If an *inpatient* or presenting directly to the ward activate a RAPID RESPONSE as per local CERS

For the following patients with fever or reported fever ≥ 38.0°C or who are unwell

- Patients on treatment for cancer
- Patients who ceased treatment for cancer within the last 3 months
- Recipients of Stem Cell Transplantation (SCT) within the last 12 months or on immunosuppressive therapy
- Oncology or SCT patients with Central Venous Access Device (CVAD) in situ

Do Not Wait for local anaesthetic to take effect. (E.g. to access port or insert peripheral line)
Access CVAD or establish peripheral IV and collect Blood cultures, FBC, VBG (Lactate & glucose) EUC, LFT
DO NOT WAIT FOR BLOOD RESULTS TO START ANTIBIOTICS

RECOGNISE

DOES THE PATIENT HAVE ***SIGNS OF TOXICITY?*** *Alertness, arousal or activity decreased; colour pale or mottled; cool peripheries; cry weak; grunting; rigors; bounding pulses; wide pulse pressure*

NO

YES

DOES THE PATIENT HAVE ***ANY YELLOW OR RED ZONE OBSERVATIONS***
All observation MUST be recorded on a NSW Health Standard Paediatric Observation Chart

NO

YES

DOES THE PATIENT HAVE

ONE or TWO of the following YELLOW ZONE Observations
Respiratory rate
Respiratory distress
O_2 Saturations
Heart rate

OR

ANY RED ZONE OBSERVATION OR **ADDITIONAL CRITERIA**
3 or more simultaneous Yellow Zone observations = Additional RED ZONE CRITERIA

YES

YES

DOES THE PATIENT HAVE ANY SIGNS OF COLD SHOCK: diminished pulses, prolonged capillary refill (>3seconds), hypotension
WARM SHOCK: bounding pulses, flash (very rapid) capillary refill, wide pulse pressure (diastolic BP less than 50% of Systolic BP)

NO

YES

RESPOND & ESCALATE

CLINICALLY STABLE
Administer antibiotics within
60 minutes
GENTAMICIN AND PIPERACILLIN+TAZOBACTAM#
Add Vancomycin^ (If indicated)

CLINICALLY UNSTABLE
Administer antibiotics within
30 minutes
GENTAMICIN AND PIPERACILLIN+TAZOBACTAM#
Add Vancomycin^ (If indicated)
Consider STAT Fluid bolus:
0.9% sodium chloride 20mL/kg

SEVERE SEPSIS / SHOCK
Administer antibiotics ***IMMEDIATELY***
GENTAMICIN AND PIPERACILLIN+TAZOBACTAM# AND VANCOMYCIN
Escalate as per Local CERS and escalation plan if not already done.
Resuscitate as per CEC Paediatric Sepsis Pathway
NETS 1300 362500

If the patient deteriorates further or has an elevated lactate (≥2mmol/L) escalate as per local CERS, Resuscitate as per CEC Paediatric Sepsis Pathway and ADD Vancomycin

Discuss the management plan with the patient and family
Inform Paediatrician as per local CERS and Oncologist on call as soon as possible

Key for Algorithm:

^Indications for Vancomycin: Obviously infected intravascular devices (erythema/tenderness along subcutaneous track or purulent exit site discharge), MRSA carriers with clinical instability, high dose cytarabine recipients (>2gm/m^2) with clinical instability.

Patients with penicillin allergy: refer to Table 1 for first antibiotic choice

Table 1: First Dose of Empirical Antibiotics

TREATMENT		Clinically Stable	Clinically Unstable	Severe Sepsis/Shock
EMPIRICAL ANTIBIOTIC REGIMEN*		**Gentamicin** (dose based on lean body weight for obese patients) 7.5 mg/kg/dose IV (max. dose 320 mg) Single dose only **then** **Piperacillin+Tazobactam** 100 mg/kg/dose IV 6 hourly (max. dose 4 g Piperacillin component) ADD **Vancomycin**^ if clinically indicated	**Gentamicin** (dose based on lean body weight for obese patients) 7.5 mg/kg/dose IV 24 hourly (max. dose 320 mg) **then** **Piperacillin+Tazobactam** 100 mg/kg/dose IV 6 hourly (max. dose 4 g Piperacillin component) ADD **Vancomycin**^ if clinically indicated	**Gentamicin** (dose based on lean body weight for obese patients) 7.5 mg/kg/dose IV 24 hourly (max. dose 320 mg) **then** **Piperacillin+Tazobactam** 100 mg/kg/dose IV 6 hourly (max. dose 4 g Piperacillin component) **AND** **Vancomycin** 15 mg/kg/dose IV 6 hourly (max. dose 750 mg)
ALLERGY	Non-life threatening penicillin hypersensitivity	**Gentamicin** (dose based on lean body weight for obese patients) 7.5 mg/kg/dose IV Single dose only (max. dose 320 mg) **AND** **Cefepime** 50 mg/kg/dose IV 8 hourly (max. dose 2 g)	**Gentamicin** (dose based on lean body weight for obese patients) 7.5 mg/kg/dose IV 24 hourly (max. dose 320 mg). **AND** **Cefepime** 50 mg/kg/dose IV 8 hourly (max. dose 2 g) OR **Meropenem** 40 mg/kg/dose IV 8 hourly (max. dose 2 g)	**Gentamicin** (dose based on lean body weight for obese patients) 7.5 mg/kg/dose IV 24 hourly (max. dose 320 mg). **AND** **Cefepime** 50 mg/kg/dose IV 8 hourly (max. dose 2 g) OR **Meropenem** 40 mg/kg/dose IV 8 hourly (max. dose 2 g) **AND** **Vancomycin** 15 mg/kg/dose IV 6 hourly (max. dose 750 mg)

	TREATMENT	Clinically stable	Clinically unstable	Severe sepsis/shock
ALLERGY	Life-threatening Penicillin Hypersensitivity not known to tolerate Cephalosporins/ Meropenem safely	**Gentamicin** (dose based on lean body weight for obese patients) 7.5 mg/kg/dose IV Single dose only (max. dose 320 mg) **AND** **Ciprofloxacin** 10 mg/kg/dose IV 8 hourly (max. dose 400 mg) **AND** **Vancomycin** 15 mg/kg/dose IV 6 hourly (max. dose 750 mg)	**Gentamicin** (dose based on lean body weight for obese patients) 7.5 mg/kg/dose IV 24 hourly (max. dose 320 mg) **AND** **Ciprofloxacin** 10 mg/kg/dose IV 8 hourly (max. dose 400 mg) **AND** **Vancomycin** 15 mg/kg/dose IV 6 hourly (max. dose 750 mg)	**Gentamicin** (dose based on lean body weight for obese patients) 7.5 mg/kg/dose IV 24 hourly (max. dose 320 mg) **AND** **Ciprofloxacin** 10 mg/kg/dose IV 8 hourly (max. dose 400 mg) **AND** **Vancomycin** 15 mg/kg/dose IV 6 hourly (max. dose 750 mg)
MODIFICATIONS		Add **Metronidazole** 12.5 mg/kg/dose IV 8 hourly (max. dose 500 mg) if Cefepime or Ciprofloxacin used AND evidence of abdominal/perineal infection	Use **Meropenem** rather than Cefepime or Piperacillin+ Tazobactam if colonised with a multi-resistant GNR (e.g. ESBL) Add **Metronidazole** 12.5 mg/kg/dose IV 8 hourly (max. dose 500 mg) if Cefepime or Ciprofloxacin used and evidence of abdominal/ perineal infection	Use **Meropenem** rather than Cefepime or Piperacillin+Tazobactam if colonised with a multi-resistant GNR (e.g. ESBL) Add **Metronidazole** 12.5 mg/kg/dose IV 8 hourly (max. dose 500 mg) if Cefepime or Ciprofloxacin used AND evidence of abdominal/perineal infection

All Antibiotic doses are based on actual body weight except Gentamicin.

Gentamicin: Dose based on lean body weight for obese patients – see *appendix 3* for method for calculating lean body weight in obese children. **Administer over 5 minutes**. Ensure that line is flushed with 10-20 mL following Gentamicin and prior to any further doses of antibiotics.

Piperacillin+Tazobactam: Administer over 20- 30 mins.

Vancomycin: Administer over at least 60 mins. If patient has previously experienced 'red man syndrome' administer over 2 hours.

^ Indications for Vancomycin: Obviously infected vascular devices (erythema/tenderness along subcutaneous track or purulent exit site discharge), MRSA carriers with clinical instability, High dose Cytarabine (>2gm/m^2/day) recipients with clinical instability.

For clinically stable patients the decision to continue Gentamicin beyond the first dose must be made in consultation with treating oncologist. Continuation of gentamicin for clinically stable patients is not recommended by the Australian Therapeutic Guidelines – Antibiotic 2015 due to the lack of proven benefit and potential for toxicity.

*Subsequent antibiotic choice/dose (i.e. after first dose) may need modification based on patient's renal function, clinical stability and history of colonisation with multi-drug resistant organisms. These decisions must be made after discussing with treating oncologist.

For patients continuing Gentamicin, drug level must be monitored just prior to second dose.

For patients continuing Vancomycin, drug level must be monitored just prior to 5th dose.