GRAND RIVER HOSPITAL

Patient Identification Sticker

ROUTINE ORDERS – Fever and Neutropenia Admission Children Less than 18 years.

Prescriber instructions: 1) The prescriber MUST check an empty box (☐) to activate the corresponding order.
2) An order with a black box ■ will be activated UNLESS the prescriber crosses out the complete order with a line and initials.

Date: year/month/day	Time:	Weight (kg): ____ Height (cm): ____	Allergies: ☐ None ☐Yes Review electronic record	*Order #	Initials
Admit to inpatient pediatrics, Dr. _____		Diagnosis: _____			
Precautions					
■ Collect swabs for Antibiotic Resistant Organisms i.e. MRSA, VRE as per hospital policy # IPC-S-1 ■ Isolation Precaution ☐ Contact ☐ Droplet ☐ Airborne (Reason_____) ■ Follow Hazardous Drugs Safe Handling Policy Date of last dose hazardous drug/chemotherapy administered_____ Drug _____					
Advance Care Directive					
☐ No ☐ Yes - Substitute Decision Maker/Advance Directive/Care Wish Form has been completed and is in chart					
Diet					
☐ Pediatric diet as tolerated ☐ Other _____					
Activity					
☐ AAT					
Vital Signs and Monitoring					
☐ Temperature (no rectal), heart rate, respirations, blood pressure and O2 saturation q1h until stable then q4h and PRN					
Lines/Tubes/Respiratory					
■ Lidocaine Cream 4% X 1 application to skin 30 minutes prior to access prn. ■ Initiate venous access via Central Venous Access Device (CVAD) if present ■ Peripheral IV access with venipuncture ■ Heparin flush with 100 unit/mL solution prior to de-accessing CVAD as per Pediatric Oncology Group of Ontario guidelines					
Intravenous Fluids					
☐ Bolus Normal Saline (20mL/kg) _____ ml over _____ minutes ☐ Dextrose 5% with 0.9% Sodium Choride (1.5 times maintenance) at _____mL/hr.					
Lab work and Diagnostics - All patients with fever (regardless of CBC results) require peripheral/central line cultures. Do not delay bloodwork waiting for port access, draw peripheral with blood culture.					
■ Blood culture peripheral x 1. Repeat at 48 hours if still febrile. ■ Blood cultures central from all lumens (may include blood discard in blood volume for central line cultures). ■ Repeat blood cultures central of all lumens at time of fever (Maximum once daily) ■ No urinary catheters ☐ Urinalysis ☐ Urine C & S ☐ Nasopharyngeal swab (NPS) (Test Code 5360 for Virology) Other _____	■ CBC stat on arrival and daily ■ Magnesium ■ Calcium ■ Glucose ■ Phosphate ■ Electrolytes on arrival and daily ■ BUN on arrival and daily ■ Creatinine on arrival and daily <u>Chest X-Ray</u> Reason Query _____ ☐ Chest X-Ray A/P portable **OR** ☐ Chest X-Ray A/P & Lateral ☐ Throat culture Other_____	Tobramycin target trough less than 2 mg/L, peak target 7-9mg/L ☐ Tobramycin trough and peak with 3rd or 4th dose for (Initial levels only if clinically indicated; e.g. renal impairment, concurrent nephrotoxic drugs, therapy expected to continue beyond 72 hours.) ■ Vancomycin trough level prior to 4th or 5th dose if Vancomycin ordered (target 10-15 mg/L) Other _____		

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Antibiotics - Choose 1, 2 or 3. Do not delay antibiotics waiting for urine culture. Initial doses of antibiotics given STAT (within 60 minutes of arrival) after blood cultures drawn. Alternate antibiotics between all lumens.

1. Stable patient WITH NO severe or life threatening allergy to beta-lactam antibiotics

Piperacillin-Tazobactam – dose total is combined piperacillin plus tazobactam

☐ Less than 6 months: Piperacillin-Tazobactam (90 mg/kg/dose, maximum 4500 mg/dose) _____mg IV STAT then q6h.

☐ 6 months and older: Piperacillin-Tazobactam (112.5 mg/kg/dose, maximum 4500 mg/dose) _____mg IV STAT then q6h.

For London Health Sciences Centre patients ADD

☐ Tobramycin (2.5 mg/kg/dose, inital max 100 mg/dose) _____ mg IV STAT then q8h. Physician to reassess at 48 hours to consider discontinuing if culture negative, regardless of fever. Initial levels **only** if clinically indicated. If continued beyond 48 hours, physician to order peak and trough levels if not already ordered.

2. Stable patient AND severe or life threatening allergy to beta-lactam antibiotics

☐ Ciprofloxacin (15 mg/kg/dose,max 400 mg/dose) ____mg IV STAT and then q12h **AND**

☐ Tobramycin (2.5 mg/kg/dose, inital max 100 mg/dose) _____mg IV STAT then q8h (initial trough and peak levels recommended) **AND**

☐ Clindamycin (10 mg/kg/dose), max 600 mg/dose) _____mg IV q8h

3. Unstable patient

☐ Meropenem (20 mg/kg/dose, max 1000 mg/dose) _____mg IV STAT then q8h (see reverse if beta-lactam allergy for alternative) **AND**

☐ Vancomycin (15 mg/kg/dose, initial max 1000 mg/dose)_____mg IV STAT then q6h **AND**

Plus one of the following:

☐ Tobramcyin (2.5 mg/kg/dose, inital max 100 mg/dose) _____mg IV STAT then q8h

OR if Toronto Hospital for Sick Children patient:

☐ Amikacin (non-formulary drug, contact pharmacist)

- ☐ 2 months to less than 11 years: Amikacin (35 mg/kg/dose) _____mg IV stat then q24h
- ☐ 11 years to less than 16 years: Amikacin (25 mg/kg/dose) _____mg IV stat then q24h
- ☐ 16 years or older: Amikacin (20 mg/kg/dose) _____mg IV stat then q24h

■ Physician to reassess Vancomycin and Aminoglycoside after 48 hours of therapy to consider discontinuing.

Add Vancomycin if evidence of cellulitis or CVAD tunnel infection **OR** diagnosis of Acute Myelogenous Leukemia

☐ Vancomycin (15 mg/kg/dose, initial max 1000 mg/dose).____mg IV STAT then q6h

Other Medication

☐ Acetaminophen (10 mg/kg/dose, max 650 mg/dose)_____mg PO q4h prn

☐ Sulfamethoxazole/Trimethoprim _____mg Trimethoprim PO ☐ daily OR ☐ BID on days _____

☐ Filgrastim _____mcg subcutaneous daily

NOTE: If patient is on Sulfamethoxazole/Trimethoprim and/or Filgrastim at home at time of admission CONTINUE until instructed otherwise by pediatric oncologist. Consult with tertiary centre regarding continuing chemotherapy.

☐ Continue oral chemotherapy specify drug _____

☐ Hold oral chemotherapy specify drug:_____

☐ Chlorhexidine 0.12% mouthwash 5 mL swish and spit orally QID

☐ Nystatin 300,000 units swish and spit orally QID

☐ Sodium bicarbonate mouthwash 5 to 15 mL swish and spit orally TID (prepared daily by nurse/family)

Lidocaine Viscous 2% (Maximum: 4 doses/12 hours)

☐ Less than 3 years: Lidocaine Viscous 2% up to 1.2 mL applied to mouth lesions with a cotton-tipped applicator q3h prn

☐ 3 years and older : Lidocaine Viscous (1 to 5 mL, maximum 4.4 mL/kg/dose) _____mL swish and spit out orally q3h prn

Consultations

☐ Social work ☐ Dietitian

☐ Contact tertiary centre regarding transfer if high risk patient (see reverse for criteria)

* Enter Order # and initial (by Nurse/Clerical)

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What defines a fever?

- Oral temperature greater than or equal to 38.3 ºC (101F) once. Oral temperature of greater than or equal to 38ºC (100.4F) for 1 hour or more or twice in 24 hours.
- Axillary temperature greater than or equal to 37.8ºC (100F) once. Axillary temperature greater than or equal to 37.5ºC (99.5F) for 1 hour or more or twice in 24 hours.

What defines neutropenia?

- Absolute neutrophil count (ANC) is equal to the total of neutrophils plus band cells
- Neutropenia is defined as ANC less than 0.5 x 10^9/L OR expected to be so in the next 48 hours. For patients who are not neutropenic but have had recent chemotherapy, the anticipated time of their expected neutropenia should be discussed with the on call pediatric oncologist at their tertiary centre.
- **Bone Marrow Transplant patient within 6 months of transplant and/or receiving immunosuppressants, antibiotic therapy is initiated regardless of ANC**

High-risk (any factor listed below)

- History of overwhelming sepsis (culture proven and sepsis syndrome) within the previous 6 months
- Age less than 12 months
- Down Syndrome
- Bone Marrow Transplant patient within 6 months of transplant and/or receiving immunosuppressants
- Diagnosis of any of the following:
  - acute myelogenous leukemia (AML)
  - Burkitt lymphoma or leukemia
  - acute lymphoblastic leukemia (ALL) in induction, consolidation or reinduction/delayed intensification phases
  - advanced stage anaplastic large cell lymphoma
  - stage 4 neuroblastoma
  - relapsed leukemia progressive/relapsed malignancy with bone marrow involvement
- Presents with any of the following **(Criteria for Unstable Patient):**
  - sepsis syndrome*
  - hypotension
  - tachypnea
  - hypoxia (O_2 saturation less than 94% on room air)
  - new infiltrates on chest X-ray
  - altered mental status
  - severe mucositis
  - vomiting
  - abdominal pain
  - evidence of significant local infection (e.g. tunnel infection, peri-rectal abscess, cellulitis)

*Two or more of fever or hypothermia, tachycardia, tachypnea, hypotension.

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Back of page 2

Treatment of unstable patient with Beta-Lactam allergy:

1. Ciprofloxacin 15 mg/kg/dose,max 400 mg/dose IV q12h **AND**
2. Vancomycin **AND**
3. Tobramycin or Amikacin

Pre-existing nephrotoxicity

Patients with pre-existing nephrotoxicity or developing nephrotoxicity while receiving gentamicin/tobramycin, and patients with sensorineural hearing loss, may receive ciprofloxacin in place of gentamicin/tobramycin (renal dosing if appropriate). This includes patients with a single kidney. Antibiotic should be discussed with the tertiary centre.

Duration of Antibiotic Therapy

Patient Parameters	Plan
• Afebrile for a minimum of 24 hours • Cultures negative at 48 hours • Antibiotic duration greater than or equal to 48 hours; • Clinically well AND • Evidence of hematological recovery**	DISCONTINUE antibiotics. If patient is early on in therapy and/or antibiotics were started due to fever and instability at presentation, discuss possible discontinuation of antibiotics with tertiary centre.
• Afebrile for a minimum of 24 hours; • Cultures **positive** • Clinically well AND • **NO** Evidence of hematological recovery**	CONTINUE broad spectrum coverage. ADD specific therapy if needed.
• Afebrile for a minimum of 24 hours; • Cultures **positive** • Clinically well AND • Evidence of hematological recovery**	CONSIDER discontinuing broad spectrum coverage. CONTINUE specific therapy to complete necessary treatment period.
• **Low risk febrile neutropenia ONLY**; • Afebrile for minimum of 24 hours; • Cultures **negative** • Antibiotic duration of 72 hours • **Irrespective of haematological recovery**	There remains considerable practice variation in this scenario and patient care must be determined in consultation with the tertiary centre. CONSIDER discontinuing antibiotic therapy if: 1. Tertiary centre is in agreement 2. If discharged, careful follow up is ensured, either by phone or patient visit 24 to 48 hours post discharge 3. If discharged, the patient and their family can and will return in a timely fashion should fever recur 4. If discharged and the patient's fever returns ("bounce back"), they are readmitted and started on empiric antibiotic coverage until evidence of count recovery
** Hematological recovery is defined as: **Minimum ANC of 0.2 x 10^9/L or minimum monocyte count of 0.1 x 10^9/L**	

Discharge

- Fever in **High Risk** patients should be managed conservatively and the decision to discharge home should be individualized and discussed with the tertiary centre.
- Discharge of patients with **localized sites of infection** who meet the above criteria should be considered on a case by case basis.
- Discharged families must be advised to continue close follow up with their treatment team. Any recurrence of fever should be approached as a *de novo* (start over) and requires immediate evaluation.

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