

Fever +/- Neutropenia is a Medical Emergency

Definition:

Oral temperature $>38.5^{\circ}\text{C}$ (or $>38^{\circ}\text{C}$ x 2 readings taken 1 hour apart)
ANC $<1 \times 10^9/\text{L}$

Triage:

It is recommended that the BCCH Clinical Pathway be followed and the recommendations for empiric antibiotic use be implemented. (CAVEAT: Individual Hospital Infection Control Policy may dictate other treatment based on their own antibiotic sensitivity profile).

The treating pediatric oncologist (after hours, the oncologist on call) should always be notified when a child on active anticancer therapy develops a fever and neutropenia.

Please see the following pages for [Practice Guidelines for Fever and Neutropenia patients](#).



Clinical Practice Guideline for FEVER & NEUTROPENIA for patients seen outside BCCH

(On Active Therapy: Chemotherapy, Radiation Therapy, &/or Post HSCT)

Physician-on-Call or Clinic receives call from parent: Child has Fever

Child arrives in Emergency with history of fever (38.0° Ax or 38.5° po)

Name, Age, Phone number
Diagnosis
Symptoms (rash)
Temperature
Time of Last Acetaminophen
Stage of treatment
Date of last Chemo/Radiation
Date of HSCT
Most recent count
On GCSF
Central line
Estimated time of arrival
Bring Patient Information Binder

On Chemotherapy, Radiation, or Post-HSCT?

Within 5 minutes:
- Vital Signs (HR,RR,BP)
- Temperature*
- ± O₂ Sat
- LOC
- Isolate if possible

* No Rectal Temperatures *
** Wash Hands **
*Isolate patient in single room

Treat as regular patient

Signs of Septic Shock?
↓ LOC, ↓ BP, ↓ perfusion

Triage as Level I:
Assessed by ER Physician
VS with BP q 5-15 min.
If CVL, access all lumens
Draw blood Stat:
- C&S from all lumens
- CBC & diff
- Lytes, BUN, Cr, Glucose
- Coag studies
- Group & Screen
- Venous Gas
- CRP
If no CVL, start IV X2 & draw above bloodwork
Weight

Triage as Level II:
Assessed by ER Physician
VS with BP q 30 min.
If CVL, access all lumens
Draw blood Stat:
- C&S from all lumens
- CBC & diff
- Lytes, BUN, Cr
- Group & Screen
- CRP
If no CVL, start IV & draw above bloodwork.
Weight

If CVL blocked, see Withdrawal Occlusion Guidelines, but do not delay treatment. Start peripheral IV STAT

Within 10 minutes:

IV - NS bolus over ½ hr at 10ml/kg Repeat as necessary. Consider Dopamine	Antibiotics as per High Risk Features (see Empiric Antibiotic Protocol dated June 2006)
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Blood work results and clinical assessment determine care

ANC = sum of Neutrophils + bands
Is ANC < 0.3?

Consider Outpatient IV Ceftriaxone in patients with low risk features only and clinically stable.

Arrange for return within 24 H

Notify BC's Children's Hospital Oncologist -on-call 604-875-2161

Other cultures as clinically indicated
- urine
- stool
- throat
- NPW
- CXray

Antibiotics as per Empiric Antibiotic dated June 2006

If renal impairment or on cisplatin protocol, Cefazadime alone (unless high risk features require additional antibiotics)

VS Stabilized?

Risk of Communicable Infection?

Admit and Isolate

ICU

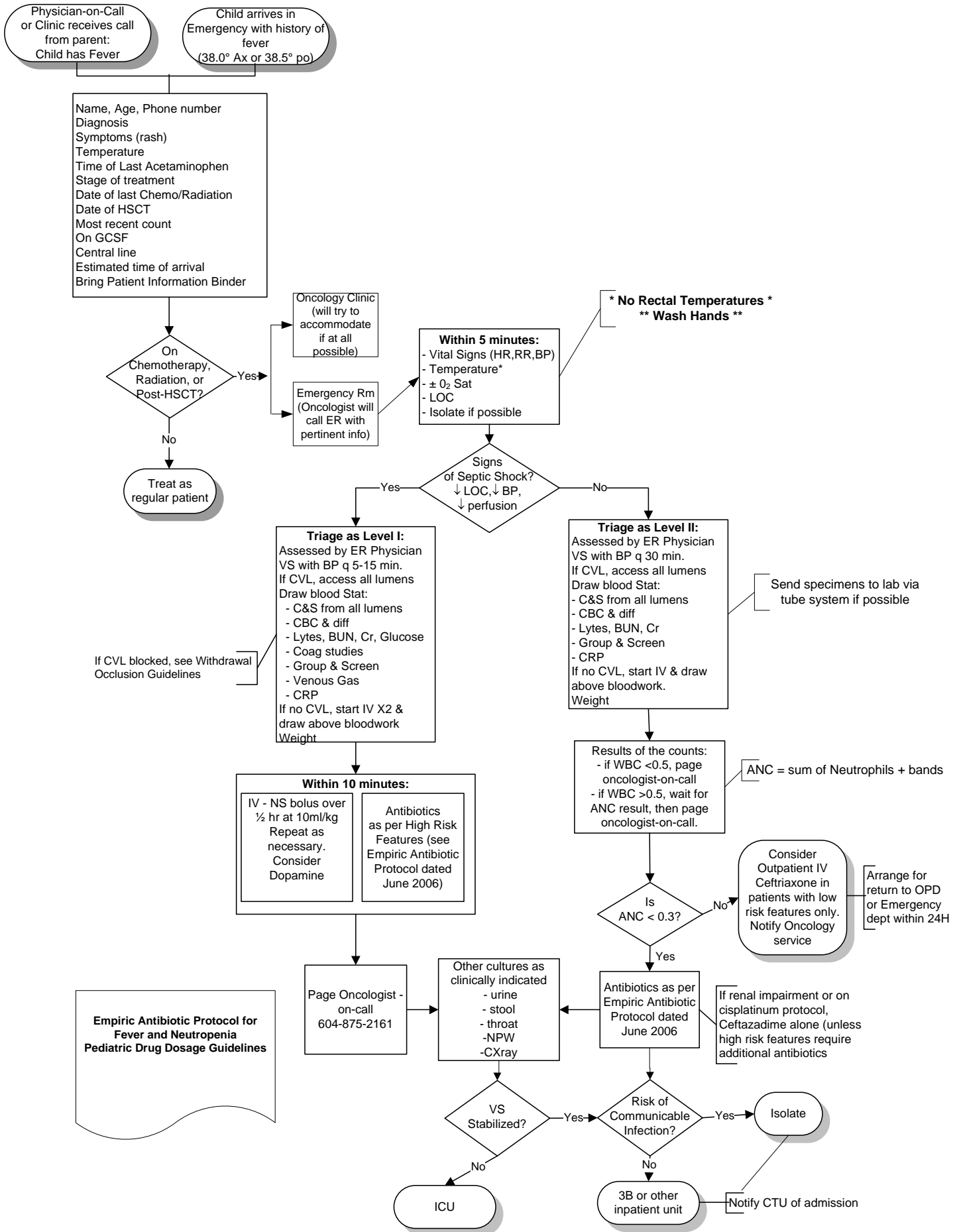
Admit to private room

Empiric Antibiotic Protocol for Fever and Neutropenia Pediatric Drug Dosage Guidelines

*Individual Hospital Infection Control Policy may dictate other Rx based on their own antibiotic sensitivity profiles

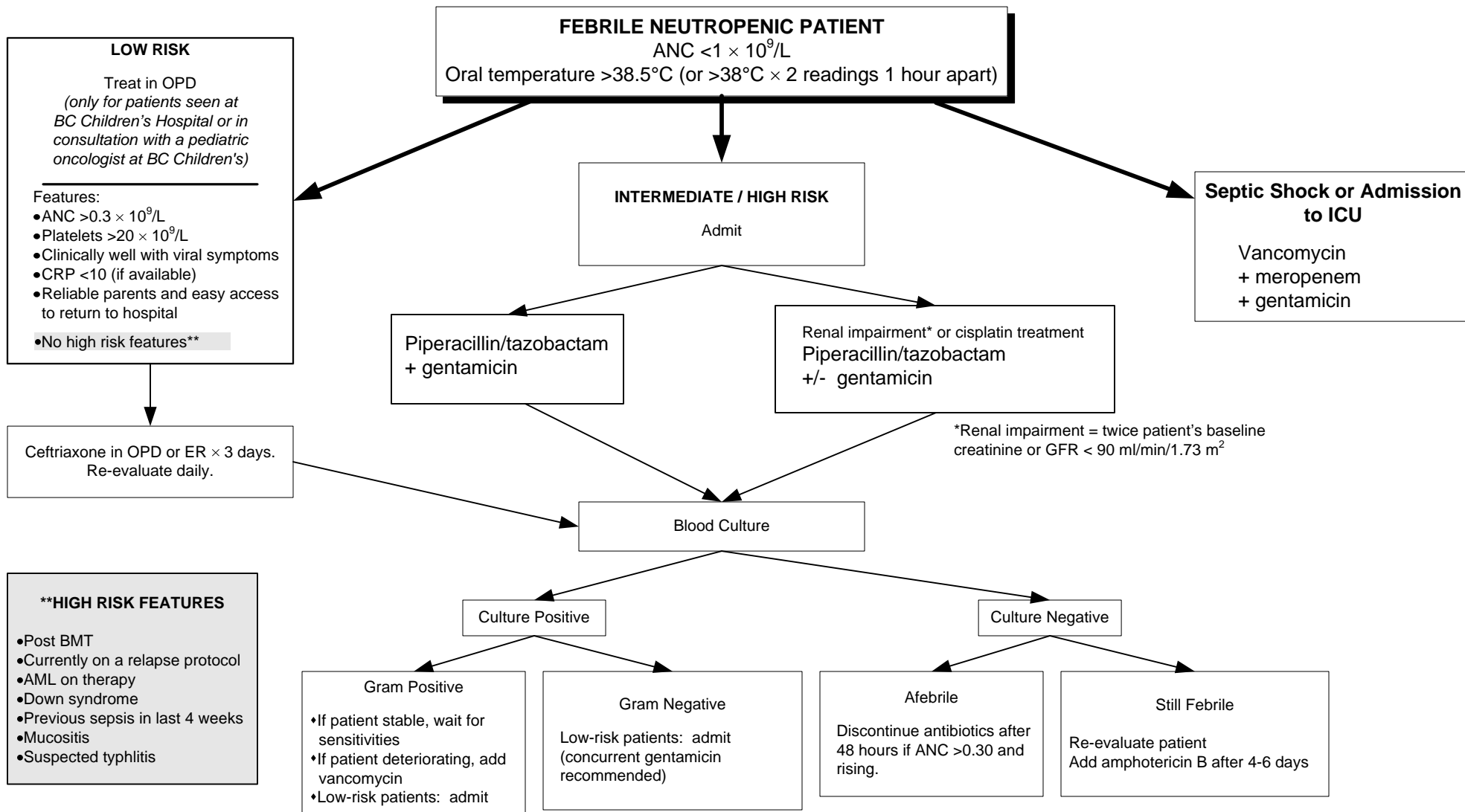


Clinical Practice Guideline for FEVER & NEUTROPENIA for BC Children's Hospital patients (On Active Therapy: Chemotherapy, Radiation Therapy, &/or Post HSCT)



EMPIRIC ANTIBIOTIC PROTOCOL FOR FEVER AND NEUTROPENIA

These are only guidelines and full clinical evaluation is required for all febrile patients.



- **HIGH RISK FEATURES**
- Post BMT
 - Currently on a relapse protocol
 - AML on therapy
 - Down syndrome
 - Previous sepsis in last 4 weeks
 - Mucositis
 - Suspected typhlitis

Rationalize antibiotics based on sensitivities and maintain broad-spectrum coverage.

DOSES						
AMPHOTERICIN B 1 mg/kg/dose +Benadryl 1 mg/kg/dose +hydrocortisone 1 mg per 1 mg amphotericin (max 25 mg/dose)	CEFTRIAXONE 100 mg/kg IV daily Max 2 g/24 h	VANCOMYCIN 40-60 mg/kg/day ÷ q8h Max 1 g/dose Baseline creatinine then twice weekly. Trough level 30 minutes before 3 rd -5 th dose	PIPERACILLIN / TAZOBACTAM 300 mg/kg/day of piperacillin ÷ q6h Max 3 g/dose of piperacillin	GENTAMICIN "Once daily dose" - recommended at BCCH 7 mg/kg/day given once daily over 30 minutes Creatinine at baseline and twice weekly Trough level 18-24 hours after second dose then weekly If level < 1 mg/L, continue same dosing If level > 1mg/L consult pharmacy	GENTAMICIN "Divided dose" 7.5 mg/kg/day ÷ q8h Levels pre/post 3 rd dose then pre-level only once/week	MEROPENEM 60 mg/kg/24 hours IV ÷ q8h

Recommendations for Once Daily Aminoglycoside Therapy in Children with Normal Renal Function at BC Children's Hospital

Recommendations from the Once Daily Aminoglycoside Working Group (May 8th, 2006)
Approved by Antibiotic Review Subcommittee (May 9th, 2006)

Children with Normal Renal Function:

- ~ By history, no risk for renal dysfunction
- ~ Normal creatinine

Exclusion criteria:

- ~ Post conceptional age < 44 weeks
- ~ Allergy or sensitivity to aminoglycosides
- ~ Significant renal dysfunction GFR < 90 ml/min/1.73m²
- ~ Gram positive infections where aminoglycoside is being with another agent for synergy
- ~ Rapid clearance of drug (ie cystic fibrosis, burn > 20% BSA)
- ~ Endocarditis
- ~ Surgical prophylaxis
- ~ Pregnancy

Recommended Gentamicin/Tobramycin Dose:

- 7mg/kg based on actual body weight
if obese use dosing weight as determined by pharmacy
- Administer over 30 minutes

Monitoring:

- Baseline creatinine
- If therapy is anticipated for > 72 hours:
 - Gentamicin or tobramycin trough level 18-24 hours after 2nd dose
 - Administer 3rd dose
 - Before giving 4th dose:
 - If level ≤ 1 mg/L – Administer next dose
 - If level > 1 mg/L– Do not administer next dose until consult pharmacy
- For therapy beyond 7 days:
 - Creatinine at least 2X weekly
 - Trough aminoglycoside level (18-24 hours after last dose) once weekly

Note:

- Ensure optimal hydration
- Concurrent use of nephrotoxic drugs may require more frequent and individualized monitoring of aminoglycoside levels or may require traditional dosing. Consultation with pharmacy is recommended.
 - Nonsteroidal anti-inflammatory drugs including COX-1 and COX-2 inhibitors may potentiate nephrotoxicity when used with aminoglycosides..
- Peak levels are not routinely recommended with once daily aminoglycoside dosing.