



# Guideline for Febrile Neutropenia in Pediatric Oncology Patients

Newfoundland and Labrador

Reviewed and approved by specialists at the Janeway Children's Health and Rehabilitation Centre, St. John's, NL.

Care has been taken to ensure the accuracy of the information in this guideline. However, any health care professional or physician using this guideline will be responsible for verifying doses and administering medications and care according to their own institutional formularies, policies and standards of care.

## **Treatment of Febrile Neutropenia in the Pediatric Oncology Patient**

**Please contact Pediatric Hematologist/Oncologist on call at 709-777-6300 to discuss all patients.**

The neutropenic patient ( $ANC < 0.5 \times 10^9/L$  or  $\leq 1 \times 10^9/L$  with predicted fall to  $< 0.5 \times 10^9/L$ ) must be admitted and given intravenous antibiotics in the event of a single temperature spike of  $\geq 38.3^\circ C$  orally or tympanic ( $37.8^\circ C$  axilla) or a temperature of  $\geq 38.0^\circ C$  orally or tympanic ( $37.5^\circ C$  axilla) taken on two occasions at least one hour apart. The temperature taken by parents at home must be counted.

**THIS MUST BE CONSIDERED A MEDICAL EMERGENCY.**

Please do:

1. CBC and Differential immediately. This may be done by finger poke or venipuncture if unable to access central line
2. Septic work up – must include blood cultures from all lumen of the central line **within 30 minutes** of arrival to hospital. Only do peripheral blood cultures if there is no central venous access device.

3. IV antibiotics **SHOULD** be initiated within 1 hour of patient's arrival to ER/Hospital.

Parents have been instructed to **NOT** give acetaminophen prior to coming to hospital. If a child is neutropenic, acetaminophen should **NOT** be given unless the child is receiving antibiotics.

When children are receiving chemotherapy, they must **NOT** be given anything rectally, including medication (Acetaminophen). They must **NOT** have temperatures taken rectally. They must **NOT** be given any NSAID such as Aspirin or Advil (Ibuprofen).

## Treatment Options

1. **Average Risk Patients (see risk stratification):**

- **Tazocin** (piperacillin/tazobactam): 240 mg/kg/day (of piperacillin component) IV divided q8h. Maximum dose is 100 mg/kg/dose or 4 g dose, whichever is less. You may use another formulary antipseudomonal, semisynthetic penicillin with beta-lactamase inhibitor (example: Timentin (ticarcillin/clavulanate) if Tazocin is not available.

2. **High Risk Patients (see risk stratification):**

- **Tazocin** (piperacillin/tazobactam): 240 mg/kg/day (of piperacillin component) IV divided q8h. Maximum dose is 100 mg/kg/dose or 4 g/dose, which ever is less. You may use another formulary antipseudomonal, semisynthetic penicillin with beta-lactamase inhibitor if Tazocin is not available.
- **Vancomycin:** 50 mg/kg/day IV q6h. Infuse over 60 minutes unless child has had previous reaction (Redman's Syndrome), then you should infuse over 120 minutes. Maximum concentration for infusion should be less than 5 mg/ml in D5W, D5W and NS, or NS. Pre-Vancomycin levels should be drawn 0-30 minutes before the 4<sup>th</sup> or 5<sup>th</sup> dose. (You may select which dose so that the child does not require blood work in the middle of the night). Post-vancomycin levels should be drawn 60-90 minutes after completion of the 4<sup>th</sup> or 5<sup>th</sup> dose.

3. **Penicillin Allergy:**

This is used for average and high risk patients with a penicillin allergy.

- **Ceftazidime:** 150 mg/kg/day divided q8h (maximum 6 g/day).
- **Vancomycin:** 50 mg/kg/day IV q6h. Infuse over 60 minutes unless child has had previous reaction (Redman's Syndrome), then you should infuse over 120 minutes. Maximum concentration for infusion should be less than 5 mg/ml in D5W, D5W and NS, or NS. Pre-Vancomycin levels should be drawn 0-30 minutes before the 4<sup>th</sup> or 5<sup>th</sup> dose (you may select which dose so that the child does not require blood work in the middle of the night). Post-Vancomycin levels should be drawn 60-90 minutes after the completion of the 4<sup>th</sup> or 5<sup>th</sup> dose.

**\*\*NOTE: rotate administration of antibiotics through all lumen of a central venous access device (CVAD).**

### **Risk Stratification**

#### **Average Risk Patients:**

- No high factors

#### **High Risk Patients have any one of the following high risk factors:**

- History of sepsis in last 6 months
- HSCT within 6 months and/or receiving immunosuppressant
- AML
- Down Syndrome
- Advanced stage Burkitt Lymphoma
- Relapsed Leukemia
- Clinically unstable (See signs and symptoms below)

#### **Signs and Symptoms of Clinical Instability:**

- Sepsis syndrome
- Hypotension
- Tachypnea
- Hypoxia (O<sub>2</sub> sats < 94% in room air)
- New infiltrates on CXR
- Altered mental status
- Severe mucositis
- Vomiting
- Abdominal pain
- Evidence of local infection

The evidence for this guideline was obtained from the C<sup>17</sup> endorsed “International Guideline for the Management of Fever and Neutropenia in Children with Cancer and/or Undergoing Hematopoietic Stem-Cell Transplantation (2012)” and adapted for use in Newfoundland and Labrador. The complete guideline, a short version (published in the *Journal of Clinical Oncology*) and associated supporting materials are available at: <http://www.sickkids.ca/HaematologyOncology/IPFNG/index.html>

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### **References for medication dosing:**

1. Taketamo, C., Halburt, J., and Kraus, D. (2009). *Pediatric Dosage Handbook, 16<sup>th</sup> edition*. Ohio: Lexi-Comp, Inc.
2. Corbett, Amanda H., et al., eds. (2014). *Lexicomp Drug Information Handbook, 23<sup>rd</sup> edition*. Ohio: Lexi-Comp, Inc.
3. Phelps, Stephanie J., Hale, Emily B., Crill, Catherine M., eds. (2007). *Teddy Bear Book: Pediatric Injectable Drugs, 8<sup>th</sup> edition*. American Society of Health-System Pharmacists, Inc.
4. Lau, Elaine, et al., eds. (2010). *Drug Handbook and Formulary (2010-2011)*. Sick Kids, The Hospital for Sick Children