Children's Mercy Kansas City

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Clinical Pathways

Evidence-Based Practice Collaborative

10-2023

Low-Risk Fever and Neutropenia

Children's Mercy Kansas City

These guidelines do not establish a standard of care to be followed in every case. It is recognized that each case is different and those individuals involved in providing health care are expected to use their judgment in determining what is in the best interests of the patient based on the circumstances existing at the time. It is impossible to anticipate all possible situations that may exist and to prepare guidelines for each. Accordingly, these guidelines should guide care with the understanding that departures from them may be required at times.

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Part of the Pediatrics Commons

davs

Currently using broad-spectrum antimicrobials

Other concerns from primary oncology team for

(excluding TMP-SMX for PJP prophylaxis)

Low-Risk Fever and Neutropenia Clinical Pathway Synopsis

Low-Risk Fever and Neutropenia Evaluation Algorithm

Standard Procedures Oncology patient presents to CMH Fever (temps may be oral or axillary) · Triage level ESI 1 or 2 One temperature > 38.5° C (101.3° F) Oncology clinic or CMH Adele Hall ED with · Rapid rooming fever and suspected neutropenia -or-· CBC with differential Two temperatures > 38.0° C (100.4° F) · Blood cultures from all CVL lumens prior to antibiotic separated by at least 1 hour at home or administration Follow standard procedures in Oncology clinic/ED Administration of IV broad-spectrum antibiotics Neutropenia within 1 hour of arrival ANC ≤ 500 cells/microliter · Evaluate for possible focus of infection Included Diagnosis (must meet one): · Acute lymphoblastic leukemia or lymphoma in Is patient maintenance phase of therapy neutropenic? · Solid tumor/brain tumor · Hodgkin's lymphoma Contact Hem/Onc provider · Langerhans cell histiocytosis for additional recommendations nitial LOW RISK Exclusion Criteria: To be assessed by ED or Hem/Onc provider; if any are true, then patient DOES NOT qualify as LOW RISK Link to Provider Assessment Checklist Does patient have one of Age < 12 months the included diagnoses? · Not tolerating oral intake, including meds · H&P not reassuring · Vital signs abnormal for age (except mild tachycardia with fever) Yes Signs of serious infection · Does not live (or is not able to stay) within 60 min of CMH AH campus Patient DOES NOT meet LOW · Not able to receive phone follow-up Does patient · Not able to return for follow-up within 72 hours qualify as RISK criteria for outpatient · Critical note in Cerner stating patient is NOT eligible for LOW RISK by initial management. Contact Hem/Onc rovider and proceed with standard outpatient fever/neutropenia management assessment? treatment and admit. Mucositis > 1 fluid bolus given Trisomy 21 Any surgery in the preceding 2 weeks (excluding CVL Contact Oncology referral doctor (during VP shunt/Ommaya reservoir placed within preceding 6 weeks OR meningeal signs business hours) or on-call Hem/Onc provider (after hours) if not already involved to perform additional assessment of risk Additional LOW RISK Exclusion Criteria: To be assessed by Hem/Onc provider; if any are true, then patient DOES NOT qualify as LOW RISK Does · Infant ALL (diagnosed in first year of life) patient qualify as LOW RISK by Hem/Onc · History of allogeneic BMT · History of autologous BMT within 100 days · Burkitt lymphoma/leukemia Abbreviations: · HLH ESI = Emergency Severity Index ANC = Absolute neutrophil count · Severe aplastic anemia AML = Acute myelogenous leukemia · Primary immunodeficiency Patient DOES meet LOW · Received > 15 days of glucocorticoids in the last 30 ALL = Acute lymphoblasitc RISK criteria. Proceed to

*If the examining provider, on-call Hem/Onc provider, or the family is uncomfortable with the appropriateness or safety of outpatient management of low-risk fever/neutropenia, the patient should be admitted

w-Risk Fever and Neutropenia

atment Pathway to initiate

outpatient therapy.4

leukemia/lymphoma

lymphohistiocytosis CVL = Central venous line

HLH = Hemophagocytic

BMT = Bone marrow transplant

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Levofloxacin Dosing:

10 mg/kg/dose PO daily (max dose 750

 For children ≥ 12 months but < 5 years: 10 mg/kg/dose PO BID (max 750

Liquid levofloxacin should be given 1

hour before or 2 hours after solid

· Levofloxacin tablets may be given

NG or G-tube feeds should be held for 1 hour before and 1 hour after

without regard to meals

Important Points for Providers:

Provide post-discharge patient

· Reinforce absolute importance of

picking up the levofloxacin

instructions for "Low-Risk Fever and

Neutropenia Management" found in

prescription and being available for

instructions will result in patient being ineligible for future outpatient management of low-risk fever and

phone follow-up. Failure to follow these

For children ≥ 5 years

mg/day)

mg/day)

food

each dose

depart.

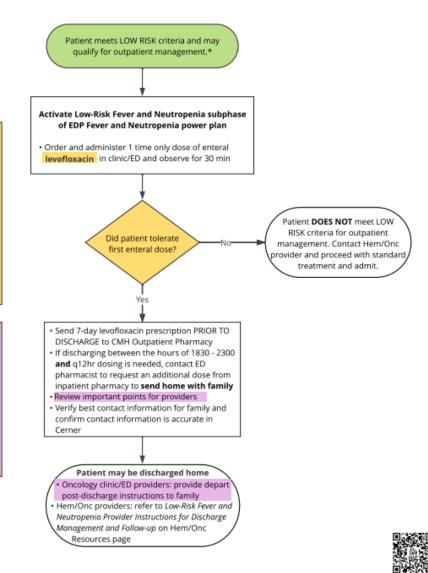
neutropenia.

Evidence Based Practice

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Low-Risk Fever and Neutropenia Treatment Algorithm



*If the examining provider, on-call Hem/Onc provider, or the family is uncomfortable with the appropriateness or safety of outpatient management of low-risk fever/neutropenia, the patient should be admitted. If the rounding inpatient team the next day judges that the patient meets the above criteria, the patient may be discharged with a prescription for levofloxacin and follow-up as above.

Each primary oncology team <u>MUST</u> place a Critical Note in Cerner for any patient that they feel would <u>NOT</u> be eligible for outpatient management of low-risk fever and neutropenia despite meeting the Diagnosis and Clinical criteria. Ideally, each primary oncology team will place a Critical Note in Cerner for every patient stating definitively whether or not they would be eligible for outpatient management of low-risk fever and neutropenia

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Objective of Clinical Pathway

To provide care standards for pediatric oncology patients who present with fever and suspected neutropenia and may qualify for outpatient management. The pathway provides guidance regarding recommended evaluation, treatment, and follow-up for eligible low-risk patients in order to maximize patient safety and minimize variation in care.

Epidemiology

Fever and chemotherapy-induced neutropenia is one of the most common complications of cancer therapy and is associated with a documented bacterial bloodstream infection in 11-30% of cases (te Poele et al., 2009). Assessment of risk for bacterial infections in fever and neutropenia allows clinicians to tailor therapy to the patient's risk. Empiric parenteral antimicrobial therapy and hospitalization are recommended for those patients at greatest risk of infection. For those at low risk of infection, less-intense upfront or step-down therapy may be appropriate. Such studies have been published since the 1990s, with assessment moving to earlier time points in the clinical course of fever and neutropenia (Ojha et al., 2018; te Poele et al., 2009; Villanueva & August, 2016; Wacker et al., 1997).

Current clinical practice guidelines for management of fever and neutropenia in pediatric patients suggest "initial or step-down outpatient management" of low-risk patients when close follow-up can be assured, but do not comment on how to determine which patients are low-risk (Lehrnbecher et al., 2017). The Low-Risk Fever and Neutropenia Clinical Pathway combines current evidence with expert consensus to define the optimal method of identifying, stratifying, and treating low-risk pediatric cancer patients who present with fever and neutropenia.

Target Users

- Physicians (Emergency Medicine, Hematology/Oncology, Fellows, Residents)
- Nurse Practitioners
- Nurses
- Pharmacy

Target Population

Inclusion Criteria

- Oncology patients presenting to Oncology Clinic or Adele Hall Emergency Department (ED) with fever and suspected neutropenia **AND** one of the following diagnoses:
 - Acute lymphoblastic leukemia or lymphoma in maintenance phase of therapy
 - Solid tumor/brain tumor
 - o Hodgkin's lymphoma
 - o Langerhans cell histiocytosis

Exclusion Criteria

· Refer to Low-Risk Fever and Neutropenia Evaluation: Provider Assessment Checklist

Practice Recommendations

Practice recommendations in the clinical pathway above are based on consensus among providers with knowledge of the existing evidence and expertise in the evaluation, treatment, and monitoring of pediatric oncology patients with fever and neutropenia.

Additional Questions Posed by the Committee

No clinical questions were posed for this review.

Updates from Previous Versions of the Clinical Pathway

This is the first version of this clinical pathway.

Measures

- Utilization of the Low-Risk Fever and Neutropenia Clinical Pathway
- Utilization of the Low-Risk Fever and Neutropenia power plan subphase
- Number of Hem/Onc patients discharged home on levofloxacin
- Number of Hem/Onc patients who are discharged home, but later found to have invasive bacterial infection

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Value Implications

The following improvements may increase value by reducing healthcare costs and non-monetary costs (e.g., missed school/work, loss of wages, stress) for patients and families while reducing costs and improving resource utilization for healthcare facilities.

- Decreased risk of overtreatment (i.e., prolonged exposure to broad spectrum IV antibiotics)
- Decreased frequency of admission
- Decreased unwarranted variation in care

Potential Organizational Barriers and Facilitators *Potential Barriers*

- Variability of an acceptable level of risk among providers and families
- Challenges with follow-up faced by some families

Potential Facilitators

- Collaborative engagement across care continuum settings during pathway development
- High rate of use of clinical pathways by providers in the organization
- Associated provider tools including Provider Assessment Checklist
- Standardized order set for Emergency Department and Hematology/Oncology Clinic

Diversity/Equity/Inclusion

Our aim is to provide equitable care. These issues were discussed with the committee prior to making any practice recommendations.

Power Plans

- EDP Fever & Suspected Neutropenia ED and Hem/Onc Clinic Standing Orders
- EDP Fever & Neutropenia
- Fever & Neutropenia
- Low-Risk Fever and Neutropenia (subphase)

Associated Policies

- Fever and Suspected Neutropenia Standing Orders Policy
- Dispensing Prescriptions Outside of Normal Outpatient Pharmacy Business Hours

Education Materials

• The Low-Risk Fever and Neutropenia Clinical Pathway has no associated educational materials.

Clinical Pathway Preparation

This product was prepared by the Evidence Based Practice (EBP) Department in collaboration with the Low-Risk Fever and Neutropenia Clinical Pathway Committee composed of content experts at Children's Mercy Kansas City. The development of this product supports the Quality Excellence and Safety initiative to promote care standardization that is evidenced by measured outcomes. If a conflict of interest is identified, the conflict will be disclosed next to the committee member's name.

Clinical Pathway Committee Members and Representation

- Joel Thompson, MD | Hematology/Oncology/BMT Department | Committee Chair
- Karen Lewing, MD | Hematology/Oncology/BMT Department | Committee Member
- Lindsey Fricke, RN, MSN, FNP-BC, CPHON | Hematology/Oncology/BMT Department | Committee Member
- Leslie Hueschen, MD | Emergency Department | Committee Member
- Stephanie Clark, MD | Emergency Department | Committee Member

EBP Committee Members

- Kathleen Berg, MD, FAAP | Evidence Based Practice
- Kori Hess, PharmD | Evidence Based Practice
- Kelli Ott, OTD, OTR/L | Evidence Based Practice

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Clinical Pathway Development Funding

The development of this pathway was underwritten by the following departments/divisions: Emergency Medicine, Hematology/Oncology/BMT, Clinical Practice and Quality, and Evidence Based Practice.

Conflict of Interest

The contributors to the Low-Risk Fever and Neutropenia Clinical Pathway have no conflicts of interest to disclose related to the subject matter or materials discussed in this care process.

Approval Process

- This product was reviewed and approved by the Low-Risk Fever and Neutropenia Committee, content expert
 departments/divisions, and the EBP Department; after which they were approved by the Medical Executive
 Committee.
- Products are reviewed and updated as necessary every 3 years within the EBP Department at CMKC. Content expert teams are involved with every review and update.

Review Requested

Department/Unit	Date Obtained
Emergency Department	October 2023
Hematology/Oncology/BMT	October 2023
Pharmacy, Infectious Diseases	October 2023
Evidence Based Practice	October 2023

Version History

. <u>5.0</u>	
Date	Comments
October 2023	Version one (algorithms and synopsis developed and power plans updated)

Date for Next Review

October 2026

Implementation & Follow-Up

- Once approved, the pathway was presented to appropriate care teams and implemented.
- Order sets/power plans consistent with recommendations were created or updated for each care setting.
- Depart education materials were reviewed by health literacy.
- Additional institution-wide announcements were made via email, hospital website, and relevant huddles.
- Metrics will be assessed and shared with appropriate care teams to determine if changes need to occur.

Disclaimer

When evidence is lacking or inconclusive, options in care are provided in the supporting documents and the power plan(s) that accompany the clinical pathway.

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