

Fever in Outpatients with a Central Line Clinical Pathway Synopsis

Objective of Clinical Pathway

To provide care standards for ambulatory patients with central venous lines (CVLs) who present with fever. This pathway aims to guide appropriate triage, consultation, and referral for optimized care.

Background

Ambulatory patients with central venous lines (CVLs) are at risk for central line-associated bloodstream infection (CLABSI) and should be evaluated promptly.¹ Evaluation includes confirmation of fever and assessment for signs and symptoms concerning for sepsis, followed by referral to the Emergency Department or consultation with the team managing the CVL and/or Infectious Diseases, as appropriate, to determine the need for laboratory testing and follow-up.

Target Users

- Physicians (Ambulatory, Emergency Department, all specialties managing CVLs)
- Advanced Practice Providers
- Nurses

Target Population

Inclusion Criteria

- Ambulatory patients > 2 months of age with a CVL
- Fever $\geq 38^{\circ}\text{C}$ (100.4°F)

Exclusion Criteria

- Patients ≤ 2 months of age

Practice Recommendations

In lieu of a clinical practice guideline fully addressing the management of fever in ambulatory patients with CVLs, expert consensus of the Clinical Pathway Committee was used to inform the assessment, acute management, and referral guidance in this pathway.

Updates from Previous Versions of the Clinical Pathway

- Remove instructions specific to Cerner for documenting in the electronic health record

Measures

- Access of the clinical pathway (website hits)

Value Implications

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

- Decreased risk of missed sepsis evaluation

These clinical pathways 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 a clinical pathway for each. Accordingly, these clinical pathways should guide care with the understanding that departures from them may be required at times.

- Decreased frequency of missed referrals or consultation with the appropriate team managing CVL
- Decreased unwarranted variation in care

Organizational Barriers and Facilitators**Potential Barriers**

- Variability of acceptable level of risk among providers
- Variability in experience among clinicians
- Challenges with access to healthcare and health literacy faced by some families

Potential Facilitators

- Collaborative engagement across the continuum of clinical care settings and healthcare disciplines during clinical pathway development

Bias Awareness

Our goal is to recognize the social determinants of health and minimize healthcare disparities, while acknowledging that our unconscious biases can contribute to these disparities.

Order Sets/Order Panels

- There are no order sets or order panels associated with this pathway

Educational Materials

- There are no educational materials associated with this pathway

Clinical Pathway Preparation

This pathway was prepared by the EBP Department in collaboration with the Fever in Outpatient with a Central Line Clinical Pathway Committee, composed of content experts at Children's Mercy.

Clinical Pathway Representation

This clinical pathway was originally created with representation from General Academic Pediatrics & Beacon Program, Gastroenterology, Critical Care Medicine, Clinical Practice & Quality, Ambulatory, Hospital Medicine, Infectious Diseases, Genetics, Emergency Medicine, Dialysis, Vascular Access, Safety, Nephrology, Allergy, Asthma & Immunology, Hematology/Oncology, Pharmacy, Rehabilitation Medicine, Patient & Family Engagement, and Medical Informatics.

Fever in Outpatient with a Central Line Clinical Pathway Committee Members and Representation

- Emily Goodwin MD, FAAP | General Academic Pediatrics & Beacon Program | Committee chair
- Ruba Abdelhadi MD | Gastroenterology | Committee member
- Tara Benton MD | Medical Director, PICU | Committee member
- Lacey Bergerhofer MSN, RN-BC | Director, Clinical Practice & Quality | Committee member
- Sarah Brunner MD | Pediatric Intensivist | Committee member
- Shari Cooley MSN, RN | Director, Medical Informatics Training | Committee member
- Ashley Daly MD | Hospital Medicine | Committee member

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- Chris Day MD | Infectious Diseases | Committee member
- Jennifer Gannon MD | Genetics | Committee member
- Joan Giovanni MD | Interim Division Director, Pediatric Emergency Medicine | Committee member
- Leslie Glennon BSN, RN, CNN | Dialysis Nurse Manager | Committee member
- Lauren Kirkpatrick MD | Hospital Medicine | Committee member
- Sarah Monteer RN, BSN | Clinical Safety Program Manager | Committee member
- Anna Mueller RN, BSN, CCRC | Nursing Program Coordinator, Rehabilitation Medicine | Committee member
- Amy Nau MSN, MBA, RN, CNN, NE-BC | Service Line Director: Nephrology, Dialysis, and Kidney Transplant | Committee member
- Jessica Peters M. Ed | Patient & Family Engagement Coordinator | Committee member
- Kim Radford RN, APRN | Gastroenterology | Committee member
- Nikita Raje MD | Allergy, Asthma, and Immunology | Committee member
- William San Pablo MD | Gastroenterology | Committee member
- Bradley Warady MD | Director, Division of Pediatric Nephrology | Committee member
- Brandi Weller PharmD | Clinical Pharmacist | Committee member
- Lisa Schroeder MD | Chief Medical Quality and Safety Officer | Committee member

EBP Committee Members

- Todd Glenski, MD, MSHA, FASA | Anesthesiology, Evidence Based Practice
- Megan Gripka, MPH, MLS (ASCP) SM | Evidence Based Practice

Clinical Pathway Development Funding

If no outside funding, use this statement: The development of this clinical pathway was underwritten by the following departments/divisions: General Academic Pediatrics & Beacon Program, Gastroenterology, Critical Care Medicine, Clinical Practice & Quality, Ambulatory, Hospital Medicine, Infectious Diseases, Genetics, Emergency Medicine, Dialysis, Vascular Access, Safety, Nephrology, Allergy, Asthma & Immunology, Hematology/Oncology, Pharmacy, Rehabilitation Medicine, Patient & Family Engagement, Medical Informatics, and Evidence Based Practice.

Conflict of Interest

The contributors to the Fever in Outpatient with a Central Line Clinical Pathway have no conflicts of interest to disclose related to the subject matter or materials discussed. For committee members identified, the conflicts of interest are as follows:

Approval Process

- This pathway was reviewed and approved by the EBP Department and the Fever in Outpatient with a Central Line Clinical Pathway Committee after committee members garnered feedback from their respective divisions/departments.

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Version History

Date		Comments
February 2022	Version one:	Development of algorithm
September 2026	Version two:	Update algorithm to remove Cerner instructions for notes in EHR; development of synopsis

Date for Next Review

- September 2030

Implementation & Follow-Up

- Once approved, the pathway was implemented and presented to the appropriate care teams:
 - Announcements made to relevant departments
 - Additional institution-wide announcements were made via the hospital website and relevant huddles
- Care measurements may be assessed and shared with appropriate care teams to determine if changes need to occur.
- Pathways are reviewed every 4 years (or sooner) and updated as necessary within the EBP Department at Children's Mercy. Pathway committees are involved with every review and update.

Disclaimer

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

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References

1. Bavare AC, Foster CE, Wollam AL, Campbell JR. Central Line-Associated Bloodstream Infections in Pediatrics: A Review. *Pediatr Rev.* 2025;46(9):510-519. doi:10.1542/pir.2024-006506

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