

| | | |
|--|--|------------|
|  | Document Scope: Hospital-wide Patient Care | |
| | Document Type: Clinical Practice Guideline Approved on 2020-02-24 Next Review Date: 2023-02-23 | |
| | Management of Postoperative Fevers in Surgical Oncology Patients | Version: 3 |

Version 3: Approved at Solid Tumour Protocol Meeting December 16th, 2019 and Haematology/Oncology/BMT/CT Quality Utilization and Patient Care Committee January 27th, 2020

1.0 Introduction

These guidelines are intended for the management of admitted surgical oncology patients with a focus on solid tumor patients, who develop a postoperative fever. Patients are to be removed from this pathway if there is a change in diagnosis.

These guidelines were developed by an interdisciplinary clinical team from SickKids using research evidence, clinical experience and consensus agreement.

These guidelines were developed as a result of evidence obtained from a retrospective chart review of 98 surgical oncology patients. It was found that 74% of oncology patients develop fevers. Of the patients with fever, 14% had documented infections. A diagnosis of neuroblastoma, and surgery length greater than 8 hours were significant predictors of infection ($p=0.015/p=0.059$). This review highlighted the importance of a prompt physical assessment, and work-up of these patients.

The target users of this guideline are surgeons, oncologists, fellows, residents, and nurses caring for surgical oncology patients.

2.0 Definitions

Fever: Fever is defined as a single oral temperature $\geq 38.3^{\circ}\text{C}$ or oral temperature $\geq 38^{\circ}\text{C}$ for 1 hour or more. Oral temperatures are more reliable and are thus preferred. However, when axillary temperatures are the only option, fever is defined as a single axillary temperature of $\geq 37.8^{\circ}\text{C}$ or axillary temperature $\geq 37.5^{\circ}\text{C}$ for 1 hour or more.

Postoperative fever: Fevers that develop within 7 days post-surgery

Neutropenia: ANC (Absolute Neutrophil Count) $<0.5 \times 10^9/\text{L}$

Solid tumors: Neuroblastoma, Osteosarcoma, Ewing's Sarcoma, Wilms' Tumour, Hepatoblastoma, Germ Cell Tumour, Rhabdomyosarcoma, Soft Tissue Sarcoma, etc.

3.0 Clinical Practice Guideline

3.1 Assessment

3.1.1. Solid Tumour patients who develop fevers after undergoing surgery require an immediate and comprehensive assessment by the **surgical** team. This assessment **must** include^(Grade C):

- Physical examination
- CBC, differential

©The Hospital for Sick Children ('SickKids'). All Rights Reserved. This document may be reproduced or used strictly for non-commercial clinical purposes. However, by permitting such use, SickKids does not grant any broader license or waive any of its exclusive rights under copyright or otherwise at law; in particular, this document may not be used for publication without appropriate acknowledgement to SickKids. This Clinical Practice Guideline has been developed to guide the practice of clinicians at the Hospital for Sick Children. Use of this guideline in any setting must be subject to the clinical judgment of those responsible for providing care. SickKids does not accept responsibility for the application of this guideline outside SickKids.

| | | |
|--|--|------------|
|  | Document Scope: Hospital-wide Patient Care | |
| | Document Type: Clinical Practice Guideline Approved on 2020-02-24 Next Review Date: 2023-02-23 | |
| | Management of Postoperative Fevers in Surgical Oncology Patients | Version: 3 |

- Blood cultures: from central venous catheters (even if not accessed), or peripheral if no central catheter
- 3.1.2** Consideration should also be given to obtain ^[Grade C]:
- Urine cultures (especially in patients catheterized during surgery)
 - Wound, drain, other fluid cultures based on clinical status
 - Chest x-ray

3.2 Antibiotics

3.2.1. Solid Tumor patients, who have received chemotherapy, may require empiric antibiotic therapy even if they are not neutropenic. Antibiotics should be started promptly in children who are unwell, unstable or have evidence of bacterial infection. A low threshold to start antibiotics should be used even in well appearing children, based on the consideration of factors such as diagnosis, length of surgery, and intensity of pre-surgical chemotherapy. This decision should be made based on clinical status after a physical assessment has been done.^[Grade C]

3.2.2. If empiric antibiotic therapy is warranted (i.e. systemic manifestations such as: hypotension, rigours, sepsis syndrome, decreased urine output, or altered level of consciousness are present^{1,2,3,4,5,6,7,8}) please refer to Table 1 in [Management of Haematology/Oncology & Haematopoietic Stem Cell Transplant Patients with Fever.](#)

3.3 Consults

3.3.1. The Oncology service **must** be immediately consulted for all febrile solid tumor patients in the postoperative period and is responsible for assessing the patient as soon as possible.

3.3.2. Other services should be consulted as indicated (i.e. infectious diseases).

4.0 Related Documents

SickKids Drug Handbook and Formulary (2012) or [e-Formulary.](#)

[Management of Haematology/Oncology & Haematopoietic Stem Cell Transplant Patients with Fever.](#)

[Sepsis Early Management Pathway](#)

5.0 Statement of Evidence

A literature search was completed using Pubmed, using key words: postoperative fever, pediatric, oncology. A systematic review and details of the literature search have been published previously.² There were no directly relevant articles regarding pediatric oncology patients specifically in the published literature. The CPG development group and the solid tumour team met on several occasions to discuss the literature and to update these recommendations. This pathway is based on Level C evidence: Expert Opinion.

| | | |
|--|--|------------|
|  | Document Scope: Hospital-wide Patient Care | |
| | Document Type: Clinical Practice Guideline Approved on 2020-02-24 Next Review Date: 2023-02-23 | |
| | Management of Postoperative Fevers in Surgical Oncology Patients | Version: 3 |

6.0 References

1. Hendershot, E., Chang, A., Colapinto, K., Gerstle, JT., Malkin, D., Sung, L. (2009) Postoperative fevers in pediatric solid tumor patients: How should they be managed? **The Journal of Pediatric Hematology/Oncology**, 31(7):485-8.
2. Chang, A., Hendershot, E. & Colapinto, K. (2006). Minimizing complications related to fever in the postoperative pediatric oncology patient. **Journal of Pediatric Oncology Nursing** 23 (2), 75-81.
3. Angel, J.D., Blasler, R.D. & Allison, R. (1994). Postoperative fever in pediatric orthopaedic patients. **Journal of Pediatric Orthopaedics**, 14(6), 799-801.
4. De la Torre, S.H., Mandel, L.M., & Goff, B.A. (2003). Evaluation of postoperative fever: Usefulness and cost-effectiveness of routine workup. **American Journal of Obstetrics and Gynecology**, 188(6), 1642-1647.
5. Fanning, J., Neuhoﬀ, R.A., Brewer, J.E., Castaneda, T., Marcotte, M.P. & Jacobson, R.L. (1998). Frequency and yield of postoperative fever evaluation. **Infectious Disease in Obstetrics and Gynecology**, 6, 252-255.
6. Freischlag, J. & Busuttill, R.W. (1983). The value of postoperative fever evaluation. **Surgery**, 94(2), 358-363.
7. Hobar, P.C., Masson, J.A., Herrera, R., Ginsburg, C.M., Sklar, F., Sinn, D.P. & Byrd, H.S. (1998). Fever after craniofacial surgery in the infant under 24 months of age. **Plastic and Reconstructive Surgery**, 102(1), 32-36.
8. Yeung, RSW., Buck, JR. & Filler, RM. (1982). The significance of fever following operations in children. **Journal of Pediatric Surgery**, 17(4), 347-349.

7.0 Guideline Group and Reviewers

Guideline Group Membership

Eleanor Hendershot RN, MN, ACNP, APN Hematology/Oncology
Ann Chang RN, MN, ANPE Hematology/Oncology
Kimberly Colapinto RN, MN, ACNP, APN General Surgery
Lillian Sung MD, Hematology/Oncology
David Malkin MD, Hematology/Oncology
Ted Gerstle MD, General Surgery

Internal Reviewers

Jacob Langer MD General Surgery
Jim Whitlock MD Haematology/Oncology

Revision History:

Approved by the Haematology/Oncology/BMT/Immunology/Allergy Quality, Utilization and Patient Care Committee on January 14, 2008.
Approved by the Perioperative Surgical Committee: *Monday March 3, 2008.*

Attachments:

[Revision History.docx](#)