

# Guideline for platelet transfusion thresholds for pediatric hematology/oncology patients

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# Reference

- Sources: C17 Council (Canada)
- Guideline release date: June, 2010; Literature search last updated **March 2011**(no new studies identified).
- This guideline has been broadly adapted with permission from “Platelet transfusion for patients with cancer: clinical practice guidelines of the American Society of Clinical Oncology” (Schiffer et al,2001).

# Reference

## Sources of Evidence

- American Society of Clinical Oncology (ASCO) guideline which included a review of the literature up until mid-1999
- Searches of CINAHL, EMBASE, HealthSTAR, MEDLINE, PsycINFO, CDSR (Cochrane Database of Systematic Reviews), DARE (Database of Abstracts of Reviews of Effects), HTA (Health Technology Assessments) in May 2008 for systematic reviews published after 2000.

# Reference

## **Target Population**

- Children and youth (age 1 month to 19 years) with cancer or serious hematologic disorders

## **Interventions and Practices Considered**

- Platelet transfusion based on assessment of thresholds

## **Description of Methods Used to Formulate the Recommendations**

- Using American College of Chest Physicians “GRADE” criteria (Guyatt et al, 2008)

# Recommendations 1

## Prophylactic approach

Prophylactic platelet transfusions at the threshold levels indicated below, rather than therapeutic transfusions at the time of clinically significant bleeding, are recommended for pediatric oncology patients (1C)

## Recommendations 2

### Threshold for patients with leukemia / lymphoma

Platelet threshold of  $10 \times 10^9/L$  is recommended for clinically stable pediatric patients receiving chemotherapy for leukemia (1C)

## Recommendations 2

### Threshold for patients with leukemia / lymphoma

Transfusions at a higher level (given the absence of research evidence, as determined by clinical circumstances: signs of bleeding, high fever, hyperleucocytosis, rapid fall in platelet count, acute promyelocytic leukemia (APL), concomitant coagulation abnormality, critically ill patients, and those with impaired platelet function, generally at threshold of  $40 \times 10^9/L$ )

# Recommendations 3

## Threshold for patients post stem cell transplantation

Threshold for stable patients post stem cell transplantation to receive prophylactic platelet transfusions is  $10 \times 10^9/L$  (1C)



# Recommendations 4

## Threshold for patients with solid tumor

Threshold for stable patients with solid tumors to receive prophylactic platelet transfusions is  $10 \times 10^9/L$  (1C)

# Recommendations 5

## Threshold for patients with chronic thrombocytopenia

- Stable patients with chronic, stable, severe thrombocytopenia due to alloimmunization should be observed without prophylactic platelet transfusions. These patients should receive platelet transfusions with clinically significant bleeding only(1C)

# Recommendations 6

## Threshold for patients requiring a lumbar puncture

- Threshold for stable patients requiring an LP to receive prophylactic platelet transfusions is  $20 \times 10^9/L$ .
- Transfusions at a higher level ( $>50 \times 10^9$ ) are recommended for diagnostic LP for newly diagnosed patients with leukemia to minimize the risk of a traumatic LP (2B)

# Recommendations 7

## Threshold for patients requiring a major invasive procedure

- Threshold for stable patients requiring a major invasive surgical procedure to receive prophylactic platelet transfusions is  $40-50 \times 10^9/L$  (1C)

# Recommendations 8

## Threshold for patients with central nervous system (CNS) tumors

Note that these recommendations are based on a survey of neuro-oncologists (66.7%), neurosurgeons (11.1%) and others (22.2%) from the C<sup>17</sup> centers across Canada who treat pediatric neuro-oncology patients. **The numbers provided are based on a minimum 75% acceptance of those responding to the survey.** Therefore all evidence for this category would be classified as 2C (weak; recommendations with poor quality evidence; observation only)

# Recommendations 8

## Threshold for patients with central nervous system (CNS) tumors

- Child has **gross total resection** and is receiving chemo and/or radiation -  $30 \times 10^9/L$
- Child has **residual tumor** (subtotal resection or biopsy only) and is receiving chemo and/or radiation -  $30 \times 10^9/L$
- Ventriculo-peritoneal (VP) shunt or Ommaya reservoir -  $30 \times 10^9/L$
- Child is receiving an antiangiogenesis agent -  $50 \times 10^9/L$
- Past history of intracerebral hemorrhage (ICH) -  $50 \times 10^9/L$
- Receiving intensive chemotherapy -  $30 \times 10^9/L$
- To undergo a neurosurgical procedure -  $100 \times 10^9/L$