CHILDREN'S ONCOLOGY GROUP

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Guidance on Platelet Transfusion for Patients With Hypoproliferative Thrombocytopenia

COG Supportive Care Endorsed Guidelines

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The "Guidance for Platelet Transfusion for Patients with Hypoproliferative Thrombocytopenia" was endorsed by the COG Supportive Care Guideline Committee in April 2016.

The source guideline is published (Nahirniak S, Slichter SJ, Tanael S, et al. Transfusion Medicine Reviews 2015: 29; 3-13. doi.org/10.1016/j.tmrv.2014.11.004) and is available at: http://www.tmreviews.com/article/S0887-7963(14)00095-9/pdf

The purpose of this guideline is to to develop an evidence-based clinical practice guideline to assist hematologists, oncologists, and transfusion medicine specialists in optimizing platelet transfusion therapy for patients with hypoproliferative thrombocytopenia.

The recommendations of the endorsed guideline are presented below.

Summary of Recommendations for Platelet Transfusion for Patients with Hypoproliferative Thrombocytopenia

RECOMMENDATIONS	Strength of Recommendation and Quality of Evidence*
Should patients with hypoproliferative thrombocytopenia receive prophylactic platelet transfusions?	
• Prophylactic platelet transfusion should be given to patients with hypoproliferative thrombocytopenia.	Strong recommendation, Moderate level evidence
What platelet transfusion threshold should be used?	
• A threshold of less than or equal to 10×10^9/L should be used for prophylactic platelet transfusion for patients with hypoproliferative thrombocytopenia.	Strong recommendation, Weak level evidence
• Patients with hypoproliferative thrombocytopenia with clinically significant bleeding attributed to thrombocytopenia should probably receive platelet transfusions even if the platelet count is above 10×10^9/L.	Weak recommendation, Very weak level of evidence
What platelet dose should be used?	
• Low- or standard-dose platelet transfusion (i.e., $1.1 \times 10^{11}/m^2$ or $2.2 \times 10^{11}/m^2$, respectively), as opposed to high-dose platelet transfusion ($4.4 \times 10^{11}/m^2$), should be given to hospitalized patients with hypoproliferative thrombocytopenia who require prophylactic platelet transfusion. Conversion to platelet units can be performed using estimates of 50×10^9 per unit of whole blood derived, random-donor platelet products or 300×10^9 per unit apheresis or buffy coat pooled products.	Strong recommendation, High level of evidence

RECOMMENDATIONS	Strength of Recommendation and Quality of Evidence*
Implementation tips from the COG Supportive Care Guideline Committee: 1) In general, platelets that are collected via apheresis have a higher concentration (plt/mL) than pooled units collected as the platelet portion from whole blood donation. However, there is significant variability in platelet concentration within each type of platelet product (whole blood donation vs. apheresis collection) and between centers. **The platelet doses recommended above can be converted to approximate platelet dose volumes after consultation with local transfusion medicine specialists.** 2) For larger children or adolescents who require prophylactic platelet transfusion, the dose of transfused platelets should not exceed the usual adult dose.	
Should patients receive ABO-matched platelets?	
• Platelet concentrates that are ABO identical should probably be used in patients with hypoproliferative thrombocytopenia, if available.	Weak recommendation, Weak level of evidence
Do patients who are negative for the RhD antigen require Rh immunoglobulin if they receive RhD-positive platelets?	
• Female children and females of child-bearing age/potential, with hypoproliferative thrombocytopenia, who are RhD negative should probably receive Rh immunoglobulin before, immediately after, or within 72 hours of receiving an RhD-positive platelet component (unless antibody testing demonstrates the persistence of anti-D from a previous dose of Rh immunoglobulin)	Weak recommendation, Very weak level of evidence
• Males and females who are not of child-bearing age/potential, with hypoproliferative thrombocytopenia, who are RhD negative and are transfused with RhD-positive platelet components probably do not require Rh immunoglobulin.	Weak recommendation, Very weak level of evidence
Should patients receive HLA/HPA-selected or crossmatch-selected platelets?	
• Patients with hypoproliferative thrombocytopenia who are refractory to platelet transfusions and have class I HLA antibodies should probably receive class I HLA-selected or crossmatch-selected platelet transfusion to increase the platelet count.	Weak recommendation, Weak level of evidence
• Patients with hypoproliferative thrombocytopenia who are refractory to platelet transfusions and have HPA antibodies should probably receive HPA-selected or crossmatch-selected platelet transfusion to increase the platelet count.	Weak recommendation, Very weak level of evidence
• Patients with hypoproliferative thrombocytopenia who are refractory to platelet transfusions solely due to nonimmune factors should probably not receive HLA-selected or crossmatch-selected platelets.	Weak recommendation, Weak level of evidence

RECOMMENDATIONS	Strength of Recommendation and Quality of Evidence*
• Patients with hypoproliferative thrombocytopenia who are not refractory to platelet transfusion should probably not receive HLA-selected, HPA-selected, or crossmatch-selected platelets.	HLA and crossmatch selection: Weak recommendation, Weak level of evidence HPA-selection: Weak recommendation, Very weak level of evidence
Should patients receive apheresis-derived platelets instead of whole blood–derived platelets?	
• When leuko-reduced platelet products are available, WBD platelets (from buffy coat or PRP methods) should be used as equivalent products to apheresis platelets.	Strong recommendation, Moderate level of evidence

*as applied to recommendations for pediatric patients

Appendix 1: GRADE

Strength of Recommendations:

Strong Recommendation	When using GRADE, panels make strong recommendations when they are confident that the desirable effects of adherence to a recommendation outweigh the undesirable effects.
Weak Recommendation	Weak recommendations indicate that the desirable effects of adherence to a recommendation probably outweigh the undesirable effects, but the panel is less confident.

Strength of Recommendations Determinants:

Factor	Comment
Balance between desirable and undesirable effects	The larger the difference between the desirable and undesirable effects, the higher the likelihood that a strong recommendation is warranted. The narrower the gradient, the higher the likelihood that a weak recommendation is warranted
Quality of evidence	The higher the quality of evidence, the higher the likelihood that a strong recommendation is warranted
Values and preferences	The more values and preferences vary, or the greater the uncertainty in values and preferences, the higher the likelihood that a weak recommendation is warranted
Costs (resource allocation)	The higher the costs of an intervention—that is, the greater the resources consumed—the lower the likelihood that a strong recommendation is warranted

Quality of Evidence

High Quality	Further research is very unlikely to change our confidence in the estimate of effect
Moderate Quality	Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate
Low Quality	Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate
Very Low Quality	Any estimate of effect is very uncertain

Guyatt, G.H., et al., *GRADE: an emerging consensus on rating quality of evidence and strength of recommendations.* BMJ, 2008; 336: 924-926.
Guyatt, G.H., et al., *GRADE: going from evidence to recommendations.* BMJ, 2008; 336: 1049-1051.