Should patients receive **HLA-selected platelets?**

**What is this research about?**

Hypoproliferative thrombocytopenia (HT) occurs when production of blood platelets by the bone marrow is reduced. HT may occur in patients with leukemia, aplastic anemia or in cancer patients after chemotherapy. In patients with HT, platelets are transfused to increase the platelet count to prevent excessive bleeding. Mismatches between the platelet donor and recipient can lead to ineffective platelet transfusion. Selecting platelets with compatible Human Leucocyte Antigen (HLA) between donor and patient, can make platelet transfusion more effective. There are a number of methods used for HLA selection for patients with HT. HLA selection of platelets requires a large pool of donors and costs approximately five times more than unmatched platelets. Most importantly, it is currently unclear which selection method improves patients’ clinical outcomes. This systematic review was done to determine if transfusion of HLA-selected platelets to HT patients decreased their tendency to bleed and improved clinical outcomes.

**What did the researchers do?**

A search of medical literature was conducted seeking studies involving HT patients who received HLA-selected platelets. The search, updated in April 2012, included published studies of the electronic databases MEDLINE, Cochrane Central Register of Controlled Trials, EMBASE, and PubMed from 1948 to March 2011. Results were independently assessed by two reviewers to determine which studies should be included in the systematic review. Data from the included studies were independently extracted by three reviewers. The quality of each study was assessed using validated tools or checklists to help interpret the findings.

**What did the researchers find?**

- 75% of the 30 included studies were conducted before the year 2000 and did not include technologies currently in use for HLA selection.
- None of the studies were adequately powered (i.e. none of the studies determined, before the study was conducted, the number of patients required to show a clinically significant difference) to detect an effect on mortality or haemorrhage.
- HLA-selected platelets did not reduce platelet refractoriness rates (i.e. the lack of increase in the platelet count after transfusion).
- A reduction in the number of platelets transfused to patients receiving HLA selected platelets was not consistently demonstrated.
- HLA-selected platelets led to increased platelet counts one hour after transfusion. However, the effect at 24 hours was inconsistent.
**How can you use this research?**

The results of the systematic review could not determine a correlation between the increase in platelet count and clinical outcomes, such as mortality and haemorrhage. Yet, in the provision of quality care, the current practice of selecting platelets with compatible HLA between donor and HT patient will be used until a higher quality level of evidence becomes available. This systematic review was conducted by the International Collaboration for Guideline Development, Implementation and Evaluation for Transfusion Therapies (ICTMG). In an effort to improve patient care, the Collaboration will disseminate the findings to transfusion specialists, physicians, healthcare providers, blood bankers, policy makers, and patients.

While the answer to the question of whether HLA-selected platelets could result in better clinical outcomes remains unanswered, this systematic review provides a clear understanding of the current knowledge and the knowledge gap. The authors also propose clinical research approaches that have the potential to move this field forward. In addition, the results of the systematic review also raise economic and operational research questions such as “Is HLA selected platelet transfusion cost-effective?” and “What is the impact of HLA selection on blood supply/inventory of blood products?”

**About the research collaboration:** The International Collaboration for Guideline Development, Implementation and Evaluation for Transfusion Therapies (ICTMG) has been convened to develop evidence based transfusion guidelines, to promote evidence based transfusion medicine, and to optimize transfusion care. The ICTMG consists of physicians and methodologists from Canada, the United States, United Kingdom, Belgium, Germany and Australia. The guideline group is expanding to include additional international members.

For the systematic review on HLA matched platelet transfusion, the lead is Dr. Katerina Pavenski. Dr. Pavenski is the Head of Transfusion Medicine at St. Michael’s Hospital in Toronto.

**This ResearchUnit is derived from the following publication:**


**Acknowledgements:** This research received financial support from Canadian Blood Services funded by the provincial and territorial Ministries of Health.

**Keywords:** HLA matched platelets, hypoproliferative thrombocytopenia, systematic review.

**Want to know more?** Contact Dr. Katerina Pavenski at PavenskiK@smh.ca or Dr. Nadine Shehata at NShehata@mtsinai.on.ca.