quintile was associated with a 40% decrease in the risk of engraftment failure (OR 0.60, 95% CI 0.41-0.87). Even when adjusted for cell dose infused, a higher # of collected CD34+ cells was associated with decreased time to platelet engraftment (HR1.15, CI 1.00-1.32, p=.052), but not ANC engraftment (HR 1.07, p=.35). Positive blood cultures within 30 days of ASCT were associated with engraftment failure (p=.0035), while race, sex, # of collections for the transplanted dose and mobilization regimen did not appear to affect engraftment. We also observed that prior Imid use demonstrated a trend toward less engraftment failure (OR 0.41, 95%CI 0.17-1.01; p=.052).

Although a moderate correlation was observed between the variables CD34 cells collected and CD34 cells infused, a sensitivity analysis by omitting either variable did not identify a significantly different estimates.

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A Plerixafor-Based Strategy Allows Adequate Hematopoietic Stem Cell Collection in Poor Mobilizers: Results from the Canadian Special Access Program

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Background: The collection of a minimum number of hematopoietic stem cells (HSC), generally defined as 2 x 10^6 CD34+ cells/kg, is a prerequisite for proceeding to HSCT. Primary mobilization failure occurs in 5 – 40% of patients.[1-5] When used to unselected patients undergoing a first mobilization attempt, plerixafor plus GCSF allows more CD34+ cells to be mobilization with fewer aphereses than GCSF alone.[6, 7] There are no publications describing the patterns of plerixafor use at Canadian transplant centres, nor is there data to guide determinations of cost-effectiveness of mobilization using plerixafor from the Canadian perspective.

Methods: The objectives of this study were to: 1) Summarize the published studies of plerixafor-based mobilization during compassionate access programs, and 2) Describe the Canadian experience with plerixafor during its availability though Health Canada's Special Access Program (SAP). A literature search was performed and studies were grouped into three strategies: upfront, preemptive and salvage. In Canada, plerixafor was available through the SAP, and funded by Genzyme/Sanofi from September 2008 to December 2010.

Results: Thirteen articles were identified. In all but one study, plerixafor was used as part of a preemptive and/or salvage strategy. The proportion lf patients in whom a minimum of 2 x 10^6 CD34+ cells/kg was collected ranged from 37 – 100%. At the time of publication, 17 – 87% of patients had proceeded to transplantation.

Thirteen Canadian centres provided data on a total of 132 patients, the majority of whom had multiple myeloma or lymphoma, and had undergone a median of 1 prior mobilization attempt (range 0 – 3). Plerixafor was used preemptively in 23 (17%) patients and as salvage in 109 (83%) patients. In 96 (73%) patients, there was successful collection. Of the 23 patients in whom plerixafor was used preemptively, 19 (83%) had successful collections. Of the 109 patients in whom the drug was used as part of a salvage strategy, 77 (71%) had successful collections. Of the entire cohort, 99 (75%) of patients went on to receive an autologous transplant.

Discussion: Our study summarizes the published experience with plerixafor-based mobilization during compassionate drug access programs and describes the Canadian experience when plerixafor was freely available through Health Canada's SAP. Canadian practice was similar to published international experience.

Plerixafor use decreased significantly when it was no longer freely available. This may be a reflection of limited resources, a lack of belief in the preemptive use of plerixafor or knowledge of the most cost-effective way to use it. The pharmacoeconomics of mobilization likely vary from centre to centre and are affected by multiple factors such as the patient population, infrastructure, available resources, and who is paying for plerixafor.

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Target Value-Tailored Apheresis Can Improve Prediction of Product Hematopoietic Progenitor Cells Prior to Autologous Transplantation

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Background: Collection of a minimum number of hematopoietic progenitor cells (HPC), usually defined as 2 x 10^6 CD34+ cells/kg, is required to ensure timely neutrophil and platelet recovery.[1-4] The majority of centres use peripheral blood-mobilized HPCs as the source of progenitor cells for autologous transplantation,[5] but the method used to predict the final apheresis product CD34+ cell content, and thus the whole blood volume to process during apheresis collection, has not been standardized. In the mid-1990s, Mitterer et al. demonstrated on a 28-patient cohort that the correlation between the pre-apheresis peripheral blood CD34+ cell count and the number of CD34+ cells/kg collected could be used to determine the blood volume to process during apheresis to harvest the desired number of CD34+ cells/kg (target-value tailored, TVT, collection). Using this concept and local data, the Ottawa Canadian Blood Services Stem Cell Laboratory created a similar regression model to help determine the blood volume to process during apheresis collection.

Methods: We conducted a retrospective study of all peripheral blood HPC apheresis collections performed at the Ottawa Hospital from January 1, 2003 to December 31, 2011. Our objective was to validate the TVT approach, as modified by our institution.

Results: From 2003 to 2011, there were 815 peripheral blood HPC collections by apheresis. The majority, 696 (85.4%), were autologous collections and 119 (14.6%) were allogeneic donors. The most common diagnoses were multiple myeloma and aggressive non-Hodgkin lymphoma (NHL). The median age of the cohort was 51.1 (range 14.3 – 70.4) years. The median number of prior chemotherapy regimens was 1 (range 0 – 5). The majority of collections, 635 (93.7%), were first attempts.

The median pre-collection peripheral blood CD34+ cell count was 2.23 (interquartile range, IQR 1.07 – 5)/μL. The