

# Timing of alemtuzumab with respect to day of bone marrow infusion and its effects upon engraftment and graft-versus-host disease in patients with hemoglobinopathy: A single institutional study.

Indira Sahdev<sup>1</sup>, Joel Brochstein<sup>1</sup>, Nan Werther<sup>1</sup>, and Jessica Stiles<sup>1</sup>

<sup>1</sup>Steven and Alexandra Cohen Children's Medical Center

May 8, 2020

## Abstract

**Background:** Reduced intensity conditioning followed by allogeneic hematopoietic stem cell transplantation can often be curative for the treatment of hemoglobinopathies. **Procedure:** This is a prospective IRB-approved (NCT02435901) clinical trial, reporting the possible impact of “late” alemtuzumab (administered on days -10 to-8) versus “early” alemtuzumab (-19 to -17) with respect to engraftment and acute/chronic graft-vs-host disease (GvHD) in a group of 35 pediatric patients with sickle cell disease (SCD) or thalassemia undergoing bone marrow transplantation (BMT) following conditioning with alemtuzumab, fludarabine and melphalan. The first 9 patients with SCD received “late” alemtuzumab followed by BMT from HLA matched siblings (MSD). The next 26 patients (21 with SCD and five thalassemia major) received “early” alemtuzumab. Of the 26 patients, 17 received transplant from MSD and nine from matched unrelated donors (MUD). **Results:** In the “late” group, one patient (11%) developed acute GvHD, six (67%) achieved sustained engraftment. Three patients (33%) ultimately experienced graft rejection, leading to early termination of enrollment of patients on this regimen. In the “early” alemtuzumab group, acute and chronic GvHD developed in 50% and 34% patients, respectively none of the patients experienced graft rejection. Three patients died, 2 due to GvHD-related complications and 1 from sepsis. Five patients developed stable mixed chimerism while 14 demonstrated 100% donor chimerism at one year post-transplant and beyond. **Conclusions:** These results suggest a benefit with respect to engraftment of administering “early” vs “late” alemtuzumab in this RIC regimen but with the possible cost of an increase in acute, and possibly chronic GvHD.

## Timing of alemtuzumab with respect to day of bone marrow infusion and its effects upon engraftment and graft-versus-host disease in patients with hemoglobinopathy: A single institutional study.

Indira Sahdev, M.D<sup>1\*</sup>, Joel Brochstein, MD<sup>1</sup>, Nan Werther, NP<sup>1</sup>, Jessica Stiles, NP<sup>1</sup>

<sup>1</sup> Division of Pediatric Hematology/Oncology and Stem Cell Transplantation, Department of Pediatrics, Cohen Children's Medical Center of New York

\*Corresponding Author: Indira Sahdev, MD

Division of Pediatric Hematology/ Oncology/Stem Cell Transplantation

Department of Pediatrics, Cohen Children's Medical Center of New York

269-01, 76<sup>th</sup>. Ave. New Hyde Park, NY-11040

Tel: 718-470-3460, Email: isahdev@northwell.edu.

Abstract word count: 250

Text word count: 2558

Number of tables: 2

Brief running title: Timing of alemtuzumab administration as a conditioning regimen and impact on outcome

Key words: Hemoglobinopathies, Allogeneic Hematopoietic Stem Cell Transplantation, Alemtuzumab, Graft failure, Graft- versus- host disease

---

Abbreviations	
VOC	Vaso-occlusive crises
RIC	reduced-intensity conditioning
SCD	Sickle cell disease
TRM	Transplant-related mortality
ATG	Anti-thymocyte globulin
HSCT	Hematopoietic stem cell transplantation
GvHD	Graft vs Host disease

---

### Hosted file

Manuscript .docx available at <https://authorea.com/users/319648/articles/449349-timing-of-alemtuzumab-with-respect-to-day-of-bone-marrow-infusion-and-its-effects-upon-engraftment-and-graft-versus-host-disease-in-patients-with-hemoglobinopathy-a-single-institutional-study>

### Hosted file

Table 1. Patient Donor characteristics.docx available at <https://authorea.com/users/319648/articles/449349-timing-of-alemtuzumab-with-respect-to-day-of-bone-marrow-infusion-and-its-effects-upon-engraftment-and-graft-versus-host-disease-in-patients-with-hemoglobinopathy-a-single-institutional-study>

### Hosted file

Table 2. Transplant Characteristics.docx available at <https://authorea.com/users/319648/articles/449349-timing-of-alemtuzumab-with-respect-to-day-of-bone-marrow-infusion-and-its-effects-upon-engraftment-and-graft-versus-host-disease-in-patients-with-hemoglobinopathy-a-single-institutional-study>