

Assessment of Hetastarch and PrepaCyte-CB® in Transplanted Cord Blood Units

Donna Regan, MT(ASCP)SBB, Matthew Dunn, MS, Kristine Wassmer, RN, BSN, Meghan Wencker, BS
St. Louis Cord Blood Bank, SSM Cardinal Glennon Children's Hospital

Abstract

An analysis of outcomes data from the transplantation of cord blood units, red cell and plasma reduced using either hydroxyethyl starch (HES) (1996-2009) or PrepaCyte® (PC) (2009-2016), was performed to summarize the St. Louis Cord Blood Bank's (SLCBB) twenty years' experience. The data analyzed was derived from both the *Center for International Blood and Marrow Transplant Research (CIBMTR)* and the SLCBB and represents products manufactured from 1996 to 2016.

Background

All units manufactured by the SLCBB are red cell and plasma reduced. The first product was released for transplant on February 14 1997 and in the twenty years that followed, 2,772 products have been distributed. Of these, 2,229 were manufactured with HES and 543 with PC-CB.

- In the HES group, 2,172 units were known to be infused and data is available on 1,660 patients – 1,255 undergoing a single cord and 955 a dual cord transplant.
- In the PC-CB group, 518 units were known to be infused and data is available on 380 patients – 155 undergoing a single cord and 370 a dual cord transplant.

This analysis compares the success of engraftment and time to engraftment, specifically achievement of absolute neutrophil count (ANC) to 500 and Platelet counts of 20k, in patients infused with cord blood processed using HES or PC-CB. These observations compare favorably with published data.

Materials & Methods

Patient demographics include an age range of 19 days to 73 years with various malignant and non-malignant diseases. Data was reviewed and categorized by processing method and single vs dual cord transplants.

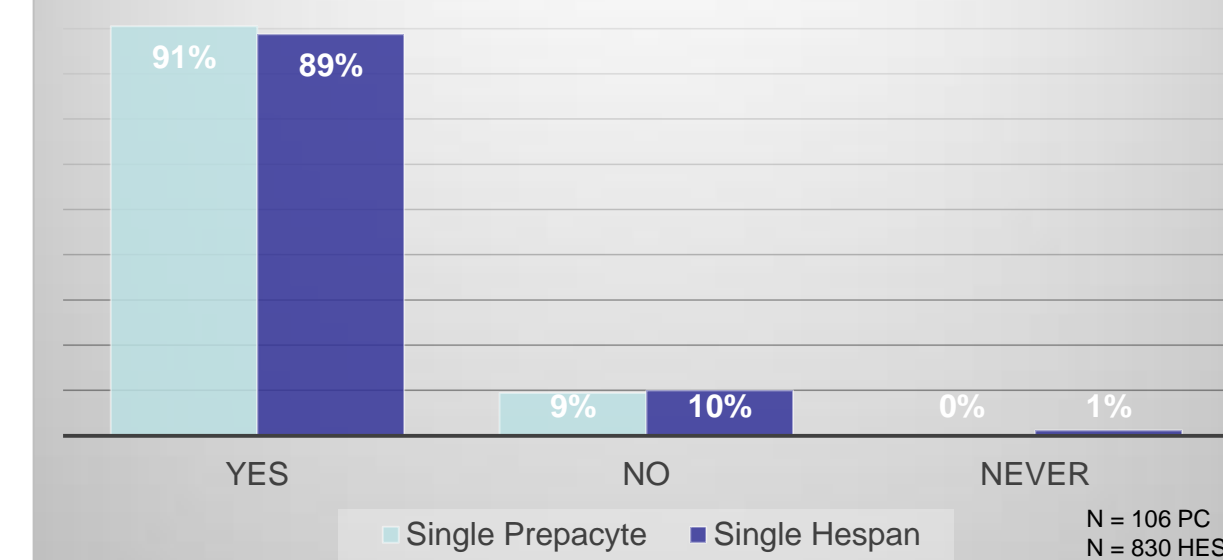
PrepaCyte Exports	543	HES Exports	2229
Infused	518	Infused	2172
Single	155 (29%)	Single	1255 (56%)
Dual	370 (68%)	Dual	955 (43%)
Other	18 (3%)	Other	19 (1%)
Single PC Infused	148	Single HES Infused	1225
ANC 500	Rate	ANC 500	Rate
Yes	96 (91%)	Yes	846 (89%)
No	10 (9%)	No	91(10%)
N/A	0 (0%)	N/A	10 (1%)
Total Known	106	Total Known	947
Avg/Med days to ANC 500	18.6/16	Avg/Med days to ANC 500	23.1/20
Dual PC Infused	355	Dual HES Infused	932
ANC 500	Rate	ANC 500	Rate
Yes	241 (90%)	Yes	619 (88%)
No	27 (10%)	No	82 (12%)
N/A	1 (90%)	N/A	4 (1%)
Total Known	269	Total Known	703
Avg/Med days to ANC 500	20.8/20	Avg/Med days to ANC 500	22/20

Overall, 89% of patients infused with a HES unit achieved engraftment in an average of 25 days (median 21). After infusion of a single HES unit, 89% of patients achieved engraftment in 23 days (median 20). When combined with another product (dual cord transplant), 88% of patients receiving a HES product achieved engraftment in 22 days (median 20).

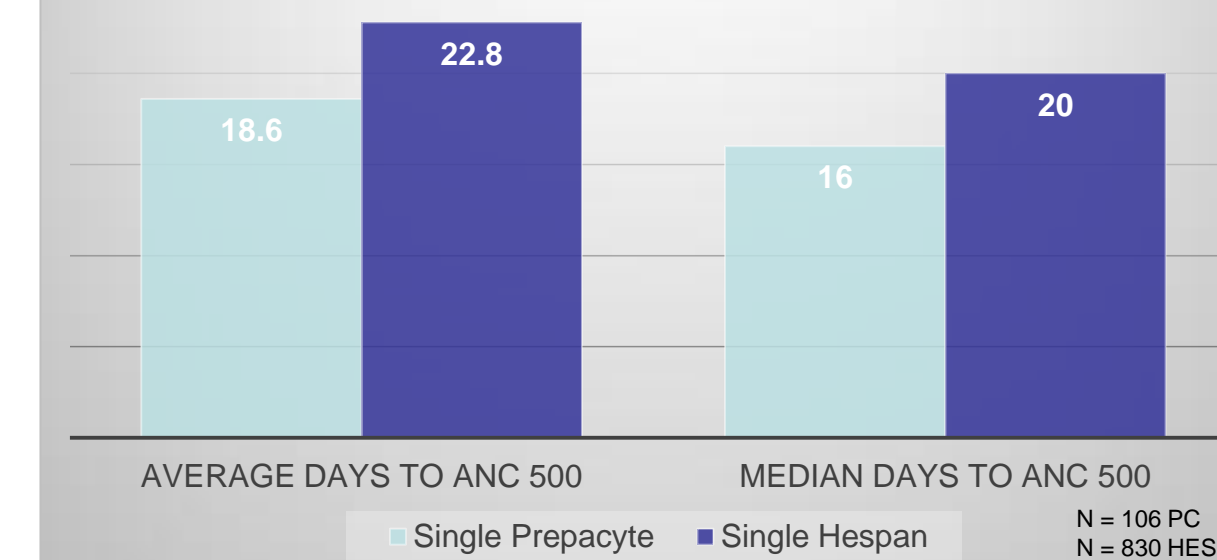
Ninety percent (90%) of patients infused with a PC unit achieved engraftment in an average of 20 days (median 19). After receiving a single PC unit, 91% of patients achieved engraftment in 18.6 days (median 16). In the dual cord setting, 90% of patients receiving a PC product achieved engraftment in 20.8 days (median 20).

Results

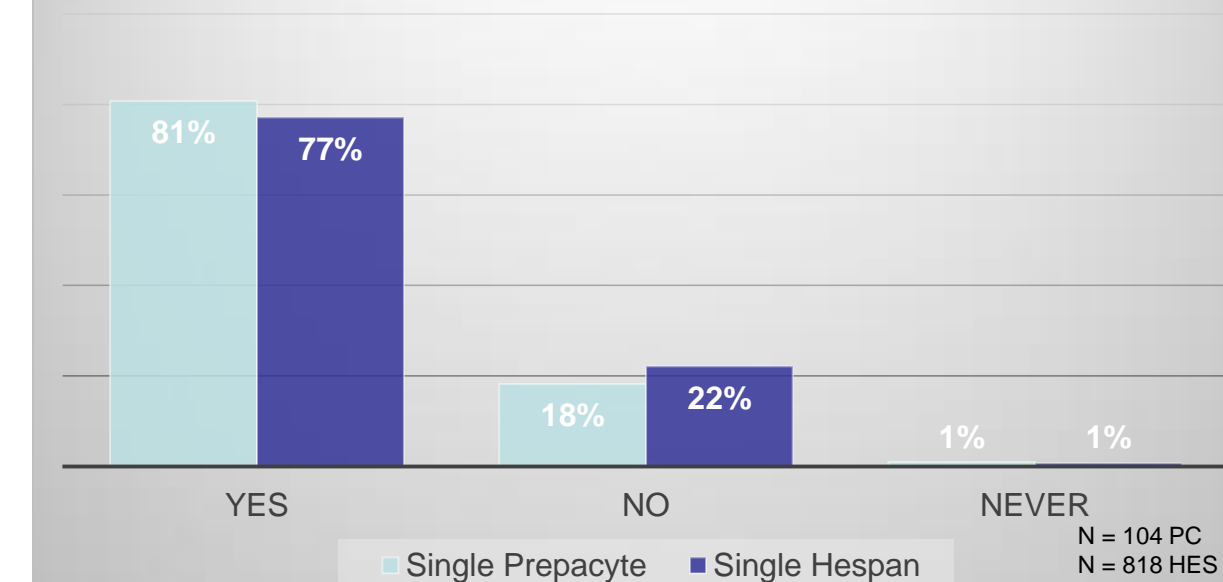
Achievement of ANC 500 Single Transplants



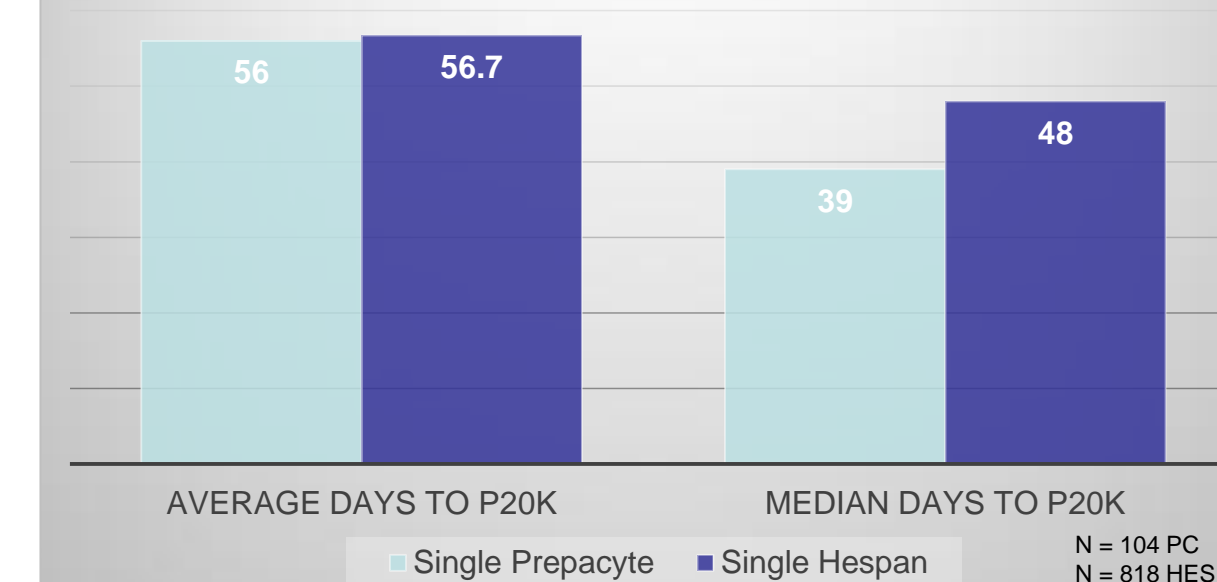
Average Days to ANC 500 Single Transplants



Platelets 20K Single Transplants



Average Days to Platelets 20K Single Transplants



Discussion

Engraftment results from transplants performed with SLCBB products, especially those processed with PC-CB, compare favorably with accounts in the published literature which report the overall incidence of graft failure following cord blood transplant as 10-20% with a median range of time to ANC of 25-42 days. We celebrate the SLCBB's 20 years in the industry and the patients, donors and colleagues with whom we have served.