

Exploring perceptions of 'quality' umbilical cord blood therapies in Japan and the UK



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Today



- ❧ **Exploring Perceptions of 'Quality' Cord Blood in Stem Cell Treatments (2013 - 2016)**
 - ❧ Kindly funded by the Great Britain Sasakawa Foundation
 - ❧ <http://www.lancaster.ac.uk/shm/research/projects/cord-blood-quality/>
 - ❧ A review of policy and practice surrounding cord blood collection, banking, and treatments in Japan and the UK
 - ❧ Interviews with haematologists, immunologists, and oncologists in Japan and the UK
 - ❧ Survey 'factors of influence' for those using cord blood in treatments in Japan and the UK

Global Context



- œ Nearly 620,000 cord blood units have been donated to the 128 public banks across the world since 1991 (BMDW, Nov. 2014)
- œ By 2012, 1 million stem cell transplants had been conducted worldwide
 - œ more than 30,000 stem cell transplants using cord blood

Global Context



- ❧ Largest banks are USA & Spain in terms of amount stored, collection, and transplants
- ❧ Cord blood units sourced through national and international registries
- ❧ Cost of cord blood unit £16,000 – £25,000
- ❧ International cord blood market worth over £20 million (WMDA, 2008)
- ❧ Standard setting agencies (JACIE, FACT, NETCORD)

Global Context: Japan and the UK



Japan

- ❧ 1st transplant 1996
- ❧ 1st cord blood bank 1997
- ❧ Almost 33,00 cord blood units stored in public banks
- ❧ Approx. 10,000 CBT (Japan CBB Network 2014)
- ❧ 8 banks funded by government
- ❧ Collection from 108 sites
- ❧ Facilitated by the Japanese Red Cross Society

UK

- ❧ 1st cord blood bank 1996
- ❧ 2 transplants 1998
- ❧ Almost 20,000 cord blood units stored in public banks
- ❧ 2007 – 2010 approx. 400 CBT (APPG)
- ❧ 2 banks (recently merged) funded by government
- ❧ Collection from 8 sites
- ❧ Partnered with Anthony Nolan Trust

Global Context: Japan and the UK



- ❧ Funding of cord blood banks
 - ❧ Number of cord blood banks
 - ❧ Public-private partnerships
- ❧ Trading of cord blood
 - ❧ Import and export
 - ❧ Cost of cord blood units
- ❧ Ethnic diversity
 - ❧ Japan – low, UK – high
- ❧ Drive to improve the ‘quality’ of cord blood collected

'Quality' Cord Blood: Japan



- ❧ Japanese Red Cross Society (2010)
 - ❧ Cord blood publicly available = approx. 33,000
 - ❧ Hierarchy of demands:
 - ❧ TNC counts
 - ❧ HLA matching
 - ❧ Age of units
 - ❧ Regulation
 - ❧ Cord blood publicly available = approx. 13,000
- ❧ Act for Appropriate Provision of Hematopoietic Stem Cells to be Used in Transplantations (2014)
 - ❧ “ensure the quality of cord blood used in transplants”
 - ❧ Cord blood licenses

'Quality' Cord Blood: UK



- ❧ All Party Parliamentary Group on Stem Cell Transplantation
 - ❧ 'cost efficiency' measures to recoup the costs of cord blood collection and banking
 - ❧ 'best practice tariff' to reimburse hospitals for securing 'high quality collections'
- ❧ Stem Cell Oversight Committee
 - ❧ Reconsider the size and composition of CB bank
 - ❧ Need to raise the cell dose and thresholds of cords processed

Influential Factors for 'Quality' Cord Blood: Knowns



- ❧ 'Known' factors affecting the 'quality' of cord blood
 - ❧ Cell counts (TNC / CD34+ cell)
 - ❧ HLA (type / typing techniques)
 - ❧ Length of storage / Age of unit
 - ❧ Bank
 - ❧ Method of storage (red blood cells)
 - ❧ Accreditation
 - ❧ Methods of measuring cell counts
 - ❧ Red blood cells included in count?
 - ❧ Bag storage
 - ❧ Maternal and infant follow up testing

Influential Factors for 'Quality' Cord Blood: Unknowns



∞ Clinical Expertise

∞ Location of the cord blood therapy

∞ Who conducts the cord blood therapy

∞ UK Stem Cell Forum and the introduction of 'regional centres of excellence'

∞ Success of cord blood therapies dependent on inherent properties of the cord blood?

Influential Factors for 'Quality' Cord Blood: Unknowns



- ❧ Maternity practices and 'transplant quality'
 - ❧ Timing of when the umbilical cord is clamped
 - ❧ Management of third stage of labour
- ❧ Collecting cord blood and 'transplant quality'
 - ❧ Donor co-ordinators and Phlebotomists
 - ❧ Medically qualified?
 - ❧ Obstetricians

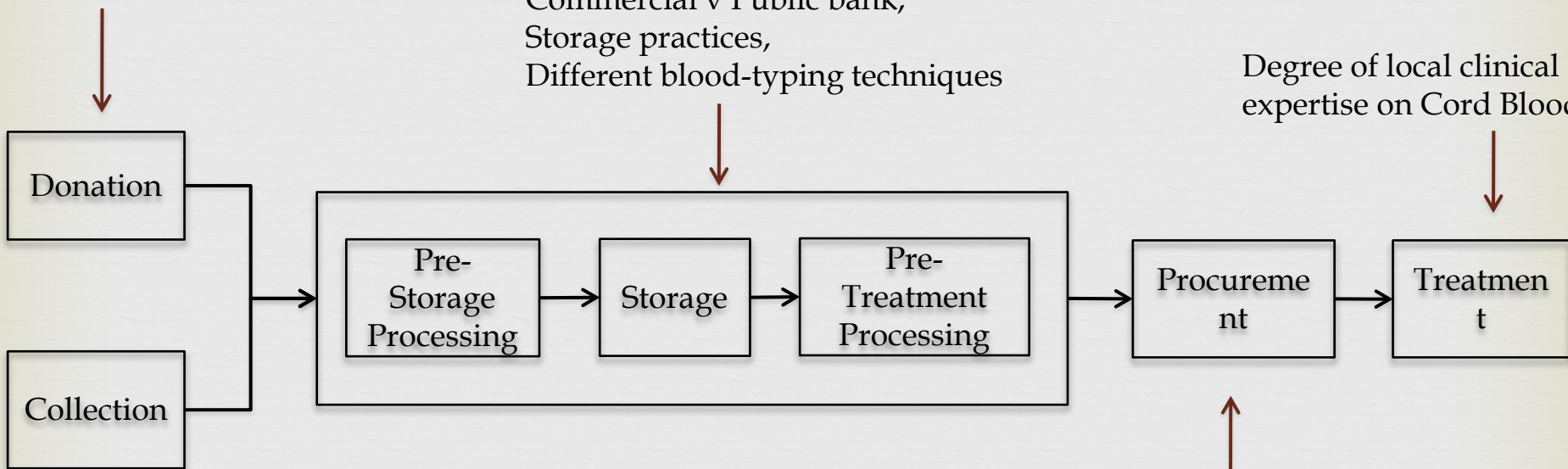
Cord Blood Treatment

Process

Demographic background of Mother,
Location of physical donation,
Volume of physical sample,
TNC count of sample,
Other biological markers of blood

Commercial v Public bank,
Storage practices,
Different blood-typing techniques

Degree of local clinical
expertise on Cord Blood



Role/Job of Collector,
Medical Training of Collector,
Different collection processes,
Timing of CB clamping,
Ex-Utero v In-Utero collection

Benefits of Cord Blood v Other Stem Cell lines,
CB quality markers - e.g. age, bank, country of origin
Policy re: Cord Blood Search