Standard Registry Services

CBU search request received and results reported to TC

CBU reports requested by TC; results sent back for review

CBU reports data assessed, final CBU selection for reservation and shipment request

Shipment is arranged and CBU delivered to transplant centres

CBU Thawed and infused

Parallel Cord Support Services

CBU shortlisting BAU or/and ad-hoc recommendations

BSHI SAP upon request

Quality checklists and CBB operational information

Post-Thaw Clinic

On-site Help with CBU Handling Urgent Queries via Phone

Customised on-site or on-line training sessions

ANTHONY NOLAN saving the lives of people with blood cancer

NHS Blood and Transplant

Email us: **cordsupport@anthonynolan.org**

Cord Support Delivery Examples

CBU shortlisting table (up to 10 CBUs shortlisted)

CORD ID	PATIENT HLA							Registry	Age	Blood group	TNC (10^7)	TNC x10^7 / kg	RBC status	Country/ Cord Bank	FACT ac-credited?	HLA Match		Unidirectional mismatch?	Recommended for Sin-gle (S) or Double (D) CBT?
	A	B	C	DRB1	DQB1	DPB1	DRB3/4/5									Low /6	High /8		
	*03:01:01	*44:02:01 *39:06:02	*05:01:01 *07:02:01	*01:01:01 *04:01:01	*05:01:01 *03:EAZJZ	*03:01:01 *16:01:01	4*01:03:01	Reg Abbr	Gender		CD34+ (10^6)	CD34 x10^5 /kg						High/8	
989712162	03:AHXJV	39:06:02	05:AESTD	4:01:01	02:AHTPE	04:AJYCM	4*01:EHN 4*01:EHN	1221-MANUF .	6 (Female)	O +	360.8	5.082	RBC reduced	USA - Cleveland Cord Blood Center	Yes	4	6		D
	29:AETSX	44:ANAHB	07:ANAHR	07:FKP	03:AHTPF	04:ANAHV		3553	AV		9.3	1.310	2 bags					1 in HvG	
	0%	100%	100%	0%	0%			US-Cleveland (C)											
HR HLA mm	1	0	0	1															
BECB030011000189	03:01:01G	27:HKAY	02:PVAP	1:01:01	03:02:01G			1381-MANUF .	11 (Female)		302	4.254	RBC reduced	Belgium - UZ Gent Cord Blood Bank	Yes	5	6		S or D
	03:01:01G	44:JXTZ	05:PVBB	4:01:01	5:01:01			4201	AV		19.7	2.775							
	100%	0%	0%	100%	0%			BE-Gent (C)											
HR HLA mm	0	1	1	0															
DUCB18423	3:01	7:02	5:01	1:01	5:01			1039-MANUF .	12 (Female)	A +	295	4.155	RBC reduced	Germany - José Carreras Cord Blood Bank Düs-seldorf-Universitätsklinikum Düsseldorf	Yes	4	6		S or D
	3:01	44:02	7:02	15:01	6:02			4908	AV		10.9	1.535	2 bags						
	100%	0%	100%	0%	0%			DE-DUS											
HR HLA mm	0	1	0	1															
290197566	02:01:01G	07:02:01G	05:01:01G	01:AUCN	03:01:01G	01:01:01G		1346-MANUF .	8 (Male)	A +	230	3.239	Unknown	Australia - Sydney Cord Blood Bank	Yes	4	6		S or D
	03:01:01G	44:02:01G	07:02:01G	4:01	06:03:01G	04:01:01G		7748	AV		16.3	2.296	2 bags?					1 in HvG	
	0%	0%	100%	100%	0%			AU-Sydney											
HR HLA mm	1	1	0	0															
994344332	02:AYCJP	07:AZBDK	05:AXBBX	1:01:01	3:02	04:BEMRX	3*NNNN	1349-MANUF .	8 (Male)	O +	225.6	3.177	RBC reduced	USA - St. Louis Cord Blood Bank	No	4	6		S or D
	3:01:01	44:AXBBZ	07:AXBCB	4:01:01	5:01	04:BEMRX	4*01:EHN	3553	AV		14.1	1.986			AABB			1 in HvG	
	0%	0%	100%	100%	0%		5*NNNN	US-StLouis (C)											
HR HLA mm	1	1	0	0															

CBU Report Quality Check

Checklist for CBU (cord support programme)			
Cord blood unit ID:	Cord A	**CBB:**	UK - Anthony Nolan Cord Blood Bank
Patient initials / ID:	Patient X	**Patient Weight (Kg):**	75.0
FACT Accredited?	Yes, no comments		

Cord Blood Collection and Processing Attributes			
Collection Date (DD/MM/YYYY):	06/07/2020	Unit age (years)	2
ABO/Rh	A+	Gender	Male
Confirmatory HLA (VT has been performed?)	No	Microbial tests	Partial - Bacterial only, Fungi missing
Process Method:	Sepax	red cell and plasma reduced	
Number of Bags Frozen:	1	**Frozen Final Volume with cryopreservative (ml):**	25
Number of Contiguous Segments:	2	Haemoglobinopathy	Normal

Cord Blood Quality/Potency Data	Post Process	Comments		
TNC including NRBC (x10^7)	230.00	Cell dose - OK		
		Suitable for double UCBT Also suitable for single UCBT for malignant condition with 6-8/8 HLA match		
Total NRBC (x10^7)	34.00	% NRBC:	16.00%	OK
Haematocrit (HCT) %	37.00	0.3	rbc volume OK	
CD34+ (x10 6)	7.00	insufficient cell dose DO NOT TRANSPLANT		
CFI-J (x10^4)	145.00	Good CFU growth		
ClonE (CFU/CD34+)	20.92	Good CFU growth		
TNC/ total/ CD45+ Viability	94.00	Good Viability		
CD34+ Viability	99.00	Good Viability		

Cell dose recommendations from: Little, A-M, Akbarzad-Yousefi, A, Anand, A, et al. BSHI guideline: HLA matching and donor selection for haematopoietic progenitor cell transplantation. Int J Immunogenet. 2021; 48: 75– 109. https://doi.org/10.1111/iji.12527.

Cord Blood Safety Data	Maternal Blood Tests – Drawn on: 11/09/2011		
HBs Ag	Negative		
HBc Ab	Negative		
HBs Ab	N/A		
HIV-1/2 Ab	Negative		
HCV/HIV/HBV NAT	NEG	NEG	N/D Maternal
Treponema pallidum Ab	Negative		
HTLV-I/II Ab	Negative		
HTLV I NAT	N/A		
CMV total antibodies	POS	-	Request CMV PCR
CMV NAT	N/D		

IDM testing key NEG: Non-reactive. POS: Reactive, TBC: To be confirmed, N/D: Not done, N/A: Not applicable

Maternal and Family History		
Cord Blood Donor Recruitment	Risk Assessed?	Comments
Mother's Declaration/ Travel history: Risk behaviour for contracting and transmitting infectious diseases plus Risk of exposure to infectious diseases	Yes, no comments	N/A
Family Medical History: Genetic Risk (Incl Cancer, Blood Disorders, Enzyme Deficiencies, Metabolic/Storage Diseases or Autoimmune Diseases identified)	Yes, see comments	Baby's Grandparent had bowel cancer

Post-Thaw potency assessment

HCT% / RBC volume tool

Unit ID:		Frozen Unit Volume		1
Please ask CBB for either RBC vol or HCT			ml RBC per KvGPBW	

Post-Thaw Section of the Checklist

Cord Blood Quality/Potency Data	Post Process	Comments		Post Thaw QC Data	Comments
TNC including NRBC (x10^7)	250	Cell dose - OK		193	77%
		Suitable for double UCBT Also suitable for single UCBT for malignant condition with 6-8/8 HLA match			TNC recovery. AN experience: >60% acceptable; >80% good
Total NRBC (x10^7)	40.00	% NRBC: 16.00% OK			
Haematocrit (HCT) %	30.00	0.1	rbc volume OK		
CD34+ (x10 6)	19.00	Cell dose - OK		11.00	58%
		Suitable for double UCBT AND suitable for single UCBT			CD34+ recovery. AN experience: >60% acceptable; >80% good
CFI-J (x10^4)	300.00	Good CFU growth		200	Fact standards require growth
ClonE (CFU/CD34+)	15.79	Good CFU growth		12.7	Expected ClonE% value (post-thaw CFU/post processing CD34). AN experience: > 5% is a good indicator.
TNC/ total/ CD45+ Viability	98.00	Good Viability		79	AN experience: >50% acceptable; >70% good
CD34+ Viability	100.00	Good Viability		83	>70% Meets fact requirements

Cell dose recommendations from: Little, A-M, Akbarzad-Yousefi, A, Anand, A, et al. BSHI guideline: HLA matching and donor selection for haematopoietic progenitor cell transplantation. Int J Immunogenet. 2021; 48: 75– 109. https://doi.org/10.1111/iji.12527. Post thaw recommendations are based upon observations made by the teams at ANCTC and NHSBT cord blood bank

Post-Thaw Clinic Query → Post-Thaw Clinic Response

Hello Cord Support Team

Hope you are well. We've just received a final CBU report from the Spanish registry with post thaw information and I was wondering if you could help clarify a couple of things.

On Page 2, the Quality report indicated that there was a 94% TNC recovery so I would assume the post-thaw TNC is 184.6x10^7 based on pre-freezing data. It then goes on to say
CD45 and CD34 is not evaluable but the Trypan blue viability is 48%. Is this viability in reference to the TNC count therefore meaning only 48% of these are viable?

Please see below the advice from some of our panel of cord experts from Anthony Nolan and NHSBT. Please let us know if you have any more questions.

Dr. Roger Horton (Anthony Nolan):

From my side I would say that yes the trypan blue viability will be referring to the TNC post thaw, but I would take that with a pinch of salt as the viability may be affected by the presence of DMSO in the post thaw sample or if it has been diluted prior to analysis.

For me the key points when looking at this unit are:

TNC recovery is good, if the unit were in really bad shape and necrotic then the total cell recovery would have been lower

The total CFU is nearly 4 million and the unit started with 6.9 million CFU, which is a 58% recovery of colony forming cells, which is good.
If only 48% of the cells were actually alive, as suggested by the trypan blue result, then that would not be possible.

If we work backwards from the post thaw ClonE of 25% then we can say: CFU/%clonE = stem cell content

so that gives us 3.97/0.25 = 15.88 million stem cells recovered post thaw

That is excellent when compared to the 15.95 that were measured post process.

My interpretation would be that for some reason the viability part of the flow assay was not playing ball on the day as the cells appear to have recovered well and are functional so I would agree with the cord banks comments on the CBU being suitable for use with all results taken into the round.

Alex Ross (NHSBT):

I'd agree that the Trypan blue viability refers to post thaw TNC but may not be the most reliable result. Suspect there will be some debris in the sample that brings down the overall TB viability result. However given the good pre freeze CD45+ and CD34+ viability, freeze time well within acceptable limits and good evidence of potency pre and post freeze I would agree with the banks comments on the CBU being suitable for use with all results taken into the round.

On-site and/or remote help with CBU handling

- **Practice with a dummy kit before infusion**
- **Dealing with damaged bags**
- **CBU Washing**
- **Handling different types of spikes**

NHS Blood and Transplant

ANTHONY NOLAN saving the lives of people with blood cancer