UK Blood Services Club 96 Working Group

The UK Blood Services Club 96 Working Group has developed a model of the supply and demand of blood components donated by those born on or after 1 January 1996 to specific patient groups. The group expects to present its report to the UK Blood Services Forum and to SaBTO in March 2013 but requests advice from SaBTO on two key questions to allow the modelling to proceed.

1. Prioritisation of recipients

There are many options for the sequence in which particular patient groups can be supplied with red cell, platelet and plasma components from Club 96 donors. Examples of recipient groups being considered are foetuses (intrauterine transfusions - IUTs), neonates and infants (neonatal exchange transfusions, neonatal top-up transfusions, large volume transfusions (LVTs) for neonates and infants, eg in cardiac surgery), and haemoglobinopathy patients.

Each decision to supply a recipient group has an impact on the availability of supply for the next group, and it is therefore necessary to seek SaBTO's view on the principle(s) to be used for prioritisation. We have considered the following three alternative principles:

a) Maximise some measure of the benefit available from these donations, such as Quality Adjusted Life-Years.

   This approach would support supplying the youngest patients first, as they generally have the highest life expectancy. This model assigns little or no benefit to those who are already exposed, as they may already be infected. This is in line with the approach taken in health economics.

b) Protect individuals who have not been exposed to previous blood borne risks of variant Creutzfeldt-Jakob disease (vCJD) - such as those not previously transfused.

   This suggests a preferential supply to patients who need fewer units so for a given number of units available from Club 96 donors, protection would be provided to the greatest number of individuals. This would contribute to a 'firewall' around recipients previously unexposed to a blood borne risk, but would deprioritise supply to those who have already been transfused, for example current haemoglobinopathy patients. This is similar to the approach that was taken with prioritised provision of recombinant Factor VIII to previously unexposed patients.

c) Protect those who are at greatest risk.

   This would prioritise patients exposed to multiple transfusions, such as haemoglobinopathy patients. This is similar to the use of imported fresh frozen plasma (FFP) for plasma exchange of patients with thrombotic thrombocytopenic purpura (TTP) to reduce the risk of vCJD infection.

There are practical issues that may need to be balanced against the ethical issues listed above. Certain component types are manufactured to particular specifications and labelled appropriately for precise patient groups eg red cells or platelets for IUT, or for transfusion to neonates and infants. It would be relatively simple to stream Club 96 donations into these specific manufacturing streams. Conversely,

components used for transfusion of children between one and 16 years of age are no different from those manufactured for adult patients, so it would be each hospital's responsibility to order the correct components from the blood service and supply these to the defined group of patients. The Working Group consider it unlikely that such reliance on local implementation would be a successful solution in the short term.

Question 1

Is SaBTO content for the modelling work to be based upon a quantifiable benefit, such as quality adjusted life years? If not, which approach should be taken?

2. The use of first time donors

In 1997, the Advisory Committee on the Microbiological Safety of Blood and Tissues for Transplants (MSBT) recommended that blood components for neonates and infants should not be manufactured from blood donated by first time donors. The aim of this rule is to reduce the risk to this vulnerable group of patients. There is clear evidence that first time donors are more likely to be infected with viruses such as Hepatitis B, Hepatitis C and HIV (see **Appendix**). Consequently, the risk of a donation being accepted during the 'window period' of infection – when the amount of virus in the blood is below the level of detection – poses a higher risk of transmission from first time than from repeat donors. There are cases where the viral risk is addressed in a different way eg the treatment of FFP with a pathogen inactivation process, and in these cases the rule does not apply. Pathogen inactivation processes are currently available for platelet concentrates, but in 2009 SaBTO expressed concerns about the efficacy of the treated platelets - the committee may see fit to examine new evidence within the timeframe of this piece of work, so this option has been included. There is no pathogen inactivation system currently available for use with red cells, which means that the risk from first time donations cannot be mitigated in this way.

The latest modelling of Club 96 supply and demand for England and North Wales predicts that components for IUT and neonatal exchange transfusions could be supplied by 2015, neonatal units by 2019, and LVT recipients by 2021. However, until these points are reached recipients will continue to receive UK blood donated by those born before 1996, which carries the risk of vCJD infection. The use of first time donations to manufacture these components may bring these dates forward by two or three years. We therefore propose to conduct a detailed assessment of the relative risks, and potential interventions, as set out in the Appendix.

Question 2

Is SaBTO content for a risk assessment to be performed, comparing the risk of viral transmission from first time Club 96 donations with the risk of vCJD transmission from UK repeat donors?

If it is considered inappropriate to conduct the risk assessment described above, or the outcome of the assessment suggests that first time donors must be tested, then one option is to take samples from potential donors rather than a full donation. This allows the donor to return one week later to give a full donation rather than waiting for 12 to 16 weeks. It also raises the possibility that samples may be taken prior to a

donor's 17th birthday, allowing a full donation to be taken as soon as the donor is eligible.

Question 3

Is SaBTO content for the UK blood services to take samples from donors before their 17th birthday?

3. Market research

A marketing research survey of this age group (funded by UK Blood Services) will be undertaken in December 2012 and January 2013. This will seek to understand a number of potential issues related to the recruitment and retention of 17 year olds as donors. Issues that are raised will be addressed in the marketing strategy to be developed by the blood services.

4. Next steps

i) Subject to SaBTO's response to question 1, it is proposed that the UK blood services proceed with plans to supply Club 96 donor derived IUT, exchange and neonatal/infant components as soon as possible. The Working Group will present its full report to SaBTO in March 2013.

ii) Subject to SaBTO's response to question 2, the risk assessment work on first time donors will proceed in parallel and operational adjustments will be made if appropriate after presentation to SaBTO in late 2013.

iii) Current modelling suggests that the availability of Club 96 blood to supply other patient groups (such as haemoglobinopathy patients) may not be sufficient for up to 10 years. It is therefore proposed that the Working Group will complete its current work in accordance with the views of SaBTO, review the implementation of the process for the agreed initial recipient groups, and review progress with the recruitment and retention of Club 96 donors. The Working Group will then step down its activity to an annual review of the evidence regarding supply and demand for other patient groups. The progress reviews and annual reviews will be shared with SaBTO.

APPENDIX – Outline of proposed risk assessment

Table 1: Based upon JPAC assessment of the estimated risk (and 95% confidence interval) that a donation entering the UK blood supply is a potentially infectious HBV, HCV or HIV window period donation: 2010-2011.[1]

		HBV	HCV	HIV	Combined viral risk[1]	vCJD risk[2]
Number of potentially infectious window period donations in 1 million donations entering the blood supply (95% CI). This is equal to risk x 1,000,000	All donations	0.76 (0.22-1.61)	0.036 (0.015 - 0.070)	0.15 (0.09 - 0.32)		
	Donations from new donors	2.19 (0.55-5.84)	0.146 (0.043- 0.394)	0.21 (0.02 – 1.79)		Zero (Club 96)
	Donations from repeat donors	0.62 (0.18 - 1.26)	0.025 (0.010-0.044)	0.15 (0.09-0.22)		To be calculated from prevalence and infectivity estimates
Red cells	New donors	As above	As Above	As Above		
Plasma	New donors	As above	As Above	As Above		Zero
	New donors + PI	[3]	[3]	[3]		Zero
Platelets – single donor	New donors	As above	As above	As above		Zero
	New donors + PI	[3]	[3]	[3]		Zero
Platelets – pool of 4	New donors	Calculate	Calculate	Calculate		Zero
	New donors + PI	[3]	[3]	[3]		Zero
Platelets – pool of 8	New donors	Calculate	Calculate	Calculate		Zero
	New donors + PI	[3]	[3]	[3]		Zero

[1] Combining viral risk by addition of all three would give a worst case (no correction for co-infections)
[2] No test is available, so assume that all donations are 'window period'
[3] Depends on viral kill by the PI system