Highly Transfused: Risk of vCJD Infection and estimate for given donor exposure

The number of living recipients in the table below is an extrapolation of data from the Scottish Transfusion Epidemiology Database. The donor exposures are those counted between 1st January 2002 and 31st March 2006 – exposure since 1980 will be considerably higher. The risk is calculated assuming transmission by blood is certain.

No. of donor exposures (1.1.02 to 31.3.06)	Estimate of number of living recipients in UK with this exposure	Estimate of number undergoing high risk surgery in UK in a given year	Risk an individual is infected	
			Prevalence 1 in 4000	Prevalence 1 in 10000
40	31000	60	1.0 %	0.4 %
80	13000	25	2.0 %	0.8 %
100	9000	18	2.5 %	1.0 %
200	2340	5	4.9 %	2.0 %
300	1040	2	7.3 %	3.0 %
400	570	1	9.5 %	3.9 %
500	350	1	11.8 %	4.9 %
600	170		14.0 %	5.8 %
1000	40		22.1 %	9.5 %

Stephen Dobra HPIH&SD 26/11/2007

Extract from January 2006 CJDIP minutes

A query had been raised concerning the criteria for confirmation of receipt of implicated blood units at local level as there were three instances where the unit number was missing from the patient's medical notes but other evidence appeared to indicate that the unit had in fact been administered to the individual to whom it had been issued. It was agreed that evidence that a unit had been issued to a named individual; that that individual had received a transfusion; and that the particular unit had not been returned to the blood bank, would justify notification of that individual. However, these details and the justification for notifying or not notifying the patient should be clearly recorded and, where notification does take place, communicated to the patient.

ACTION: HPA

11. Other issues concerning blood and vCJD (CJDIP 17/09)

A Panel subgroup had met by teleconference on 20th December 2005 to consider three key areas in connection with blood and vCJD:

- Recipients of blood from donors with a risk ~1% implied by donation to a vCJD case.
- Further questions regarding onward (and backward) implications of the 'reverse' blood risk assessment, including blood fractionation.
- Highly-transfused patients.

Reconsideration of the 'reverse' blood risk assessment had taken into account the fact that transfused individuals would not themselves subsequently donate blood, so the same benefits would be achieved for public health at a higher risk threshold, if the risk of transmission was treated as certain ie transmission rate ('t') = 1.

Since the September meeting, it had emerged that there were a larger number of individuals who had received more than 100 blood donations (and who therefore posed a possible risk to public health) than originally thought. This group receives approximately a third of the blood supply and suffers from a small group of clearly defined medical conditions, for example, leukaemia, liver disease, sickle cell anaemia, thalassaemia, TTP. Whilst actions in relation to this 'highly transfused' group are the remit of the DH, as advised by MSBTO, the subgroup had made a recommendation for consideration by the Panel (and, subject to approval, subsequently to MSBTO) that individuals who had had more than 80 donor exposures should be identified and informed about the required

public health precautions at pre-surgery assessment. The subgroup's recommendations were accepted as follows:

i. In the case involving 103 donors, the other recipients should not be notified.

ii. For any future cases, individual assessment should be undertaken of the details and review of the Panel's calculations and assumptions, since there is insufficient information to determine an exact threshold number of donors to vCJD above which notification would be recommended routinely.

iii. Other recipients of blood from donors to vCJD cases with a ~1% or lower risk of infection who were not notified, should be a candidate group for uninformed monitoring and traced once the joint HPA/NCJDSU proposal had been approved.

iv. No action should be taken concerning the plasma sent for fractionation collected from donors to vCJD cases, but this decision should be reviewed if the infection status of (any of) these donors becomes clearer, or transmission by plasma products is observed.

v. That notifications of 'at risk' individuals should not be extended beyond the first generation of transfusion contact, subject to review if 'at risk' donors to vCJD cases or other recipients from these donors are observed to have vCJD infection.

vi. For highly-transfused individuals who have had ~80 or more donor exposures, special precautions should be advised for surgery involving medium- or high-risk tissue.

vii. Two ways to facilitate public health precautions (vi. above) are:

a. effective pre-surgery assessment

b. clinicians should include the fact that individuals are highly-transfused in referrals for surgery involving medium- or high-risk tissue.

viii. Patient information should be developed for highly-transfused individuals when notified of their 'at-risk' status. Information about this risk assessment and the Panel recommendations should be in the public domain.

ix. These recommendations should go to the UK CMOs only after MSBTO comment and/or endorsement.

ACTION: Secretariat, HPA

Recommended strategies for the identification and notification of highly transfused patients

1. Introduction

Patients who have been exposed to a large number of blood donors may have an increased risk of vCJD. The analysis by the HPIH&SD Analytical Team of the Department of Health showed that the vCJD risk to multiply transfused patients may exceed the 1% threshold which the CJD Incidents Panel uses to categorise patients as 'at risk of vCJD for public health purposes'. In a scenario which assumes the transmission probability to be 0.5 and a vCJD prevalence of 1 in 4,000, recipients who have received blood from ≥80 donors (highly transfused) are considered to have an additional 1% risk of vCJD compared to the background risk in the UK population.

Highly transfused patients are already deferred from donating blood, tissues, and organs. The main route through which they could potentially transfer vCJD is by contamination of surgical instruments during high risk surgery. The joint CJD Incidents Panel and ACDP TSE Working Group Subgroup on Highly Transfused Patients undertook the further work requested by the CMOs to develop strategies for the identification and notification of highly transfused patients. Three studies have been completed in order to test feasibilities and evaluate methods for the identification and notification of highly transfused patients. The subgroup discussed the results of these studies and possible ways forward at its last meeting on 26th November 2007. The summary of the study findings and recommendations from the subgroup have been presented below. The recommendations are not mutually exclusive and have different time frames.

2. The studies

2.1. Pilot to assess feasibility of detection of highly transfused patients through pre-surgery assessment

The main objective of the study was to explore the practical issues of identifying highly transfused patients prior to surgery.

The pilot was conducted among 167 patients from 37 surgical lists at two non-specialist district hospitals. The first four questions of the current Annex J were already used by the pre-assessment services of the two hospitals to identify patients with or 'at risk' of CJD. Question 5 was added in order to identify patients who had received multiple blood or blood component transfusions and might be considered at risk of vCJD for public health purposes. The pre-surgery assessment team at each hospital assessed the feasibility of asking this additional question.

> **Additional Question 5 for Annex J:**
> **Since 1980, do you have, or have you had, a condition needing treatment with many transfusions of blood or blood components?**

A protocol was also developed for evaluating the feasibility of assessing the number of transfusions using hospital and laboratory records. It was not possible to accomplish this because no multiply transfused patients were identified in the first part of the study. Infection control procedures were also developed for this pilot in order to guide the management of patients of different categories based on the cut-off point of <80 or ≥80 donor exposures.

Results

- It was feasible to ask Question 5 of Annex J during pre-surgery assessment without causing any delay in the pre-surgery assessment procedure.
- The pre-assessment teams found it was easy to explain the question to patients and patients could understand the question without any difficulty.
- No patient with a history of many transfusions was identified.
- The protocol used in the pilot could be implemented for the identification and management of highly transfused patients undergoing surgery.

Limitations of the study

- The hospitals selected are not representative of all hospitals in the UK. There is anecdotal evidence that in many hospitals the questions included in Annex J are not always asked. Some hospitals undertake minimal pre-surgery assessment and some not at all.
- It was not possible to assess the feasibility of ascertaining the number of transfusions using hospital and laboratory records.
- The number of patients interviewed was much lower than originally intended. The chances of identifying a highly transfused patient would still be very low even if more patients were interviewed because of the small number of highly transfused patients in the population. However, the data provided by the pilot on the transfusion history of patients complement the results of this pilot (Pilot B, below).
- No checks had been undertaken to determine whether the patients' self-reported transfusion status was correct.

2.2. A pilot study to establish how effectively hospitals can determine a patient's transfusion history

The objective of the study was to find out whether hospitals can effectively establish a patient's transfusion history, both locally, and at other hospitals, and the amount of difficulty in doing this.

This pilot was conducted in five hospitals where haematologists were asked to determine the number of blood components transfused for one patient treated for each of the following conditions in 1995, 2000 and 2005: Acute Myeloid Leukaemia (AML), Non-Hodgkin's Lymphoma (NHL), Myelodysplastic Syndrome (MDS). Data were returned for 42 patients. One hospital was unable to identify suitable patients diagnosed and treated in 1995.

Results

- All five hospitals used electronic records to obtain transfusion histories. These were available from 1986, 1990, 1991, 1992 and 1993 in each of these hospitals respectively. All the hospitals in the study had electronic records for at least 14 years.
- Donor exposure rates ranged from 0 to 1959 (median 58). 17/42 patients (40%) had received blood components from 80 or more donors.

- The time taken to review and summarise transfusion records ranged from five minutes to 160 minutes (median 5 minutes, data not returned for two patients).

- Two hospitals were not able to specify the type of platelets given to a total of three patients, who had been transfused in 1995 and 2000.

- Notes were not available for 9/42 patients (21%). These included notes that had been stored in an archive off site or destroyed after a patient's death. One hospital reported delays of two weeks to obtain patient notes for four patients.

- For the remaining 29 patients, the time taken to read the notes ranged from two to 40 minutes (median five minutes, data not returned for one patient).

- 14/33 patients (42%) were noted to have been treated in a different hospital. Only one patient was definitely noted to have been transfused in a different hospital.

- The laboratories in this study were able to obtain details of a patient's transfusion history at that hospital. With preparation, hospitals were able to do this quickly.

- It was feasible to obtain transfusion records across different trusts as it was found that electronic records of most of these hospitals go back to 1995. However, it was noted that a robust system of data sharing is needed to be in place to share data on multiply transfused patients.

Limitations of the study

- Hospitals in this selected group are not representative of all UK hospitals.

- The diagnoses chosen to identify patients for this pilot study are amongst those most commonly seen in highly transfused patients. It is not therefore surprising that so many were exposed to more than 80 donors.

- The selection of patients for inclusion in the pilot study was not random, and hospitals might have found it easier to remember, and select, those patients who returned frequently for transfusion. Other hospitals might not have electronic records going back for such a long period.

- Because of the selection of a small number of hospitals for the pilot it was not possible to evaluate a wide variety of IT systems used by different laboratories. However, a recent survey by the National Blood Transfusion Committee in about 100 hospitals revealed that two-thirds of them used one of two particular IT system suppliers and that the remaining third used 15 different suppliers. However, 25% of the respondents to the survey were considering changing their systems to one of four suppliers within the next two years. The survey results also indicated that 93% of respondents would be able to calculate the number of donor exposures for named patients.

2.3. Highly Transfused Patients in Scotland

The objective of this study was to estimate the number of highly transfused, their age distribution and donor exposure, their diagnostic characteristics, survival and chances of undergoing medium- and high-risk surgery.

Patient specific data on the use of blood components has been extracted from hospital blood bank computer systems and recorded in a national database since January 2002.These data have been linked on an individual patient basis to records of episodes of acute care (SMR1) recording diagnoses and surgical procedures. The dataset covers those patients who had a linked record of the transfusion of any blood component during the period 1 January 2002 to 31 March 2006. It includes hospital records for these patients during the period January 1981 to September 2006. The national SMR database was consulted in order to estimate the total population of patients in relevant diagnostic groups who were alive at 31 March 2006. Periods from one day up to 4.25 years were available for calculating the number of donor exposures (January 2002 to March 2006).

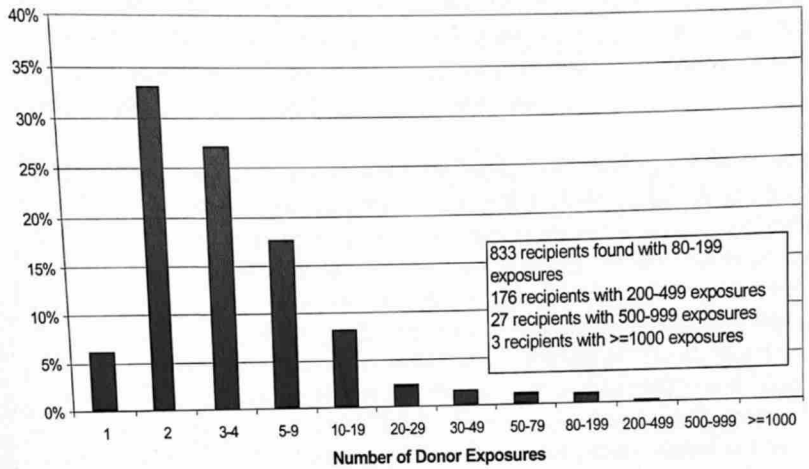
Data was not available for Forth Valley NHS Trust. The estimated catchment population was 4,830,847 compared to a total estimated Scottish population of 5,116,900 (General Register of Scotland mid-2006 population estimates). The estimated population of the UK was 60,587,000 (ONS mid-2006). Patients alive at the last date of records in the national transfusion database (31 March 2006) were used to summarise the characteristics of the transfused patient population, and of patients with high exposure levels.

Additionally, patients alive at 31 December 2003 were used to study the survival of highly exposed patients over the subsequent 2.75 years (1 January 2004 to 30 September 2006) and to estimate their probability of undergoing either medium risk or high risk surgical procedures. It should be borne in mind that only two years' data (1 January 2002 to 31 December 2003) were available for counting transfusion exposures for these patients.

Results

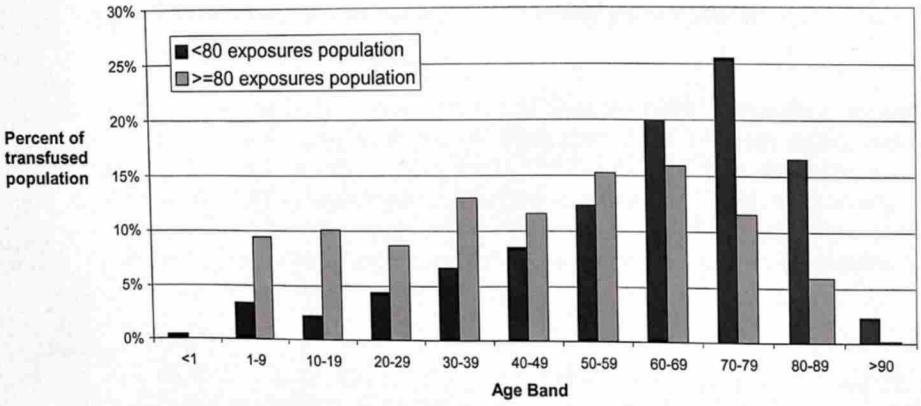
- One thousand and thirty-nine patients (1.3% of transfused patients alive at 31 March 2006) were found to be alive and have had more than 80 donor exposures during the 4.25 year period from January 2002 to March 2006. The data available covered 94.4% of the Scottish population and 8.0% of UK population. It is estimated that there would be 1101 recipients in the whole Scottish population with 80 or more donor exposures during the study period. Under the assumption that the incidence of transfusion is similar elsewhere in the UK, it is estimated that there would be about 13,000 such recipients in the UK.

Fig.1: Transfusion Recipients Living on 31 March 2006: Distribution of the Transfused by Number of Donor Exposures



- There are relatively high numbers (0.3%, 206/77834) of very highly transfused patients (≥200 donor exposures) and high numbers of patients under the 80 donor exposure threshold (50-79 donor exposures), many of whom would in fact be highly transfused if we took into account their lifetime donor exposures (Fig. 1). The distribution of highly transfused is relatively higher in the younger age groups (Fig. 2). However, this distribution may change if donor exposures before 2002 are included.

Fig.2: Transfusion Recipients Living on 30 September Distribution of the Highly Transfused Population, and the Transfused Population by Age



- Of the cohort of highly transfused patients (n=1039) the highest proportion of patients with >80 exposures had diseases of blood, blood forming organs, and certain disorders involving the immune system: 56.4% (n=586). This was followed by neoplasms of lymphoid, haemopoietic or related tissues 43.2% (n=449); malignant neoplasms of lymphoid and haemopoeitic tissues 37.3% (n=388); coagulation defects, purpura and other haemorrhagic conditions 37.0% (n=384); diseases of the

musculoskeletal system and connective tissue 21.6% (n=224); myeloid leukaemia 19.3% (n=201); and diseases of skin and subcutaneous tissue 15.3% (n=159). Although the proportion of patients with skin and musculoskeletal system diseases was small, the total number of highly transfused patients was highest in this group. This can be explained by the fact that there was a high degree of overlap between the diagnostic groups and the patients with diseases of skin and subcutaneous tissues had other conditions which required multiple transfusions.

- The majority of patients in each diagnostic group were not highly transfused. The proportion of highly transfused patients varied from 0.9% to 44.5% and patients overlapped among diagnostic groups. The highest proportions of highly transfused patients were in 'myeloid leukaemia' 44.5% (201/452); 'disseminated intravascular coagulation' 28.3% (13/46); and 'myeloplastic syndromes' 22.2% (2/9), but these comprised a small number of highly transfused patients. Whereas the proportion of highly transfused patients was relatively low in diseases of 'blood, blood forming organs and certain diseases of immune system' 1.5% (586/39435) and 'skin and subcutaneous tissues' 2.2% (589/26773), these comprised a large number of highly transfused patients. Therefore, these broad diagnostic groups would not be useful for identifying highly transfused patients.

- Investigation of individual diagnoses (rather than broad diagnostic groups) shows a high probability of being transfused for specific diagnoses. There were nine diagnoses where the majority of patients with these diagnoses had more than 80 donor exposures (23%, 239/1039). These diagnoses included 'acute monocytic leukaemia' 100% (7/7); 'myeloid sarcoma' 100% (4/4); 'subacute myeloid leukaemia' 100% (1/1); 'acute promyelocytic leukaemia 72.4% (21/29); 'promyelocytic leukaemia' 66.7% (4/6); 'subacute lymphocytic leukaemia' 66.7% (2/3); 'acute myeloid leukaemia' 61.4% (180/293); 'myeloid leukaemia, unspecified' 60% (12/20); 'acute leukaemia of unspecified cell type' 50% (8/16).

- Of 592 patients surviving during the period between1 January 2002 and 31 December 2003 who received ≥80 transfusions, 75% survived for one year and 62% survived for 2.75 years (up to March 2006).

- Among highly transfused patients alive at 31 December 2003 and undergoing surgery during the period 1 January 2004 to 31 March 2006, 3 (1.66%) were highly transfused among 181 high-risk surgery patients; 68 (1.55%) among 4397 medium-risk surgery patients; 80 (1.48%) were among 5394 endoscopy patients; 120 (1.38%) among 8676 high- and medium-risk surgery patients. There was no significant difference in the incidence of high-risk surgery, medium-risk surgery or endoscopy between those having high or low donor exposure.

Main conclusions

Given the difficulties of extracting data from routine sources and linking databases collected for different purposes, the study should be considered very helpful. This study is valuable, in particular, because it allows counting of a patient's donor exposure across hospitals in Scotland, rather than at a single trust and provides a link between transfusion and hospital episode data.

- There are significant numbers of recipients alive with a very high number of donor exposures.

- We cannot infer the number of highly transfused (those with 80 or more donor exposures since 1980) from these data – more analysis is required to do this.
- The highly transfused have a significantly younger age distribution than other transfusion recipients.
- Many highly transfused do survive for significant periods of time. (29% survive more than 2 years, EASTR data).
- Broad diagnostic groups do not seem to be a good indicator of being highly transfused, but certain individual diagnoses are a good indicator.

Limitations

- The number of highly transfused, and the proportion with a given diagnosis who are highly transfused, have been significantly underestimated.
- The split between diagnostic categories and age distribution would be different if a longer period had been used.
- The period over which donor exposures were counted varied between 1 day and 4.25 years.
- Data on the proportion of different diagnostic groups who underwent high- or medium- risk surgery has not been analysed because of small numbers.

3. Estimated number of highly transfused patients in the UK

We can extrapolate the results of the Scottish data to the UK population of 60,587,000 at mid-2006. This is reasonable if we assume that there is not much variation in the distribution of relevant diseases and transfusion practices in different countries in the UK. This gives about 13,000 highly transfused patients in the UK (Table 1).

Version 1

This is a gross underestimate since the data covers only a 4.25 year period. Based on data from previous studies we would expect approximately 30,000 highly transfused living patients in the UK. The number of highly patients undergoing high-risk surgery in a year has been estimated to be 25. Again this is a gross underestimate. The figure could be double this.

Version 2

These estimates (both for Scotland and the UK) significantly underestimate the number of highly transfused (those receiving 80 or more donor exposures since 1980) since these data cover only a 4.25 year period, rather than looking back over a 28 year period. A judgement was made by the subgroup that those receiving 40 or more donor exposures over the 4.25 year period would provide a rough estimate of those receiving 80 or more donor exposures since 1980. This gives an estimate of approximately 30,000 highly transfused living patients in the UK. This rough estimate is also consistent with some preliminary data from one NHS trust in England. The number of highly transfused patients undergoing high-risk surgery in a year is estimated to be between 10 and 150. (The wide confidence interval is due to the small numbers involved and limited data available.)

Table 1*. Highly transfused: Risk of vCJD infection and estimate for given donor exposure. The number of living recipients in the table below is an extrapolation of data from the Scottish Transfusion Epidemiology Database. The donor exposures are those counted between 1 January 2002 and 31 March 2006; total exposures since 1980 would be considerably higher.

No. exposures (1.1.02 to 31.3.06)	Estimate of number of living recipients in UK with this exposure	Estimate of number undergoing high risk surgery in UK in a given year	Risk an individual is infected			
			assuming transmission by blood is 50%		assuming transmission by blood is certain	
			Prevalence 1 in 4000 (%)	Prevalence 1 in 10000 (%)	Prevalence 1 in 4000 (%)	Prevalence 1 in 10000 (%)
40	31000	60	0.5	0.2	1.0	0.4
80	13000	25	1.0	0.4	2.0	0.8
100	9000	18	1.2	0.5	2.5	1.0
200	2340	5	2.5	1.0	4.9	2.0
300	1040	2	3.7	1.5	7.3	3.0
400	570	1	4.9	2.0	9.5	3.9
500	350	1	6.1	2.5	11.8	4.9
600	170		7.2	3.0	14.0	5.8
1000	40		11.8	4.9	22.1	9.5

* Produced by Stephen Dobra, HPIH&SD Analytical Team

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No. exposures (1.1.02 to 31.3.06)	Estimate of number of living recipients in UK with this exposure	Estimate of number undergoing high risk surgery in UK in a given year	Risk an individual is infected			
			assuming transmission by blood is 50%		assuming transmission by blood is certain	
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200	2340	5	2.5	1.0	4.9	2.0
300	1040	2	3.7	1.5	7.3	3.0
400	570	1	4.9	2.0	9.5	3.9
500	350	1	6.1	2.5	11.8	4.9
600	170		7.2	3.0	14.0	5.8
1000	40		11.8	4.9	22.1	9.5

* Produced by Stephen Dobra, HPIH&SD Analytical Team

4. Recommendations

4.1. Identify and notify highly transfused patients during pre-surgery assessment for surgery in contact with high-risk tissue

- The main objective of identifying and notifying the highly transfused patients of their 'at risk' status is to protect public health by taking precautions in reducing potential iatrogenic transmission of vCJD.

- The subgroup strongly recommends pre-surgery assessment as the primary strategy for identification and notification of highly transfused patients. This strategy can be implemented at neurosurgical and ophthalmic surgical centres with few additional resources in 2008. In order to implement this Annex J will have to be revised by the ACDP/TSE Working Group. This strategy should be implemented irrespective of the implementation of any additional strategies mentioned below (4.2, 4.3, 4.4).

- The evidence from pilot studies that supports this recommendation includes:

  - The pre-surgery assessment team found it easy to ask the additional question in Annex J without any difficulty, without the need of significant extra time, and without any additional resources. It also seemed that the patients could understand the additional question and were aware of having received multiple transfusions.

  - Tracing the transfusion history of patients in the local laboratory and in other hospitals where patient records indicated was found to be feasible since electronic records in most hospitals go back to 1995. A recent survey of the National Blood Transfusion Committee indicated that 93% of laboratories would be able to calculate the number of donor exposures of named patients. It would therefore be feasible to find the transfusion records of an anticipated small number of highly transfused patients undergoing high-risk surgery (see Table 1).

  - Because of the anticipated small number of highly transfused patients and the existing infrastructure at neurosurgical centres, it would be relatively straightforward to arrange their management, counselling, support, and subsequent follow-up through these units. Specialist neurological support by a consultant neurologist can be provided to all who require this service.

- The inclusion by GPs and other clinicians of information about the number of transfusions received in any referrals for surgery likely to involve high-risk tissue would further assist in the identification of highly transfused patients during pre-surgery assessment.

- Existing staff involved in infection control, pre-surgery assessment, and theatres in neurosurgical units would need to be reminded about the importance of additional risk reduction measures during the implementation of pre-surgery assessment. The launch of the revised Annex J in early 2008 could highlight this. This would be reinforced by clear messages and advice for clinicians on how to manage highly transfused patients. A management algorithm and patient information leaflet would be made available.

- Post-surgery assessment would be an option when pre-surgery assessment had not taken place because of an emergency. Surgical instruments used on unconscious

patients or those who needed emergency high-risk surgery could be quarantined pending post-surgery assessment. The number of such patients is expected to be low and may fall into the traditional remit of the CJD Incidents Panel.

4.2. Notify those with certain specific diagnoses that are highly associated with 80 or more donor exposures

- The subgroup recommends that patients who are diagnosed with these specific diagnoses (acute monocytic leukaemia, myeloid sarcoma, subacute myeloid leukaemia, acute promyelocytic leukaemia, promyelocytic leukaemia, subacute lymphocytic leukaemia, acute myeloid leukaemia, myeloiod leukaemia – unspecified, acute leukaemia of unspecified cell type) with ≥80 donor exposures are identified prospectively and notified through specialist clinics. Patients with these specific diagnoses constitute about 23% of all highly transfused patients. The notification of these patients would be done as previous exercises when patients have been deemed to be 'at risk'. If these patients presented for surgery they would be screened according to the revised Annex J.

- It has been noted that no patients with thalassaemia were identified as highly transfused in the STED study. This may reflect the ethnic populations living in Scotland and the fact that data was collected for only four years. Patients with beta thalassaemia major and sickle cell anaemia are examples of distinct groups with a specific diagnosis (not listed above) who are likely to require multiple transfusions in their lifetime.

  In relation to identifying patients with thalassaemia there is no current up to date patient register. There was a fully comprehensive register of all patients with thalasssemia in the UK until 2002 which lapsed due to lack of funding. This register could be re-instated with very modest funding and could provide information on the 800 to 1000 patients with thalassaemia. The sub-group recommends that the Department of Health takes necessary steps to re-instate the register.

  The European Haemoglobinopathy Registry contains information on a proportion (but not all patients) with sickle cell anaemia. It is estimated that ~10% of sickle cell patients are likely to be on a long-term transfusion program giving rise to an estimate of ~1000 highly transfused sickle patients but no complete register is available.

- The feasibility of a notification exercise using specific diagnoses in acute trusts has been demonstrated. The transfusion pilot traced blood transfusion records of patients with three specific diagnoses[1] in five hospitals without much difficulty.

- The subgroup recommends that the CJD Incidents Panel and ACDP/TSE Working Group identify relevant stakeholders in the fields of paediatrics, haematology, and oncology to find ways of identifying, notifying and managing highly transfused patients (≥80 donor exposures) with specific diagnoses as a secondary strategy for reducing the risk of vCJD transmission.

4.3. Identify and notify the very highly transfused (e.g. more than 200 donor exposures)

[1] Acute myeloid leukaemia, non-Hodgkins lymphoma and myelodysplastic syndrome.

- The subgroup recommends that very highly transfused patients (e.g., ≥200 donor exposures) would be identified and notified in the same way as patients deemed to be 'at risk' in previous patient notification exercises. The number of very highly transfused patients with ≥200 donor exposures constitutes about 20% of all highly transfused patients. If these patients presented for surgery they would be screened according to the revised Annex J.

- Because of the higher number of donor exposures, there is a greater probability of the very highly transfused being infected; they are more likely to have greater tissue infectivity, and thus more likely to transmit vCJD. This will be another secondary strategy for reducing the risk of vCJD transmission in the population.

- The subgroup recommends that the Department of Health looks into the feasibility of interrogating the very diverse IT systems in blood banks to identify all highly transfused patients (using defined cut-off) before proceeding with this option. If this is a viable strategy there would need to be very detailed recommendations for managing the identified patients.

4.4. Establish procedures for standardising and linking blood transfusion databases

- The subgroup recommends active engagement by the HPA, National Blood Service, CJD Incidents Panel and ACDP TSE Working Group with existing groups looking at transfusion and the NHS Connecting for Health Initiative eg National Transfusion Committee IT working group for recording transfusions prospectively using the NHS number as a unique identifier. From this data, it would be possible to calculate donor exposures in real time. The identification of patients who are close to 80 donor exposures and who would fall into the highly transfused group in the near future could also be flagged in real time using these prospectively developed databases.

4.5. Communication strategy

- In addition to the above strategies it would be necessary to have a public communication strategy, including public education campaigns, to increase general awareness of the importance of blood transfusion and the risks associated with it.

- It would be necessary to involve communications experts in order to develop messages achieving the right balance between needs for transfusion and risks of transfusion. It would be important to stress that no one would be deprived of any treatment because they are highly transfused. The messages would also need to include appropriate advice for patients nearing the highly transfused threshold.

- It would also be necessary to develop well-targeted communication strategies for the notification of families of highly transfused patients; this might involve the translation of information leaflets into multiple languages.

- The CJD Incidents Panel and HPA will develop information packages for highly transfused patients and relevant health care workers.

4.6. Identification and notification of all highly transfused patients

The subgroup considered the option for identification and notification of an estimated 30,000 highly transfused patients in the UK. It would be a difficult and resource intensive process, disproportionate to the likely public health benefit, since a very small minority of highly transfused patients would undergo high-risk surgery in a given year (Table 1). The other major problem associated with the notification of all highly transfused patients would be the great risk of having to undertake a large-scale de-notification exercise if there were a change from 'at risk' status of a large proportion of the group at a later date because of a change in the prevalence estimate of infected patients in the UK population. In addition to causing perceived unnecessary distress to a large number of people at the outset, a large-scale de-notification exercise would be a very difficult and expensive undertaking.