New Zealand Blood Service
The gift of life

BLOOD ISSUES

July 2004, Issue 10 A Transfusion Medicine Newsletter

Editorial

In common with other health sector organisations NZBS is currently busy finalising its annual plan for the next financial year. In defining its plan NZBS has been working closely with representatives of the DHBs and DHBNZ. Demand for blood products in New Zealand continues to increase. The question inevitably arises as to whether the increased use of blood products is necessary and appropriate. NZBS has been asked to undertake an evaluation of blood product use across New Zealand in an attempt to begin to address this question.

During the next financial year NZBS will commence a programme of demand *management*. A number of approaches will be used to gain data on how blood and blood products are currently being used across the sector. The first step in the process will be to identify areas where significant change in demand has occurred during the last 2-3 years. Information on this is provided within this edition of *Blood Issues*.

Interestingly the demand for most blood components has remained reasonably stable over the period. By way of contrast the demand for Intragam P has risen significantly over the same period. This is very much in line with international trends. The increased use of Intragam P may arise for a number of reasons.

- More patients with immunodeficiency are being identified and treated.
- New clinical indications are being identified.

NZBS plans to undertake a multi-centre audit during 2004/05 to gain a better understanding of the way this product is being used in New Zealand. One other area for early scrutiny will be cryoprecipitate. In 2002 NZBS introduced a new apheresis based cryoprecipitate product. This is specially formulated to have a high fibrinogen level. Demand for cryoprecipitate has increased at a number of hospitals.

The overall aim of these initiatives is to improve understanding of how blood components are being used and to identify areas where clinical practice might be improved. Information gained from the process will also enable NZBS to plan its collection requirements more effectively in the future. This is particularly important for Intragam P which is currently the overall driver for collection in New Zealand. If demand for Intragam P continues to increase then NZBS will need to increase overall collection levels to ensure that appropriate clinical demand is met. *Blood Issues* will be a valuable tool to feedback information gained from these initiatives during the year.

Peter Flanagan
National Medical Director

Haemovigilance Systems – Why We Need One in New Zealand

Since the advent of HIV infection in the 1980's the use of blood and blood products has become an important issue in quality care medicine. Blood transfusion is an essential part of management for many diseases. It is prescribed and used by almost all specialties. However the use of blood and blood products is associated with a variety of potential dangers including immunological reactions and infections, both viral and bacterial. This imposes a special responsibility on all those who use blood and blood products. A safe, high quality blood supply depends not only on proper donor selection, blood collection, processing of the collected blood, testing of the donated blood for infectious diseases, and compatibility testing but also on the appropriate use of blood products in patient management. Haemovigilance can also contribute to increased safety of transfusion.

Haemovigilance is a part of pharmacovigilance. It consists of the detection, gathering and analysis of information regarding untoward and unexpected effects of blood transfusion. It is expected that the information generated by haemovigilance systems will contribute to improving the safety of blood transfusion. It achieves this by providing the medical community with accurate information about adverse effects of blood transfusion. This will assist with the identification of corrective actions in order to prevent the recurrence of similar incidents in the future. Haemovigilance will also warn the blood transfusion service about adverse events such as the transmission of infectious diseases that might involve more than one patient.

Haemovigilance has been practiced in many countries in different forms for many years but often in a fragmented way. In some cases the focus has been on the act of transfusion, in some only on immediate adverse or serious effects. Others have focused on the long term effects of transfusion. Because transfusion is a complex event with many elements and with the potential for individual elements to interact with others, effective haemovigilance should address all parts of the transfusion chain, from the donor to the recipient.

The first comprehensive haemovigilance system started in France in 1992 with the establishment of Centre National d'Haemovigilance. On the European level haemovigilance started in 1995 with the publication of a Council of Europe Resolution in 1995. In the United Kingdom the Serious Hazard of Transfusion (SHOT) scheme was launched in 1996. Both the French and British haemovigilance systems has generated information that has impacted on transfusion practice.

For example the SHOT study has shown that more than 50% of serious errors are administrative errors and a large proportion of these are the result of an error in collection of the pre-transfusion sample or an error in

identifying the patient at the point of transfusion. As a result of these findings a number of initiatives are under way to address these problems.

In New Zealand all hospitals have an adverse event reporting system. Most hospital blood banks use the Notification and Investigation of Adverse Transfusion Reaction form supplied by New Zealand Blood Service. This is used to record and report details of adverse reactions. The system, in its present form, has enabled identification of a number of problems over the last few years. Most notably during 2003 the system allowed the early identification of a cluster of hypotensive events in patients receiving platelet transfusion during cardiac bypass.

Whilst the reporting of adverse effects is a standard practice, it is not performed in a systematic way and currently we do not have a system in place to collate and analyse the reports on a local or national level. These deficiencies prevent us from gaining maximum benefit from the adverse effect reporting system. The current reporting system is also not comprehensive enough. For example it does not record near miss events or the transfusion of the wrong blood components; both important elements of an effective haemovigilance system.

New Zealand Blood Service is working to develop a comprehensive haemovigilance system for the country. This process has the support of Medsafe. The final configuration of the system has not yet been defined. Success in this initiative will require the support and participation of all involved with the transfusion process.

Blood Product Use in New Zealand

NZBS is the sole provider of blood and blood products in New Zealand. Data obtained from the national blood management system, Progesa, provides a picture of the change in demand for blood products over time. Data for the last three financial years is shown below. Red cell use is growing at approximately 2-3% per year. This possibly reflects an increase in overall surgical activity. Suprisingly demand for platelets and fresh frozen plasma is stable.

Component	2001/02 Actual	2002/03 Actual	2003/04 Forecast
Red cells transfused	122005	125054	126260
Platelets (ATDs[1]) transfused	10387	10035	10550
Fresh Frozen plasma units transfused	22259	21326	21000

1. Adult Therapeutic Doses

The picture for fractionated products is very different.

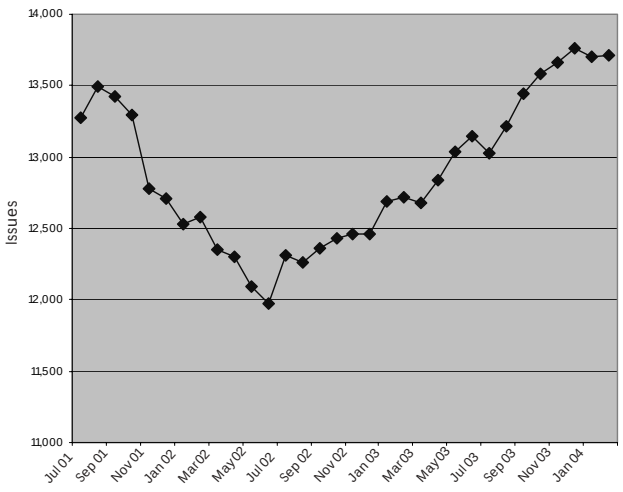
Product	2001/02 Actual	2002/03 Actual	2003/04 Forecast
Intragam P[1] transfused	11849	12845	14845
AHF-HP 250 IU vials	29066	35951	30000

1. 12g Equivalents

Demand for AHF-HP, which is used in the management of haemophilia has been volatile and unpredictable. Investigation has shown that the significant increase in demand seen during 2002/03 related to a small number of patients requiring large volumes of product during the year. This situation has since settled but the possibility however exists that similar clinical issues might arise in the future. This would impact severely on NZBS. This is one of the drivers behind the national haemophilia project.

The increase in demand for Intragam P is also interesting. This is shown graphically below.

Intragam P Issues - Moving Annual Total



Demand for Intragam P has fluctuated significantly over the period of observation. The initial fall seen during 2001/02 coincided with a significant increase in the price of the product. It is not clear whether this is related. There has been a progressive increase in demand seen since July 2002. Demand during this financial year is approximately 15% higher than that experienced in 2002/03. NZBS is currently investigating the clinical patterns of use for this product to identify the likely cause for changes in demand pattern over the period.

The use of Intragam P in New Zealand is significantly less than that seen in other countries. In Australia current usage is approximately 69g/1000 population. The equivalent figure for New Zealand is 42g/1000 population.

NZBS Demand Management Project

In recent months the engagement process between NZBS and DHBNZ has highlighted a desire from the DHBs for the introduction of systems for management of the demand for blood components and blood products. NZBS has been asked to develop a number of initiatives to support a review of current demand patterns.

During the next 6 months the demand management initiative will focus on four main areas. These include:

- The production of standard datasets for monitoring changes in demand levels. This will be a high level analysis that reviews changes in demand levels by product nationally and by DHB over the last 3 years. A moving annual total approach will be utilised for ongoing monitoring. This process should inform DHBs of any significant changes in local activity and of areas where local usage is significantly different from the national position and should facilitate identification of local priorities for review.

- The standard datasets could also be useful for benchmarking purposes. DHBs will be divided into four groups based on their overall expenditure on blood components and blood products each year. Comparison of activity, stock levels and expiry rates between DHBs of similar sizes should identify areas for more intensive local review. The data will facilitate cross DHB review and resolution of issues identified in the process.

- A prospective audit of cryoprecipitate use. The initial data analysis undertaken within NZBS has demonstrated that demand for this product has changed significantly in a number of DHBs. NZBS will conduct the audit at those sites where we are responsible for management of the Blood Bank. The templates can however be made available more widely if local resources are available. NZBS should be able to evaluate data collected at other sites.

- A review of demand patterns for Intragam P. This will aim to identify where the product is used within DHBs and also assess use against a number of clinical standards. Data obtained from the review will enable a debate on the level of control that is appropriate for this product.

Information arising from the initiative will be provided to DHBs and to their Hospital Transfusion Committees. The reports will identify areas suitable for investigation by the DHB. It should not be assumed that changes in demand represent inappropriate use. It may reflect changes in case mix or overall activity. It is however important that DHBs understand why demand patterns are changing and where appropriate, take active steps to manage this. Proper clinical review will need to be undertaken and analysed before any corrective actions are put in place.

Initial data will be distributed to participating DHBs during July this year.

An Audit of Overnight Transfusions

Routine transfusion's administered overnight are not always in the patient's best interest. The need for clinical observations during the transfusion can dramatically disturb sleep patterns; the cover of darkness can prevent early detection of a transfusion reaction and the reduced staff FTE overnight in the majority of units can affect the physical ability to monitor the recipient of a blood component or product safely. Results from the Serious Hazards of Transfusion (SHOT) reporting system in the UK highlight that the risks associated with human error increase during overnight transfusion.[1]

A pilot audit recording overnight transfusion activity in five hospitals was undertaken to provide baseline data on the level of transfusions during the night. Transfusion Nurse Specialists collected blood component issuing data (red cells, platelets, fresh frozen plasma and cryoprecipitate) between the hours of 9pm (2100 hours) and 7 am (0700 hours) each day for one week. An evaluation of the requirement for transfusion using the criteria identified below was made.

Criteria for Transfusion to be Considered Necessary

- Patient located in high care clinical area with high patient:staff ratio enabling ongoing monitoring – e.g. ICU, HDU, ED, OT
- Blood screen indicative of urgent need (and in line with ANZSBT guidelines)
- Clinically unstable e.g. chest pain associated with anaemia, active bleeding, haemodynamically unstable
- Presence of co-morbidities that may increase risk to patient if NOT transfused

Exclusions for Necessary Overnight Transfusion

- Haemoglobin level above 70 in asymptomatic patient with no risk factors justifying urgent transfusion
- Unit(s) transfused overnight was 2nd or 3rd unit prescribed for transfusion episode and could have been withheld until after 7am
- Full blood count/coagulation results available several hours prior to transfusion commencing. In this instance delay in transfusion related to time management rather than clinical need

A total of 317 units were transfused to 136 patients over the five sites during the audit; 49 (15%) of these were assessed to be not clinically necessary i.e. the transfusion could have been carried out during day time hours. There were differences in the frequency of unnecessary transfusions seen at different sites. The two sites that produced the lowest numbers of unnecessary transfusions either had a "culture" of discouraging overnight transfusion (but no written policy) or had written IV policy discouraging routine transfusion overnight.

The other three sites demonstrated comparable results with approximately 20% of overnight transfusions deemed unnecessary. None of these sites had an IV

policy that discouraged routine transfusion overnight. 99% (n = 135) of the patients had a blood screen taken pretransfusion to assess clinical need for the component and 94% (n = 128) had the relevant blood screen checked within 24 hours for response.

The study demonstrated that the majority of patients across the five centres were monitored appropriately and had pre and post relevant blood screens completed. 15% of the total transfusions that were administered during the audit period were identified as being clinically unnecessary. These were transfused within a ward setting that had fewer staff to safely monitor the patient or where the patient was asymptomatic and the transfusion could have waited until the following day.

Unnecessary overnight transfusion potentially puts the patient at increased clinical risk, disturbs sleep patterns of the transfused patients as well as others sharing the same cubicle and creates unnecessary work for nursing and in some cases medical night staff. It also may put other patients in the same clinical area at risk as the night-staff's time and attention has a specific focus on the patient who requires close monitoring. Education of clinical staff and the inclusion of a specific statement that discourages routine overnight transfusion in local blood policies may assist in reducing such events.

The audit demonstrated that 99% of patients had a haemoglobin level performed prior to the transfusion recorded in their notes and that 94% had a post transfusion haemoglobin recorded. This data demonstrates a high level of compliance with recommendations developed as part of the NHMRC review on the use of blood and blood components[2]. NZBS will be presenting data to individual Hospital Transfusion Committees to discuss the results of the audit.

Reference:
1. UK SHOT report **www.shotuk.org**
2. Clinical Practice guidelines on the Use of Blood components. **www.nhmrc.health.gov.au**

The SAFE Trial

The SAFE trial was a multicentre trial that assessed the impact of choice of resuscitation fluid (Albumin versus Saline) in patients on Intensive Care Units on survival of patients at 28 days. The trial was carried out under the auspices of the Australian and New Zealand Intensive Care Society and a number of New Zealand hospitals were involved.

The trial was designed to respond to questions posed by a Cochrane Injuries Group Meta analysis published in 1998. This analysis suggested that the use of albumin was associated with an increased mortality. The Cochrane report resulted in significant debate both in clinical and media circles. The SAFE trial concluded that 'in patients in the ICU, use of either 4 percent albumin or normal saline for fluid resuscitation results in similar outcomes at 28 days'.

Reference: New England Journal of Medicine volume 350 27 May 2004 pages 2247-2256.

Possible Case of vCJD Transmission by Transfusion of Red Cells in the UK

During December 2003 the UK Secretary of State announced a possible case of transmission of vCJD by transfusion of blood components. The case involved a patient who received a red cell transfusion from a patient who subsequently developed vCJD. The recipient developed symptoms some 6 years following the transfusion. The possibility that the case was unrelated to transfusion cannot be excluded. The case involved a transfusion prior to the introduction of universal leucodepletion.

This is the first reported case that identifies a possible link between vCJD and transfusion. The UK Transfusion Services in conjunction with the UK CJD Surveillance Unit have for some years being closely monitoring information on cases of vCJD with the aim of identifying the possibility of a transfusion link. The results of this monitoring process, the Transfusion Medicine Epidemiology Review (TMER) were published in the Lancet in February this year.

As a consequence of this reported case, the NZBS has reviewed the statements relating to vCJD and transfusion contained within the range of Informed Consent Leaflets that we produce. Stakeholder groups have been involved in the review process. The Fresh Component Informed Consent Leaflet has been changed with the following statement being introduced.

The risks of acquiring CJD/vCJD from transfusion remains very low and has never been reported in NZ. A probable case related to vCJD has been reported in the UK.

The new version of the leaflet will be introduced by early August. As part of this process NZBS will aim to withdraw copies of the older version. This should ensure that all patients will have access to up to date information on this topic. NZBS currently has in place a number of precautionary measures which are aimed at reducing the risk of transmission of blood and blood products. These measures include:

- Universal leucodepletion of all blood components.
- A donor deferral based on a UK residency which permanently excludes donors who have spent 6 months or more in the United Kingdom between 1980 and 1996.
- A donor deferral which permanently excludes donors who have received a blood transfusion in the United Kingdom.

NZBS continues to actively monitor the situation and formally reviews the position annually. In the event of significant developments the NZBS position would be reviewed sooner than the annual process.

Reference: Llewelyn et al The Lancet volume 363 February 7 2004: 417-21.