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Foreword

I am pleased to provide the foreword for the Blood Matters Breakthrough Collaborative Improvement Guide.

The Blood Matters pilot began as a consortium between Peter MacCallum Cancer Centre, Royal Melbourne Hospital and the Australian Red Cross Blood Service. This pilot commenced a process of changing the direction of quality improvement in blood and blood product delivery. The approach was not top down but instead a partnership between the multidisciplinary providers of care from the donor to the patient receiving the product at the bedside.

The National Health and Medical Research Council guidelines for the use of fresh products were released in 2001. Funding was provided to assist the implementation of the guidelines in Victorian hospitals. The work done by the Blood Matters pilot provided the groundwork for an improvement program needed to run a collaborative across major health services in Victoria. In addition we were pleased to welcome the Royal Hobart Hospital team as active contributors to the Collaborative.

Substantial work has been done by our committed teams. They have shared ideas, learned from each other and we have learned from them.

This guide aims to share the best of the multiple ideas and changes that have worked and have resulted in real improvement, with as wide an audience as possible.

The challenge for us all is to take the experience and knowledge Blood Matters has captured and apply this to other clinical areas in health services who participated and for those not involved to commence the process of building on the excellent work already achieved.

I commend this report to you.

DR JENNY BARTLETT
Chief Clinical Advisor
Metropolitan Health and Aged Care Services
Department of Human Services

May 2004
Blood matters: introduction and background
Breakthrough methodology

What is a breakthrough collaborative?

Developed by the Institute for Healthcare Improvement (IHI) in 1995, the breakthrough collaborative series is a method that relies on the spread and adaptation of existing knowledge to multiple settings to accomplish a common aim.

Breakthrough collaborative is:

- achieving results
- defining, documenting and disseminating good ideas
- testing and measuring improvement
- developing clinical leaders
- accelerating improvement.

Breakthrough collaborative is not:

- research for new clinical knowledge
- focused within a single institution
- small changes to existing systems
- benchmarking
- a series of meetings.

The breakthrough collaborative method seeks to achieve results; define, document and disseminate good ideas; test and measure improvement; identify and develop clinical leaders; and accelerate improvement. The breakthrough collaborative methodology focuses on rapid cycle change methodology based around the well established improvement cycle known as ‘PDSA’ cycle (or a plan, do, study, act.)

During a breakthrough collaborative teams participate in an orientation session, four learning sessions, and ‘action’ periods. The learning sessions include plenary and small group discussions, in which teams learn from colleagues, receive coaching from clinical leaders, share and gather new information, and develop clinical improvement plans.

The ‘action’ periods are times between learning sessions when the health service teams work towards implementing major, ‘breakthrough’ improvements within their organisations. During action periods, the teams maintain contact with each other via conference calls, online discussion groups and occasional site visits. The teams share improvements by measuring and reporting their progress against targeted aims on a monthly basis.

The goals of the breakthrough collaborative programs are to:

- Improve the timely delivery of safe, appropriate patient care whilst increasing family, carers, patient and staff satisfaction.
- Develop leadership for improving health services, in order to enhance the timely delivery of safe, appropriate patient care whilst increasing family, carers, patient and staff satisfaction beyond the life of the collaborative.
This document summarises the progress of the Blood Matters Collaborative, a coordinated program of service improvement activities between 2002-2004 that supported clinical teams within Victorian and Tasmania to improve a range of care processes required for safe and appropriate blood product transfusion within health services.

It is a practical report, aimed at sharing the experiences of the participant clinical teams with a wider audience.

Case examples are given to illustrate progress in four key areas:

- the appropriateness of clinical decision-making in the transfusion of fresh blood products
- our patients’ understanding of the risks and benefits of transfusion
- compliance with critical protocols and procedures governing the ordering, handling and administration of blood products
- mechanisms to capture any errors or adverse events associated with blood transfusion.
Translating ideas into action

The Blood Matters Collaborative was structured around a series of specific projects designed to improve distinct aspects of the sequence of care processes that ultimately determine the safety of each and every fresh blood product (red cell, platelet, fresh frozen plasma and cryoprecipitate) transfusion. These commence with the appropriateness of the clinical decision to transfuse blood products. The projects then move to ensure that procedures for patient, sample and blood product identification and blood administration are robust and that any procedural errors and adverse events associated with transfusion are captured, analysed and acted upon. Finally and very importantly the collaborative sought to improve the patient and carers understanding of the risks and benefits of transfusion. “It was an ambitious program of work,” reflects planning group member Associate Professor Larry McNicol of Austin Health, “but there seemed little alternative other than addressing all of the interdependent processes that determine the quality and safety of transfusion. All elements in this chain of events contribute to the actual levels of transfusion safety. We would have ignored any one of these interlocking processes at our patients’ potential peril” Associate Professor McNicol concluded.

With support from the Clinical Innovation Agency and the planning group members, local multi-disciplinary hospital teams set out to deliver changes to improve transfusion safety. The collaborative methodology was initially developed by the Institute of Healthcare Improvement in the United States of America. It has been adopted and used by a large number of health systems internationally and within Australia. Its’ implementation within Victorian health care has been led by the Clinical Innovation Agency. It is based on answering three key questions and testing ideas through the plan, do, study, act cycles of change.

Model for improvement

Q1. What are we trying to accomplish?
Q2. How will we know that a change is an improvement?
Q3. What changes can we make that will result in improvement?

Planning group member Dr Chris Hogan from Melbourne Health reminds us of Don Berwick’s comments “all improvements involve a change, but not all changes are improvements”. Dr Hogan went on to explain that, “consequently not every idea tested will eventually be adopted or make a positive impact, but this approach has already yielded many real improvements in transfusion practices at Melbourne Health with clear improvements in patient safety”.

Individual projects monitored their progress using ‘run charts’ to record their measured performance. These indicate progress towards achieving locally set targets and collaborative improvement goals.
Our objectives can be translated into tangible benefits for patients requiring blood product transfusion. “Fundamental to the collaborative approach to improving transfusion practice is the belief that changes can be tested rapidly on a small scale without risk” explains collaborative clinical lead, Associate Professor Neil Boyce from the Australian Red Cross Blood Service. “For example, an idea can quickly be tried with one patient, one clinic or ward, a single consultant or hospital. Only if it proves successful will it be suggested for wider adoption as an improvement in care across an entire Health Service or system of care” Associate Professor Boyce emphasised.

Planning group member, Professor Sanchia Aranda, from Peter MacCallum Cancer Centre, reinforced the value of using a systematic method for translating ideas into practice such as that used by the collaborative. “The governance structures and teams established during our participation in the collaborative have helped us to identify key local issues and implement strategies to enhance the quality of our transfusion services to our patients” Professor Aranda commented. “As a result of a structured review of transfusion practices we have decided to require that the administration of red cells becomes a mandatory nursing competency. We have established training and assessment procedures to roll this out to all affected areas within Peter McCallum Cancer Centre”.

“Our aim is to ensure that the continued review and improvement of transfusion practices becomes an integral part of the way that clinical teams and hospital and system clinical governance structures work”, explains Professor Sanchia. “The role of the Department of Human Services and any other state or national bodies is to support this to happen. In essence we hope to build a series of improvement partnerships that all focus on optimising the quality of transfusion services and the outcomes of patients receiving transfusion during their clinical care”.

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**Example of run-time chart used in Blood Matters Collaborative**

- **Baseline** = 15%
- **Target** = 5%

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Blood matters: good news stories
Patient’s understanding of the risks and benefits of transfusion

Barwon Health
Bendigo Health Care Group

What was the problem?

At Bendigo Healthcare an April 2003 survey of patients who had received blood product transfusions in the previous three months revealed that only 37 per cent of patients recalled receiving any information (written or verbal) regarding their blood product transfusions. This result was in keeping with consumer research undertaken during the collaborative, which indicated that only one third of transfused patients recalled having been provided with any information on transfusion risks and benefits.

At Barwon Health the collaborative team wished to tackle the issue of informed consent for transfusions for elective cardiac surgical patients. They too had local survey data showing that very few elective cardiac surgery patients recalled receiving information on the risks and benefits of blood transfusion at any point during their patient journey.

Which change ideas were tested and proven to work?

At Bendigo Healthcare one-on-one academic detailing of consultants, hospital medical officers and presentations to nursing staff emphasised the importance of informed consent and the patient’s right to information regarding blood product transfusion. Nursing staff were encouraged to talk to their patients about their need for a blood product transfusion and the risks and benefits of transfusion.

An easily understood in-house brochure for patients with information regarding blood product transfusions, Better Blood for Bendigo, was developed in conjunction with a consumer focus group. The National Health and Medical Research Council (NHMRC)/Australasian Society of Blood Transfusion brochure Blood, who needs it? and Better Blood for Bendigo were made available in all clinical areas. Informed consent and risks and benefits of transfusion prompt cards for medical staff were provided in work areas, in effort to aid/prompt medical staff to talk to patients about transfusion issues.

A range of posters were developed to prompt staff to talk to their patients about issues related to transfusions and for patients and their families to talk to their nurse and doctor about blood product transfusions. These are displayed in patient waiting room areas and areas of high patient traffic, including lifts. These posters prompt patients to talk to their doctor and/or nurse about issues related to blood product transfusions and also to request the information brochures.

The Barwon Health team decided to ask anaesthetists to change their practice and include discussions about the risks and benefits of the giving of blood products within all discussions of the anaesthetic process with elective cardiac surgery patients. They asked that anaesthesia staff document this blood risk and benefit discussion on the patients preadmission anaesthesia assessment form. This was agreed and compliance championed through an anaesthetist medical leader of the collaborative team. All elective coronary artery bypass graft patients pre-operatively received a Blood who needs it? brochure from either their surgeon or cardiac rehabilitation co-ordinator. They were followed up post-operatively by the transfusion nurse to assess their recall of information provided.

What improvements were achieved?

Overall, patients seemed happy to receive information, related to blood product transfusions, with many requesting further information when given the opportunity. At Bendigo Healthcare a December 2003 patient survey revealed that 67 per cent of surveyed patients reported receiving transfusion related information (written or verbal). Interestingly 15 per cent of patients indicate that they do not wish to receive any information related to transfusion. Patient’s reported finding the patient information brochures, Blood who needs it? and Better Blood for Bendigo informative, with many patients commenting that the Better Blood for Bendigo brochure was very easy to read and understand.

At Barwon Health the proportion of elective cardiac patient with documentation of discussion of the risks and benefits of transfusion on the preadmission form rose progressively from zero through 38 per cent to an eventual stable plateau of 80 to 85 per cent. All pre-operative cardiac surgery patients who attend pre-operative clinics...
now receive the relevant brochure, as do all inpatients. One surgeon also has them available to present to the patients during his consultation.

The 'documented discussion' is to become a permanent area on the anaesthetic assessment sheet. The process of systematically documenting a discussion on transfusion risks and benefits is filtering through to other surgical specialties via common anaesthetists.

Currently 65 per cent of patients interviewed post-operatively at Barwon after cardiac surgery recall having had the discussion about transfusion risks and benefits. It was noted that the timing of these interviews was critical as on day four post-operative patients recall of most things was limited, but by day five and six post-operative they were well enough to recall a great deal more of that which had occurred pre-operatively.

Recommended reading


The appropriateness of clinical decision-making in the transfusion of fresh blood products

Barwon Health
Box Hill Hospital
Western Health

What was the problem?

Before the Blood Matters project began, there was little awareness or knowledge of the existence of transfusion guidelines or content of the National Health and Medical Research Council/Australasian Society of Blood Transfusion guidelines on use of fresh blood products within participant health services. Most transfusion decisions were not aligned with the recommended transfusion practices within these guidelines.

Baseline data in the cardiac surgery area at Barwon Health, which included intensive care staff, anaesthetic staff and surgical staff, showed only 40 per cent of relevant staff were aware of the existence of the guidelines and had knowledge of the recommended transfusion practices in the guidelines. At Western Health none of the initially surveyed staff were aware of the guidelines.

Box Hill Hospital reviewed transfusion practice across the hospital by auditing medical records for alignment in transfusion decisions with the NHMRC guidelines. Baseline results collected in March 2003 showed that none of the decisions to transfuse were consistent with the recommended practices in the guidelines (for example, decision alignment rate was 0 per cent).

Which change ideas were tested and worked?

At Box Hill Hospital academic detailing of all orthopaedic consultants, registrars and interns was commenced in April 2003. Education sessions and forums for nursing staff were also provided. Posters were displayed throughout the hospital advertising the Blood Matters project.

Regular audits of medical records were conducted and the results fed back to orthopaedic staff.

The National Health and Medical Research Council/Australasian Society of Blood Transfusion guidelines for fresh blood product transfusion were made widely available via the Blood Matters page on the intranet and the Clinicians Health Channel with hard copies given to relevant medical staff and departments. Identification badge sized guidelines were handed out to medical staff.

The guidelines were added to the hospital medical officer web page at the hospital to emphasise the need to base transfusion decisions on these guidelines. Clinical champions were identified in both the orthopaedic and anaesthetic areas to encourage alignment with the guidelines. Blood Matters project summaries of the audit results and general project progress were presented at a range of hospital committees and in staff newsletters.

The Blood Matters team reviewed alignment of decision-making with guideline audit results monthly and increased academic detailing with those staff that demonstrated consistently poor compliance with the guidelines.

At Barwon Health copies of the National Health and Medical Research Council/Australasian Society of Blood Transfusion guidelines were left in wards after ward in-services, for nursing staff. Copies of guidelines were left in prominent positions near doctors’ desks. Academic detailing of medical staff and senior nursing staff and small groups presentations were made. The guidelines were reformatted and presented to staff in a way that was convenient for them by printing them in identification badge size, allowing them to be with staff at all times. Access to the guidelines was provided on the intranet for all staff, and a summary of the guidelines was provided on the cover of all cross match requests pads.
What improvements were achieved?

At Box Hill Hospital alignment of clinical transfusion decisions with guideline recommendations increased over successive audit periods from a baseline of 0 per cent to 100 per cent. Staff are becoming increasingly aware of the importance of alignment with the guidelines.

Alignment of transfusion decisions with clinical guidelines

Despite these excellent results the team at Box Hill identify a number of challenges to sustaining appropriate transfusion decision-making. These include:

- quick rotation and turn over of staff
- the need to educate all staff involved in transfusion decisions
- means of gaining widespread interest in adoption of the guidelines
- getting medical staff to recognise and acknowledge that existing practice is not optimal and that there is a need to document transfusion decisions in the medical record.

Group education sessions for medical staff were felt to be relatively ineffective. Medical staff seemed to be fairly passive and not overly interested in the whole of hospital or whole of unit audit results. It would have been better to follow up the ‘repeat offenders’ whose transfusion decisions did not align with guidelines, one on one, rather than providing general information about poor alignment. Providing overall results seemed to provide staff with the opportunity to assume that others were making these off-guideline decisions, rather than requiring ownership of the results by those responsible for these transfusion decisions.

The transfusion team at Box Hill Hospital learnt to involve relevant scientists, laboratory and medical staff, nursing staff and allied health professionals early on so they were actively engaged in the pursuit of better transfusion practice. Open discussions about the guidelines, seeking input and comments for those involved in the decision to transfuse were essential. It was particularly important to gain endorsement for improvement efforts from those in power, in particular at Box Hill the orthopaedic consultant group and anaesthetic consultants. Gaining widespread support and adoption of the guidelines by anaesthetists proved complex and demanding. Persistence was the key to the shift in transfusion decisions to align with the guidelines. It was also important to maintain academic detailing programs, especially when there is change over of staff, with new medical staff rotating through relevant areas at regular intervals.

At Barwon Health the measures implemented led to an improvement in awareness about the transfusion guidelines from an initial 40 per cent to 78 per cent. With the arrival of new staff, knowledge and awareness fell to 59 per cent, but improved to a sustained 90 per cent. It is to be expected that there will be such a ‘see-saw’ effect as new staff appear in clinical areas, emphasising the need for continued education and monitoring efforts. The guidelines have now been implemented as a package to all clinical areas across Barwon Health. They are now permanently a part of the cross match request pad, which is utilised not only in Geelong Hospital but also in private hospitals for Geelong and general practitioners offices across Barwon Health. As new medical and nursing staff commence work in the nominated clinical areas, they will receive a guideline package and discuss the importance of transfusing in accordance with the recommendations of the guidelines with the transfusion nurse.

At Western Health similar strategies of academic detailing, provision of hard copy and electronic access to the guidelines and in-service education saw awareness and knowledge of the guidelines rise from a low base to a sustained 90 per cent plus by the end of the collaborative. As awareness was initially so poor - the major focus of academic detailing sessions was on the existence of the guidelines and means of addressing them. It was noted that there was little interest from clinicians in large volumes of written literature and handouts.

Not all clinicians agreed with the content of the guidelines and several questioned the relevance of the evidence supporting the guidelines, in particular the lack of contemporary Australian
research studies. Individual clinician socialisation and clinical affiliations underpinned long held beliefs regarding appropriate transfusion practice. As one clinician succinctly put it “I know what I am doing - I don’t need these guidelines”.

Some nursing staff were initially ambivalent about considering the transfusion guidelines as medical staff were seen as being solely responsible for the ordering of transfusions. When placed in the context of the role of the nurse in educating patients and being actively involved in treatment decisions, these nursing staff agreed that they did indeed have an important role in raising these issues during treatment discussions and decisions. As one of these nurse commented “I never thought about the nurses role in patient decisions regarding transfusion – it’s always just been something the doctors order and we give”.

**Recommended reading**


Mechanisms to capture any errors or adverse events associated with blood transfusion

Bendigo Healthcare Group
Box Hill Hospital
Peter MacCallum Cancer Centre

What was the problem?

The Blood Matters teams recognised that existing hospital adverse event reporting systems often did not take specific transfusion error and adverse events into consideration. Specific transfusion error and adverse event reporting systems were frequently underutilised.

There were typically no prompts for staff to know what, where and when to report in regards to transfusion events. Definitions of transfusion reactions were largely inadequate and transfusion adverse events definitions were also often unclear.

As a consequence of these failures there was major underreporting of error and adverse events related to blood product transfusion, with loss of the opportunity for organisations learning ways of prevention of future adverse events. Non-reporting also robs health services of an important means of identifying patterns of adverse events that might indicate problems with the safety and quality of particular batches of blood products.

Which change ideas were tested and worked?

Box Hill Hospital recognised that this area needed much improvement in procedures to both capture and respond to transfusion adverse events. They developed new specific reporting systems for transfusion related events and errors which linked easily into existing adverse event reporting systems. Their transfusion team initially focused on red cell transfusions in orthopaedic patients. They met with relevant medical and nursing staff to gain their support and involved the newly formed Eastern Health Transfusion Committee in supporting and endorsing new transfusion error and adverse event reporting measures.

There was no effective baseline data available at Box Hill Hospital as the old reporting systems were under-utilised and poorly understood, with no apparent evidence of transfusion adverse events or error. This was due to a failure of reporting of transfusion events from wards due to a lack of known reporting structures for transfusion events by staff working in clinical areas. There was also no documentation of transfusion events picked up within the laboratory.

At Box Hill the collaborative team decided to implement something that wasn’t just ‘another form to complete’. They developed the ‘B Tag’ in August 2003. The ‘B Tag’ was designed to streamline the whole reporting process and encourage reporting of all transfusion events. This ‘B Tag’ was attached to all red cells to be transfused on the orthopaedic ward. Nursing staff administering the transfusion completed the information required on the Tag. The ‘B Tag’ contained tick boxes for details such as date and time of transfusion, staff and patient and product identification. The ‘B Tag’ remained attached to the blood throughout the transfusion and was returned to the blood bank along with the empty bag. Initial reactions to the ‘B Tag’ were very positive with many staff interested in the new concept.

The transfusion nurse reviewed all red blood cell transfusions daily and measured ‘B Tag’ completion. If a ‘B Tag’ was incomplete, this was followed up (in a friendly manner) with staff involved. Feedback to the ward was provided along with the latest results of captured transfusion events and errors. Staff were able to see that something was being done with the data they were collecting and reporting. The capture of transfusion reactions increased dramatically and the Blood Matters team saw clear improvements in the culture of reporting adverse events and errors.

At Bendigo Healthcare oncology nursing staff spoke with the transfusion nurse following a presentation on the risk and benefits of transfusion mentioning delayed transfusion reactions. It was recognised that the majority of patients receiving blood product transfusions in the oncology unit were discharged home shortly after completion of transfusions. A need was identified for post transfusion information for the patients, so that patients would be aware of what to do in the event of experiencing a delayed transfusion reaction.

Once the need for post transfusion patient information was identified at Bendigo, a suitable patient brochure was developed and trialled on transfused oncology patients. The draft brochure went to a patient focus group and members of the Blood Matters Collaborative team for comment.
The final brochure was available and being used within two weeks of a need being identified.

At the Peter MacCallum Cancer Centre an initial trial in a haematology unit with high blood usage involved asking clinicians to ring the transfusion nurse for any event that occurred involving transfusion (untoward clinical transfusion reaction/ procedural problem/ clerical error). An answering machine was set up to take these calls if the transfusion nurse was unavailable.

Peter MacCallum Cancer Centre also embarked on a hospital wide trial for improving the reporting of transfusion events by clinicians, based on including transfusion event reporting within the hospital wide incident report form. This report form includes a prompt for staff to notify blood bank of their completion of the report so that immediate advice can be given and actioned to reduce the impact of the adverse event taken if necessary. The clinical risk manager and the transfusion nurse undertook intensive education to all clinical areas when this form was introduced. A summary card covering the essentials of transfusion adverse events worn on the hospital identification badge was provided to staff. This highlighted the events to be reported and the mechanism for reporting.

In the mandatory nursing competencies for the ‘administration of red cells’ recently introduced at Peter MacCallum Cancer Centre there is a requirement that all nurses understand the transfusion related adverse reactions and the method for reporting adverse reactions. This information is also routinely included in the orientation program for the hospital medical officers and nursing staff.

The hospital blood bank at Peter MacCallum Cancer Centre implemented a paper based reporting system to report adverse events, including request form and specimen labelling errors. All these events are later entered into a purpose-built local hospital database and reports are regularly presented to their transfusion committee.

What improvements were achieved?

At Peter MacCallum Cancer Centre the telephone reporting of events to the transfusion nurse was a successful venture. It was felt that for the roll out across the hospital it would be preferable to have the blood bank as the initial port-of-call (as it is staffed 24 hours a day). The hospital-wide reporting initiatives are generating regular event reports for analysis by their hospital transfusion committee.

The Bendigo Hospital initiative has not as yet identified any delayed transfusion reaction; it has however raised staff, patient and carer awareness of the potential for such reactions and their preparedness to manage any future reactions.

The Box Hill Hospital ‘B Tag’ increased adverse event reporting dramatically. Initial results showed ‘B Tags’ returned in around 63 per cent of all transfusions. This return rate gradually increased over time. ‘B Tags’ were implemented hospital wide for all blood components in October 2003. Data on 95 to a 100 per cent of all transfusions are now being captured, with return of the ‘B Tags’ to the blood bank transfusion practices have improved with an increased recognition and awareness of those areas where errors were likely to occur. Their current transfusion adverse event rate is sitting at an all time low of 0.7 per cent of every single unit of red cells, platelets, fresh frozen plasma and cryoprecipitate.
Compliance with critical protocols and procedures governing the ordering, handling and administration of blood products

The Alfred
Western Health

What was the problem?

The most serious transfusion errors arise when the wrong blood is given to the wrong patient. The United Kingdom SHOT (serious hazards of transfusion) and many other haemovigilance reports detail accounts of 'near misses' and fatalities. These result from errors at ward and laboratory levels involving incorrectly labelled samples, mishandling of blood products and misidentification of transfused patients.

The major contributory factors identified in investigations of these errors are a failure to have appropriate policies, procedures and protocols for critical care processes and/or the failure of staff to be cognisant of these instructions or to adhere to them.

The use of automated, pre-printed labels for blood group and cross match specimen tubes is a common contributing factor in 'wrong blood to wrong patient' events. Hand written labelling for group and cross match specimens is recommended as best practice to ensure optimal patient outcomes of transfusion.

Examination of the Western Health policy for labelling of group/cross match tubes revealed that the use of automated, a pre-printed labels was not allowed. However a review of the pathology policy revealed that whilst hand labelling was required, specimens labelled with pre-printed label were accepted and processed if used in error and signed by the collector. An audit of all group and cross match tubes received by the blood bank at Western Hospital revealed that only 49 per cent of these specimen tubes complied with the Western Health labelling policy and that pre-printed labels were being used to label over half of the specimens. An impromptu survey of clinical staff inwards and specialty areas revealed that not only was there a general view that it was acceptable to use an automated label but that many staff believed the policy had been changed to accept pre-printed labels for this purpose.

At The Alfred Hospital local guidelines for the labelling of pre-transfusion specimens were developed and posted on the hospital intranet in 2002. These guidelines reflected those of the Australian and New Zealand Society for Blood Transfusion. Although these local guidelines had been in place since 2002 staff surveys in 2003 demonstrated that staff were not aware of the guidelines and blood bank scientists were not rejecting specimens that did not meet the criteria set out within these guidelines.

Which change ideas were tested and worked?

At Western Health

- The clinical policy for the identification of patients and collection of group/cross match specimens and the pathology policy for the labelling of group/cross match tubes were revised and made consistent.
- The stock of group/cross match tubes were removed from all clinical areas and replaced with tubes with a much larger label that accommodated hand labelling.
- Labels that allowed for hand written labelling of paediatric specimen tubes were produced and distributed to relevant clinical areas.
- A poster including written and visual depiction of correct labelling of specimens was developed and displayed in all nursing and medical education venues.
- A process for reporting labelling errors/non-compliance with policy was established between Pathology and the Clinical Risk Manager. Monthly reports are tabled at the Transfusion Committee.
- The revised policy was forwarded to all unit and department heads with a covering letter from the Blood Matters executive sponsor advising of the implementation date and that the transfusion nurse would be visiting all areas prior to this date.
- A moratorium of one month prior to the implementation of the policy was given to allow dissemination of information to all clinical and laboratory staff.
- The transfusion nurse undertook audits of compliance in the week following implementation and results were fed back to all clinical areas. The transfusion nurse targeted areas of non-compliance for further education.
At The Alfred a program for raising awareness of the labelling criteria included:

- in-service education and informal education of staff by the transfusion nurse and ward based clinical nurse champion
- posters of pictorial representation of the pre-transfusion specimen labelling criteria
- the development and use of a ‘Quality’ board display to update staff on Blood Matters activities
- enlisting a nursing and medical clinical leader to champion the project
- increasing awareness of the proposed criteria:
  - memo sent to all emergency department staff outlining the criteria
  - clinical nurse leader meeting with staff during daily handovers for the first two weeks of the trial
  - clinical medical leader discussing the proposal with medical staff at emergency department forums
  - utilisation of the emergency department clinical educators
  - auditing /feedback of results to clinicians via attachments to payslips to capture all staff.

What improvements were achieved?

The percentage of accurate and complete tube labelling in accordance with Western Health policy has increased from 49 per cent in April 2003 to 97 per cent in December 2003. At The Alfred, specimen labelling in accordance with local guidelines was increased to 80 to 95 per cent. The Alfred team believe that sustained improvement in compliance with labelling guidelines will require that laboratory staff reject specimens that do not fully comply with their organisational pre-transfusion specimen labelling criteria.

Both hospitals noted that it took considerable time to revise policies and align all hospital labelling policies. There are particular difficulties with revising pathology policy, as pathology is a shared service that often services other hospitals that did not have hand labelling as mandatory.

Resistance by some clinical areas, particularly emergency medicine, to hand labelling was noted. “We’ve never been supposed to use them” stated one emergency department registered nurse. Considerable time is required to explain clinical risk issues underpinning change. “If it stops someone getting the wrong blood it’s a very good thing” concluded another emergency department staff member, and laboratory staff were supportive. As one medical scientist at Western Health stated, “It’s great to have clear cut rules on what we accept and what we don’t”.

Recommended reading


Blood matters: new ways of working
Transfusion teams: new ways of working

Many of the improvements in transfusion practice achieved within the Blood Matters Collaborative have been achieved with relatively few new resources. The main resource for all breakthrough collaborative teams has been time and organisational support, so that teams can look at the way care is delivered and see how these systems can be improved. Doctors, nurses, managers, quality improvement staff, medical scientists and staff from every part of the healthcare system have come together to examine the transfusion services that they provide their patients, to consider what could be made better, and to work together to make improvements for their patients.

Central to the overall success of these efforts has been the operations of a core ‘transfusion team’, consisting of a medical leader, a transfusion nurse and a medical scientist with expertise in transfusion. As indicated by planning group member, Professor Miles Prince from Peter MacCallum Cancer Centre, “this core group was instrumental in overseeing the trial, assessment and bedding down of process changes to improve transfusion safety at Peter MacCallum Cancer Centre. They worked closely with the hospital’s Transfusion Committee, providing an essential on-the-ground resource to monitor levels of performance of transfusion practices and identify areas warranting improvement and facilitate improvements in current practices”.

The collaborative has provided a forum for clinical teams from across Victoria and Tasmania to come together and to learn about how they deliver transfusion services. Collaborative Chair, Professor Marcus Kennedy of Melbourne Health stressed that “teams have tested ideas out with each other, learned from each other’s failures, and plagiarised the changes that have worked. Many of the improvements that have been made are not due to inventing new ideas but are due to the application of an existing idea that has already been shown to work well elsewhere”.

Establishment of local ‘transfusion teams’ provided a tension for change. “Long established habits and practices were viewed with fresh eyes,” reports Western Health’s transfusion nurse Susan McGregor. “During discussions with clinical staff regarding the labelling of group & cross-match tubes it became apparent that the manner in which fresh frozen plasma was thawed on the wards was inappropriate. Further review revealed that equipment for thawing fresh frozen plasma was not available despite statements to that effect in the relevant hospital policy. This was referred to the transfusion committee and as result policy and practice were changed. All fresh frozen plasma is now thawed in blood bank prior to issue using an appropriate temperature controlled water bath optimising integrity of the product and minimising product wastage”.

“It also became apparent that there was no policy regarding patient identification in place at Western Health” Susan explained. “Such a policy has since been developed by the Blood Matters executive sponsor (Divisional Manager of Surgery) and Clinical Risk Manager in conjunction with the Western Health Quality Committee. This formalised policy on patient identification at Western has undoubtedly enhanced patient safety”.

Ward visits and discussions with transfusion nurses often exposed transfusion practices that warranted review, Susan went on to explain. “Special care nursery staff did not have appropriate equipment to utilize paediatric red cell packs readily from Australian Red Cross Blood Service for neonatal transfusion. As a consequence small volumes of blood were being drawn from adult packs and the remainder discarded. This represented an unacceptable waste of a precious resource and exposed staff to unnecessary risks. Similarly there were no giving-sets with an in-line micro-aggregate filter. The far more expensive leucocyte removal filters were being used for all transfusions adding unwarranted cost to every transfusion. The appropriate equipment has been located. As a result staff exposure to infection risks and wastage of blood has been decreased, whilst cost savings have been achieved by preventing the use of leucocyte removal filters for all transfusions”.

In a similar vein, Meryanda Jodoin the transfusion nurse at Bendigo Hospital noted several benefits from the introduction of a ‘transfusion team’ at her hospital. “We were able to develop things that were not directly related to our specific project aims. These included a Jehovah’s Witness guideline for hospital treatment in regards to blood products; a ‘do’ and ‘don’t’ picture poster for all pathology specimen transport chutes – outlining what can and cannot be sent through the chute; and compatibility tables for red cells and fresh frozen plasma – describing what blood groups are
transfusion compatible. These tables have boosted confidence of nursing staff involved in transfusion and increased general staff knowledge in regards to blood transfusion” reports Merryanda. “Theatre stamps for urgent blood requests have also been introduced – facilitating communication between theatre and blood bank and improving the efficiency of service delivery by blood bank to theatre patients with urgent transfusion needs”.


Blood matters: summary
Report from the clinical lead for the Blood Matters Collaborative

For the first time in the 75-year history of blood transfusion in Victorian hospitals a concerted, system-wide effort has been made to identify and implement best practice in the series of inter-related care processes within hospitals required to see optimal transfusion outcomes. During the life cycle of the Blood Matters Collaborative we have successfully harnessed the considerable enthusiasm and creativity of our clinical teams. We have seen a large number of changes in the way we approach the delivery of safe and appropriate blood transfusion within these participant hospitals.

The Blood Matters Collaborative has forged an alliance of consumers, ward and laboratory medical staff, medical scientists, quality improvement and clinical risk management experts, clinical nurses and executive managers to focus on identifying and trialling a myriad of local improvements in transfusion-related care processes. These were people ‘at the coal face’ having ideas and trying to implement these ideas within their local context. Many of these ideas translated into significant improvements in the care of patients facing blood transfusion. By this we mean there has been widespread improvement in the quality and safety of transfusion practice within selected wards, clinics and processes of care in participant hospitals.

There are numerous excellent examples of practical changes in care delivery that improved transfusion care from teams in the collaborative. This report highlights a handful of examples to demonstrate the range of approaches and results achieved.

A major theme of the collaborative has been the establishment (or strengthening) of local hospital ‘transfusion teams’. This multidisciplinary team draws upon the knowledge and skills of relevant medical staff, specialist nurses, managers and medical scientists to support optimal transfusion practice within their hospital. These ‘transfusion teams’ act as an engine for the hospital’s ‘transfusion committee’ or equivalent governance body. They typically drive change by identifying opportunities for improvement and then encourage those involved in the relevant care processes to design and trial changes that are believed likely to lead to improvements in transfusion care.

The collaborative has developed a specialised curriculum to suitably equip specialist ‘transfusion nurses’ to play a pivotal role in transfusion safety. This curriculum is now available to any interested party as a distance education product delivered by the University of Melbourne. It is clear from the experience of the Blood Matters Collaborative that these specialist transfusion nurses make major contributions to local ‘transfusion teams’ and have a great deal to offer in guiding improvements that deliver safer and more appropriate transfusion within our hospitals.

There is no reason that clinical nurse consultant; clinical nurse specialist and nurse practitioner roles cannot evolve within the multi-disciplinary team contributing to transfusion safety. These transfusion nurse roles offer a great deal of scope for enhancing the quality and safety of transfusion in our hospitals. Our health services need to embrace these skilled nursing professionals and work with nursing educators to further develop the potential of this emerging specialist nursing role. We look forward to following-up those nurses and health services who contributed to the successes of the Blood Matters Collaborative to find out how these roles are progressing.

Too often in the past we have focused blood safety initiatives on means of enhancing the microbiological safety of blood products within central blood banks. The prevention of transfusion-transmitted infections clearly remains a high priority in blood safety. Blood Matters has demonstrated the ability of coordinated hospital-based initiatives to improve upon the already enviable safety of blood transfusion in Victoria and Tasmania. It provides a foundation of knowledge and expertise to support continued system-wide efforts to enhance transfusion safety. It is essential that we continue with a program of hospital-based endeavours to embed the practice improvements achieved through Blood Matters into everyday care in participant hospitals, spread these better practices into all hospitals that transfuse blood and establish mechanisms to ensure that we seek optimal outcomes for those of our patients requiring transfusion support into the future. To that end Victoria is launching an ongoing state-wide ‘Better, safer, transfusion program’ to guide such enduring improvement efforts to improve transfusion outcomes.

There can be no doubt that blood products are an increasingly precious community resource and
that our community has very high expectations in terms of transfusion safety. The way has been opened for those of us who participate in any aspect of the chain of interdependent processes required for safe and appropriate blood transfusion to continue efforts across all levels of healthcare to deliver the best possible patient outcomes with the available blood product resource.

I thank all those who contributed to the success of Blood Matters, in particular my colleagues at the Australian Red Cross Blood Service, Peter MacCallum Cancer Centre and Melbourne Health who were instrumental in conceiving the program and my fellow planning group members who led the delivery of the collaborative improvement program. I look forward to seeing continued interest ‘on the ground’ in our hospitals in optimising transfusion outcomes and an enduring focus by those charged with clinical and health systems governance at various levels in requiring excellence in transfusion practice.

Our patients and those who so generously donate blood should expect no less of us as responsible healthcare professionals working to continuously improve the systems in which we work.

Associate Professor Neil Boyce
Transfusion Medicine Specialist
Australian Red Cross Blood Service
Blood matters: participants
### Participating Health Services

<table>
<thead>
<tr>
<th>Health Service</th>
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<tbody>
<tr>
<td>Austin Health</td>
<td>Studley Road, Heidelberg 3084</td>
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<td>Bayside Health</td>
<td>P O Box 315, Prahran 3181</td>
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<tr>
<td>Bendigo Hospital</td>
<td>PO Box 126, Bendigo 3552</td>
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<tr>
<td>Barwon Health</td>
<td>PO Box 760, Geelong 3220</td>
</tr>
<tr>
<td>Eastern Health</td>
<td>C/- Box Hill Hospital, 16 Arnold Street, Box Hill 3128</td>
</tr>
<tr>
<td>Melbourne Health</td>
<td>Level 10, Charles Con nibere Building, Flemington Road, Parkville 3050</td>
</tr>
<tr>
<td>Northern Health</td>
<td>201 Bell Street, Preston 3072</td>
</tr>
<tr>
<td>Peninsula Health</td>
<td>P O Box 52, Frankston 3199</td>
</tr>
<tr>
<td>Peter MacCallum Cancer Centre</td>
<td>St Andrews Place, East Melbourne 3002</td>
</tr>
<tr>
<td>Royal Hobart Hospital</td>
<td>48 Liverpool, St Hobart 7000</td>
</tr>
<tr>
<td>St Vincent’s Health</td>
<td>P O Box 2900, Fitzroy 3065</td>
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<tr>
<td>Southern Health</td>
<td>Locked Bag 29, Clayton 3168</td>
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<tr>
<td>Western Health</td>
<td>Gordon Street, Footscray 3011</td>
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### Planning Group Members

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<tr>
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<td>Dr Chris Hogan</td>
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<td>Professor Marcus Kennedy</td>
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<tr>
<td>Mr Geoff Magrin</td>
<td>The Alfred Hospital</td>
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<td>Mr Lee Martin</td>
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<tr>
<td>Associate Professor Larry McNicol</td>
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<tr>
<td>Ms Tania Nallathamby</td>
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<td>Dr Helen Savoia</td>
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<td>Dr David Skewes</td>
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<td>Mr Trevor Sutherland</td>
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<td>Professor Gordon Whyte</td>
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Blood matters: resources
## Resources

**Examples of Blood Matters improvement tools**

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<td>Staff handout</td>
<td>FAQ</td>
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<td>Staff poster</td>
<td>Blood sampling</td>
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<td>Does your patient know about the risks and benefits of blood product transfusion?</td>
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<td>Barwon Health</td>
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<td>Pathcare minimum requirements for cross match collection</td>
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<td>Barwon Health</td>
<td>Staff newsletter</td>
<td>Clinical alert: delayed transfusion reactions</td>
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<td>Staff ID badges</td>
<td>Clinical decision information</td>
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<td>Adverse reaction cards</td>
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<td>Austin Health</td>
<td>Patient information brochure</td>
<td>Transfusion of blood and blood products</td>
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<td>Melbourne Health</td>
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<td>Blood product transfusion orders and adverse reactions form</td>
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<td>Staff form</td>
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<td>Registered nurse/RMO blood product checklist</td>
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<td>Registered nurse checklist for administration of blood products</td>
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<tr>
<td>Western Health</td>
<td>Staff learning package</td>
<td>Storage, collection and administration of blood components</td>
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<td>Southern Health</td>
<td>Staff information sheet</td>
<td>Blood filters information sheet</td>
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<td>Peter MacCallum Cancer Centre</td>
<td>Staff learning package</td>
<td>Self directed learning package and competency tool on the administration of red cells</td>
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<td>Eastern Health</td>
<td>Staff tagging system</td>
<td>Box Hill Hospital B tags</td>
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<tr>
<td>Southern Health</td>
<td>Staff protocol</td>
<td>Collecting a specimen of blood for crossmatching protocol</td>
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1. St Vincent’s Health – Question and Answer Sheet

- **What does NHMRC stand for?**
  Answer: National Health and Medical Research Council. The guidelines were produced in cooperation with the Australasian Society of Blood Transfusion (ASBT). They aim to support clinical decisions about the use of RBC/platelets/FRESH FROZEN PLASMA and Cryoprecipitate and promote appropriate use of blood components to optimize patient outcomes.

- **What is the recommended lowest Haemoglobin threshold?**
  Answer: 70g/l. Decisions should take into account individual patient needs. Refer to the Guidelines posted around the ward or in the ward resource folder.

- **When were the NHMRC Guidelines distributed?**
  Answer: 2001

- **When are Platelets ideally indicated?**
  Answer: Bone marrow failure at a platelet count of 10 in the absence of risk factors and 20 in the presence of risk factors. Surgery/invasive procedure to maintain platelet count at 50. For high-risk procedures it may be appropriate to maintain platelets at 100. Platelet function disorders - inherited acquired disorders. Bleeding – thrombocytopenia. Massive haemorrhage/transfusion.

- **How long do Red Blood Cells and Platelets have to be run over?**
  Answer: Red Blood Cells – maximum of 4 hours, but can be less given the patient’s clinical condition/health history

  Platelets – 20 minutes
  Both through a standard Baxter bloodline with the inline filter.
2. Bendigo Health Care Group – Blood Sampling

WHEN YOU DRAW BLOOD FROM A PATIENT FOR GROUP & HOLD +/- CROSSMATCH, HAVE YOU?

- Have you checked the patient’s identification details of name, date of birth and address with the patient (if he is competent to do so) for verification?

- Do not ask the patient “Yes or No questions”, i.e. “Are you Mr John Alex Smith?”, instead, ask him to state his full name and date of birth etc. If the patient is not competent due to age or condition, his details may be confirmed with a family member (if present).

- Checked that the identification details on the Blood Product Request form match the information on the patient’s identification band?

- Did you fill out the patient’s details on the blood tube, at the patient’s bedside ONLY after you had taken the blood sample?

- Do not pre-label blood tubes for Group & Hold +/- Crossmatch or label the tubes post-sampling in a location away from the patient’s bedside. Don’t forget to also place your signature on the blood tube.

- Bradma label may be used on the Blood request form, BUT blood sample tubes should be hand labelled at the bedside.

- Have you signed the Collecting Officers declaration at the bottom of the Request for Blood form?

- Only sign the Collecting Officers Declaration if YOU were the one to take the blood sample. Do not sign this declaration on someone else’s behalf!

If you have any further questions please contact the
Transfusion Nurse on Ext: 9091
Blood Bank on Ext: 8973
3. Bendigo Health Care Group – Does your patient know about the risks and benefits of blood product transfusion?

DOES YOUR PATIENT KNOW ABOUT THE RISKS AND BENEFITS OF BLOOD PRODUCT TRANSFUSION?

The patient information brochures, ‘Blood- Who needs it?’ and ‘Better Blood for Bendigo’ available at the Nurses Station.

For further information, please contact M. Jodoin, Transfusion Nurse on ext: 9091
BARWON HEALTH & PATHCARE MINIMUM REQUIREMENTS FOR CROSSMATCH COLLECTION

**MUST BE CLEARLY AND LEGIBLY HANDWRITTEN**

**Minimum details:**
- Full name (Surname and given name)
- Date of Birth

**Hospital/Location**
- MUST BE CLEARLY AND LEGIBLY HANDWRITTEN

**Number of units required / or GAH**

**Date /time required**

**For legal reasons**
Collectors name must be printed and signed at time of collection

**Diagnosis and reason for Transfusion**

**Has the patient been transfused or pregnant in the last 3 months?**

**Signature of requesting Medical Practitioner**

**TUBE REQUIREMENTS - NO STICKY LABELS WILL BE ACCEPTED**
- Collect a 6ml 'pink top' EDTA tube
- Tubes MUST be handwritten – Surname, given name, DOB, UR if available, date and time of sample, ward and signature.

**PLEASE CHECK ALL DETAILS BEFORE SENDING TO THE LABORATORY AS INCORRECT LABELLING MAY LEAD TO DELAYS IN CROSSMATCHING**
Recently a Barwon Health patient was diagnosed with the rare complication of Post-Transfusion Purpura following a red cell transfusion. Below is a summary of the complication and management.

### Post Transfusion Purpura

**Clinical features:**
- PTP has an estimated frequency of one in 50,000 Transfusions. (Shot Report 2000/01, Serious Hazards of Transfusion, UK)
  - Thrombocytopenia
  - Usually 5-10 days after transfusion
  - Often severe +/- purpura /bleeding
  - Recovery of platelets within 7-10 days

**Treatment:**
- May not need any treatment if not bleeding
- Most cases will resolve spontaneously within a week, but up to 7 weeks if no treatment offered
- Steroids
- Intragram (IVIG)
- Therapeutic Apheresis {controversial and rarely required}
- Splenectomy {controversial and rarely required}
- Platelet Transfusions- generally little value: antigen positive platelets destroyed by antibody, introduce more antigen, consider if serious bleeding, can give antigen negative platelets though difficult to find they are accessible through the ARCBS on request.

Be aware of all acute and delayed reactions with all blood components and notify Blood bank and risk man for investigation. Prompt reporting ensures patients receive appropriate treatment.

### The "3R’s": Recognise -- React-- Report

6. Barwon Health – Clinical Decision Information for ID Badges

### RED BLOOD CELLS

- Decision to transfuse is based on:
  1. Clinical Assessment of the patient
  2. Patient’s response to previous transfusions
  3. Haemoglobin (g/L)
     - >100: Unlikely to need it
     - 70-100: Yes, if lack of impaired oxygen transport and surgery with major blood loss
     - <70: Yes, but may be withheld if asymptomatic

### FRESH FROZEN PLASMA

- Appropriate use
  1. Single factor deficiencies – if specific factor is unavailable
  2. Warfarin reversal – with major bleeding, use in addition with Vit. K.
  3. Thrombotic Thrombocytopenia purpura
  4. If bleeding occurs with abnormal coagulation:
     a. Acute DIC
     b. Massive transfusion
     c. Cardiac Bypass
     d. Liver Disease
  5. INR >1.5 with ongoing bleeding

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<td>1. Fibrinogen deficiency - with clinical bleeding, DIC, Trauma or an invasive procedure, to maintain Fibrinogen &gt;1.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>PLATELETS – To prevent bleeding</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bone Marrow Failure</td>
</tr>
<tr>
<td>- &lt;10,000/μL with no risk factors</td>
</tr>
<tr>
<td>- &lt;20,000/μL with risk factors, Fever, antibiotics, systemic hematostatic failure</td>
</tr>
<tr>
<td>2. Most surgery and invasive procedures - to keep count &gt;50</td>
</tr>
<tr>
<td>3. Surgery with serious bleeding complications i.e. Ocular/Neuro - to keep count &gt;100/μL</td>
</tr>
<tr>
<td>4. Platelet Function Disorders - inherited or acquired.</td>
</tr>
<tr>
<td>- transfusion need depends on clinical setting</td>
</tr>
<tr>
<td>5. Bleeding - when thrombocytopenia is a major contributor</td>
</tr>
<tr>
<td>6. Massive Hemorrhage / Transfusion - when low platelet count or function is a contributor</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>CRYOPRECIPITATE</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Fibrinogen deficiency - with clinical bleeding, DIC, Trauma or an invasive procedure, to maintain Fibrinogen &gt;1.0</td>
</tr>
</tbody>
</table>
## BLOOD PRODUCT ADMINISTRATION INFORMATION

<table>
<thead>
<tr>
<th>Product</th>
<th>Components</th>
<th>Administration</th>
<th>Storage</th>
</tr>
</thead>
</table>
| **PACKED RED CELLS**            | Red blood cells  
Volume ~300mls | Must commence within 30 minutes of collection from Blood Bank. Maximum administration time is 4 hours | Fridge  
Temperature controlled at 4 – 6°C  
Shelf life 42 days |
| **PLATELETS**                   | Platelets  
Plasma  
Volume ~ 200mls  
>240x10⁹/L plt count | Stat – 30 minutes | Room Temp  
22 – 24°C  
Never refrigerate  
Shelf life 5 days |
| **FRESH FROZEN PLASMA (FFP)**   | All clotting factors  
Plasma  
Volume = 150mls / 300mls per bag | Minimum 30 minutes per unit unless emergency / massive blood loss | Freezer –30°C  
Takes approx 20 mins to thaw  
Shelf life 5 days  
post thaw @ 4-6°C |
| **CRYOPRECIPITATE**             | Fibrinogen, FVIII, FXIII & vWF  
Plasma  
Volume = 30 mls | Stat – 15 minutes | Freezer –30°C  
Takes approx 10 mins to thaw  
Shelf life 6 hours  
Post thaw |

To ensure correct storage, prevent wastage & enable products to be reused **RETURN** to Blood Bank if administration delayed longer than 30 minutes from time of collection.
### Blood Product Transfusion - Adverse Reactions

#### MINOR

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Possible Reaction</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Chills, unexpected fever ( &gt; 38°C), nausea, vomiting, headache, rigors.</td>
<td>Non haemolytic, Septic, Bacterial contamination</td>
<td>Stop transfusion, Maintain IV access, Seek urgent MO advice, monitor vital signs</td>
</tr>
<tr>
<td>2. Localised hives, rash, flushing, wheeze, hypotension</td>
<td>Allergic/Anaphylactic</td>
<td>Stop transfusion, Contact MO, Monitor vital signs</td>
</tr>
<tr>
<td>3. Dyspnoea, productive cough, pink frothy sputum, hypertension</td>
<td>Fluid overload</td>
<td>Sit patient upright, administer O₂ therapy, stop transfusion, contact MO, monitor vital signs, maintain IV access,</td>
</tr>
</tbody>
</table>

---

**All transfusion reactions must be documented in the patient’s medical record.**

---

#### MAJOR

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Possible Reaction</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Chills, back pain, ooze from IV insertion site, pain at insertion site, hypotension, haemoglobuliaemia, patient has feeling of impending doom</td>
<td>ABO incompatibility / Haemolytic reaction</td>
<td>Immediate action Stop transfusion, maintain IV access, vital signs, Contact MO URGENTLY / MET call Return blood bag to Bloo Bank with specimens collected from patient &amp; completed transfusion reaction form Notify Haematology registrar</td>
</tr>
</tbody>
</table>

---

Complete transfusion reaction form for all major transfusion reactions

Further information available on Nursing standards Intranet site
Transfusion of blood & blood products

This handout has been prepared to answer your questions about having a blood transfusion and explain what you may expect to happen when having your transfusion. There are a number of products that come from blood and you may be given one or more of these products depending on your individual case.

This handout is not intended to replace discussion with your doctor, nurse, or other members of the health care team. Please feel free to ask any questions. You may find it helpful to write down your questions when you think of them.

Further Information
If you have any questions contact the phone number below

Department details/ phone number

Liaison Nurse __________________________
Austin Health 94965000

References.
www.nhmrc.gov.au (National Health & Medical Research Council)
www.arcbs.org.au (Australian Red Cross Blood Service)
www.ansbt.org.au (Australian & Society of Blood Transfusion)

Produced by: ©Tamla Tait - Transfusion Nurse
Blood matters Collaborative Project

Date produced: September 2003
Date for review: September 2005

Staff please insert contact details on back.
Blood

What is Blood?

Blood moves through our bodies in arteries and veins to carry oxygen and food to the cells and carry away waste. Blood is made up of two main parts, the cells and the fluid. There are 3 main types of cells. These are:

- Red blood cells: - these cells carry oxygen and remove waste. When you are anaemic you don’t have enough of these cells.
- Platelets: - these cells stick together & become the plug to stop bleeding.
- White blood cells: - these cells fight infection.

Plasma: - this is the fluid part of your blood that contains substances, which help your blood to clot. Plasma may be divided into different substances; the most common ones are fresh frozen plasma and cryoprecipitate.

Where do blood products come from?

The Australian Red Cross Blood Service collects blood from Volunteer donors.
You may like to keep a record of your blood group and the number of transfusions you have had.

**Blood Group = ________________________**

### Why do I need a blood transfusion?

Your doctor will tell you why you need a blood transfusion. Don’t be afraid to ask why you need a blood transfusion.

You may require a blood transfusion for a lot of different reasons.

- Some people will need a single emergency transfusion after an accident or major surgery.
- You may be having or have had an operation where you may lose or have lost some of your blood.
- You may have an illness that affects the way your blood cells work.
- You may be having treatment for cancer which affects the way your body makes blood cells.
- You may have blood loss caused by some other illness or condition.
- If you are not able to make enough blood clotting factors.

The type of blood product you need will depend on your illness or injury. You may be given one or more of the different kinds of blood products. Your doctor will only order blood or blood products for you if you really need them.
Benefits

Blood is used in many different medical situations

- If you have an accident or surgery where you lose a lot of blood. Replacement of blood can save lives.
- It can make you feel better and make your quality of life better if you have an illness that lasts a long time, which affects your blood.
- If you have anaemia - which is where you do not have enough red blood cells or haemoglobin. As oxygen is carried by the haemoglobin on your red cells to the rest of your body. You may feel tired, short of breath, tight in the chest and look pale. A blood transfusion will replace the red blood cells and make you feel better.

What Are the Common Side Effects & Risks of Blood Transfusion?

- The most common side effect is a fever or you may also feel cold and develop the "shakes". This will last a short time only and is easily treated
- Some people may feel short of breath, or feel some chest tightness. This may happen as your body adjusts to having extra fluid from the transfusion. This is also easily treated with medication to help your body get rid of the extra fluid.
- You may develop a skin rash. The rash will not last for long & again this is easily treated with medication
- If you receive a different type of blood to your own or you are sensitive to something in the donor’s blood, symptoms such as headache, burning feeling along the vein that has the "drip", back pain, or shortness of breath may occur. This is rare.

Informed Consent

Before any medical procedure is carried out, you (or a family member) will be asked to give permission or consent. This may be verbal or written. You should be given information about the benefits and risks of transfusion. You should be involved in deciding what is the best treatment for you.

Checklist

- Do you understand why you may need a blood transfusion?
- Have the risks & benefits of blood transfusion been explained to you?
- Do you understand the alternatives to blood transfusion
- Have all of your questions been answered?

Please ask any questions if there is any part of your treatment that you do not understand.

You will be watched closely while you are having your transfusion for signs of any transfusion reactions.
**After The Transfusion?**

**Outpatient**
If you have just come in to hospital for the day to have your transfusion, once the transfusion is finished you will have the "drip" removed from your arm and go home.

**Inpatient**
Once your transfusion is finished the "drip" may or may not be removed depending on what other treatment you need.

If you have had an operation remember to ask your Doctor if you were given any blood during your operation /surgery.

**Are There Any Alternatives To Blood Transfusion?**
Alternatives to blood transfusion are continually being developed. Improved surgical methods are used to decrease the amount of blood loss and reduce the need for blood during operations. However, the risks of NOT having a blood transfusion when you do need one are greater than the risks of having the transfusion.

**Can I Use My Own Blood?**
Some people prefer to use their own blood if needed for surgery. Blood is collected from you before surgery and stored for you. This is called autologous (or - tol - o - gus) blood. Autologous blood collection is not suitable for everyone and your doctor can discuss the risks and benefits with you well before your surgery. As blood from blood donors undergoes rigorous testing, there is little benefit to using your own blood.

**Please tell the nurse immediately** if you feel unwell at any time or feel you have any of the above symptoms. Ask questions if you would like more information or are not sure of something any time during your transfusion. There are many steps involved to ensure you get the right blood, for the right reason.

All blood donors are checked and questioned before donating. Donors who have been in contact with any hazard are not allowed to give blood. The blood is then tested for viruses such as HIV, AIDS and hepatitis that may be passed on to the person having the transfusion. Any infected or abnormal blood is destroyed.

**Risks of getting these Viruses are as follows:-**

- HIV = 1 in 4,808,000
- Hepatitis B = 1 in 971,000
- Hepatitis C = 1 in 3,112,000

Taken from the Australian Red Cross Blood Service (ARCBS) circular June 2003

Treatment is available for the above viruses.
What happens when I have a transfusion?

Before the Transfusion
Before you have your transfusion you will have a blood test taken which tells:

- The number of blood cells you have
- Your blood group or type
- How well your blood can carry oxygen. You may hear the term haemoglobin used by staff. Haemoglobin carries oxygen & is carried by the red blood cells
- Your platelet count which tells how well your blood can clot
- If you have a problem with the proteins that help your blood clot

Once we know why you need a transfusion & the product you need has been decided the product is matched to your own blood. It is then labelled with your name, date of birth, hospital number and blood group. This is done to ensure you receive the correct blood.

During the Transfusion

- The nurse then connects the blood to your "drip" and the transfusion is started.
- Your pulse, blood pressure and temperature will be checked again after 15 minutes and at the end of the transfusion.

If you think any of your details are wrong, tell the staff immediately!

You should report any unusual feelings immediately!
10. Melbourne Health Blood Product Transfusion Orders and Adverse reactions form

### Blood Product Transfusion Orders

<table>
<thead>
<tr>
<th>Date</th>
<th>Blood Product</th>
<th>Dose (Units)</th>
<th>Frequency</th>
<th>Administration Time</th>
<th>Nurse Signature</th>
<th>M.O. Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CLINICAL INDICATION(S)**

If your patient is not experiencing these criteria, consider carefully the need for these fresh products and the risk they carry to your patient.

- Fresh frozen plasma (FFP):
  - Hemorrhage: ≥ 3% of predicted blood loss
  - Bleeding: ≥ 300 ml/h
  - Prophylaxis: with HIT + I
  - Prophylaxis: with other anticoagulants

- Cryoprecipitate:
  - Hemorrhage: ≥ 3% of predicted blood loss
  - Bleeding: ≥ 300 ml/h
  - Prophylaxis: with HIT + I

- Other indications:
  - Hemorrhage: ≥ 3% of predicted blood loss
  - Bleeding: ≥ 300 ml/h
  - Prophylaxis: with HIT + I

**Person Drawing Blood**

The person drawing blood for the 7.5 ml purple-topped tube must complete the following:

1. Have checked the information on the sample label and the request form against the patient's ID (before leaving the patient), and verify this as correct by having signed, dated, and timed the sample tube and this decision.

**Signature:**

**Data Collected:**

**Time Collected:**

**Patient Information offered to patient:**

**Yes:**

**Signature of Clinician:**

**Surname Printed:**

**Date:**

**Trial Form – please file as Permanent record**

**TO BE FILED IN PATIENT’S MEDICAL RECORD ON COMPLETION OF INVESTIGATIONS**
### Process Error & Adverse Reaction

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Possible Type Of Reaction</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Colds, unexplained fever, petechial rash, nausea, vomiting, headache</td>
<td>Malaria; Malaria-like illness</td>
<td>New transfusion. Observe patient more frequently.</td>
</tr>
<tr>
<td>2. Colds, unexplained fever, petechial rash, nausea, vomiting, headache</td>
<td>Malaria; Malaria-like illness</td>
<td>New transfusion. Observe patient more frequently.</td>
</tr>
<tr>
<td>3. Localized itching, rash, fever, malaise</td>
<td>Malaria; Malaria-like illness</td>
<td>New transfusion. Observe patient more frequently.</td>
</tr>
<tr>
<td>4. Chills, fever, back pain, nausea, vomiting, headache</td>
<td>Malaria; Malaria-like illness</td>
<td>New transfusion. Observe patient more frequently.</td>
</tr>
</tbody>
</table>

**IMMEDIATE ACTION**

- Stop transfusion immediately.
- Notify medical staff.
- Document in medical history.

### Blood Product Transfusion Orders

Registered Nurse Checklist for Administration of Blood Products

- Identified patient's name, age, sex, and blood type.
- Transfusion ordered.
- Transfusion completed.
- Transfusion observed.
- Transfusion site observed.

**Monitoring of a Patient Receiving Blood Products**

- Patient should be observed for adverse reactions throughout the transfusion.
- Vital signs should be monitored every 15 minutes.
- Transfusion should be stopped if any adverse reactions occur.
- Notify medical staff immediately.

**Alerts**

- Blood product transfusion should be continued for 30 minutes if no adverse reactions occur.
- Transfusion should be stopped if any adverse reactions occur.

### Transfusion Reaction

**Patient Diagnosis:**

**Product Type:**

**Time Transfusion stopped:**

<table>
<thead>
<tr>
<th>Donation Number</th>
<th>Transfusion site observed</th>
<th>Transfusion completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Time</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Volume of affected unit</th>
<th>Transfusion site observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Time</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>History of previous transfusion reaction:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

**Medication (IV, IM, oral):**

**Signs & Symptoms:**

<table>
<thead>
<tr>
<th>Minors</th>
<th>Majors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>Tachycardia</td>
</tr>
<tr>
<td>Chills</td>
<td>Hypoventilation</td>
</tr>
<tr>
<td>Urinary</td>
<td>Urinary urgency</td>
</tr>
<tr>
<td>Nausea</td>
<td>Chest pain, Lumbar pain</td>
</tr>
<tr>
<td>Vth</td>
<td>Hypotension</td>
</tr>
</tbody>
</table>

**Clinical Reaction:**

- Patient ID hand or machine transcribed
- Patient ID checked

**Specimens:**

- 7.5 mL Plasma serum tube - BROWN
- 7.5 mL EDTA tube - PURPLE (Group and Screen)
- Blood cultures - Appropriate
- Blood cultures - Group and Screen
- Blood cultures - Appropriate
- Blood cultures - Group and Screen

Return this document to the Blood Bank with blood specimens.

For further information refer to Clinical Policy and Procedure Manual S21.6
11. Melbourne Health Shared Pathology Transfusion Medicine Service – product request form

<table>
<thead>
<tr>
<th>Doctor:</th>
<th>Initiates:</th>
<th>UNIT:</th>
<th>UR No.</th>
<th>Surname</th>
<th>Forenames</th>
<th>Date of Birth:</th>
<th>Sex: M / F</th>
<th>&lt;50yrs</th>
<th>&gt;50yrs</th>
<th>Unknown Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provider No.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Copy to: 1.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Indication:**

Reason for Transfusion / Request ___________________________

Massive Bleeding: Actual [ ] Suspected [ ]

Operation (if applicable) ___________________________

Refer to NH & MRC guidelines - See Reverse

**Time Blood Product Required:**

URGENT: (please phone) <1hr [ ] Within 3 hours [ ]

Non-urgent (elective transfusions) Date: ______ Time: ______

Transfusion Ward / Theatre (if known) ___________________________

**Transfusion History & Pt Information**

YES NO UNK

Patient Demographics

Previous transfusions in past 3 months [ ]

Pregnancy / Miscarriage in past 3 months [ ]

Current Pregnancy (gestation) ______ wks

Known Red Cell Antibodies ______ (state antibody)

If any answer above is Not Indicated or Yes Extended Expiry will NOT BE AVAILABLE

**Special Requirements:**

Renal [ ] Irradiated [ ] Leucodepleted [ ] CMV Neg [ ]

Apheresis Platelets & Cryo-depleted FFP - Contact Haem Reg

**Requesting Clinician to Complete:**

Name (print) ___________________________

Signed ___________________________

Pager No. ______ OR Mob. No. ______ Date: ______

**Person Drawing Blood (7.5 ml blood in a purple topped tube) to Complete:**

I certify that the blood specimen(s) accompanying this request was drawn from the patient named above and I established the identity of this patient by direct inquiry and / or inspection of wristband, and immediately upon the blood being drawn I labelled the specimen(s) with their first name, last name, UR number, date, time and verified this with my signature.

Signed ___________________________

Surnae: (print) ___________________________

Ward / Location: ___________________________

Date Collected ___________________________

**Transfusion Test / Product Request Form**

**Other Products:**

( Intragam - contact Lab )

**Patient’s Blood Group**

<table>
<thead>
<tr>
<th>ABO</th>
<th>Rh(D)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Anti-A</th>
<th>Anti-B</th>
<th>Anti-A/B</th>
<th>Anti-D</th>
<th>C</th>
<th>c</th>
<th>A1</th>
<th>B</th>
<th>O</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Special Conditions:**

**Antibodies:**

PEG Valid 37°C RAM Valid

- SC 1
- SC 2
- SC 4

**Sign:** ___________________________ Date: ___________________________

**Antibody Screen:** Detected [ ] Not Detected [ ]

The persons responsible for the signatures on the transfusion history MUST complete the product checklist

Registered Nurse Division 1 / RMO Blood Product Checklist

<table>
<thead>
<tr>
<th>Donation Number</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Initial box)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identified patients name verbally if able</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identified patient’s name on wristband, issue form and product. Also check UR if avail.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check donor no. On ARCBS label, on issue form, blood unit label</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check Patient’s blood group on the issue form and product label</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check blood group on the donor product, issue form and patient label</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check expiry date on unit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient told to report any associated symptoms to staff .For example... Any pain at site, Flushing, headache, any unusual feeling</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For each Unit Transfused:

- A set of Baseline Observations, before commencing the Transfusion and document
- Initially patients must be reviewed every five minutes for twenty minutes to detect any adverse reaction, then hourly observations are required whilst the Transfusion is administered.

This is a trial document for 6 weeks commencing July 14th, please maintain in patient’s history.

Please feedback to Lisa Stevenson pager 149 re this document or any queries regarding the Blood Matters Project.
13. Eastern Health Registered nurse checklist for administration of Blood Products form

### ADMINISTRATION OF BLOOD PRODUCTS

**TRIAL FORM ONLY**

<table>
<thead>
<tr>
<th>(Please Tick)</th>
<th>Units of Blood</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>4th</th>
<th>5th</th>
<th>6th</th>
</tr>
</thead>
</table>

- Identified patients name verbally
- Identified patients name & date of birth on wristband, transfusion report and product
- Identified UR number on wristband, transfusion report and blood product
- Check blood group on ARCBS label, transfusion report, on patient label & on blood product
- Check donor number on ARCBS label, transfusion report, on patient label & on blood product
- Check expiry date of product

Patient asked to report feeling unwell immediately to nursing staff.

You **must** sign the Transfusion Report form (issued with product from Blood Bank), your signature signifies that the above checking procedure has been completed.

### Monitoring Of A Patient Receiving Blood Products

Patients receiving blood products should be readily observed throughout the transfusion:

- Vital Signs (Temp / Pulse / BP) must be measured:
  - Prior to each unit of blood / blood component
  - 15 minutes post commencement of each unit of blood / blood component
  - Hourly during transfusion and at completion of each transfusion episode
  - Observe patient for first 15 mins of transfusion for adverse events
  - Further observations are required if patient becomes unwell or shows signs of reaction

### Administration set must have a 170-220um inline filter

<table>
<thead>
<tr>
<th>Product</th>
<th>Volume</th>
<th>Commence Infusion</th>
<th>Complete Infusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packed Cells or Whole Blood</td>
<td>350mls</td>
<td>Within 30 minutes of removal from unit</td>
<td>Within Four hours</td>
</tr>
<tr>
<td>450mls</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Platelet Concentrate</td>
<td>150ml single unit</td>
<td>Immediately</td>
<td>Within 20 minutes</td>
</tr>
<tr>
<td>Fresh Frozen Plasma OR Cryoprecipitate</td>
<td>150 ml single</td>
<td>Immediately</td>
<td>Within 20 minutes</td>
</tr>
<tr>
<td>300mls double</td>
<td></td>
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</tr>
<tr>
<td>50mls</td>
<td>Immediately</td>
<td>Within 16 minutes</td>
<td></td>
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</tbody>
</table>

### Observations (Use only if the patient is not already requiring frequent observations)

<table>
<thead>
<tr>
<th>Date / Time</th>
<th>Temp</th>
<th>Pulse</th>
<th>Resps</th>
<th>BP</th>
<th>O₂ sat</th>
<th>Donation number / Remarks</th>
<th>Adverse Reaction Y / N</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>
14. Western Health Self directed learning package on Storage, Collection and Administration of Blood Components

STORAGE, COLLECTION AND ADMINISTRATION OF BLOOD COMPONENTS

Name: _____________________________________________

Ward: ______________________________________________

Date: _______________________________________________

1. Before drawing blood for a blood group or crossmatch specimen the patient’s identity must be checked by:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

2. A patient identification (BRADMA) label may be attached to a group or crossmatch specimen tube. TRUE / FALSE

3. It is acceptable to pre-label the group/crossmatch specimen tube prior to taking the blood. TRUE / FALSE

WHY/WHY NOT
________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

4. A crossmatch is performed prior to transfusion of Red Blood Cells to:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

5. As the person drawing the blood for group/crossmatch, I am required to sign and date the specimen tube and the blood product request form. TRUE / FALSE
6. Blood Bank will process the specimen if the details on the specimen tube and blood product request form are similar.  TRUE / FALSE

7. I can correct the details on a mislabelled specimen tube even if I wasn’t the person who actually took the blood. TRUE / FALSE

8. If the patient having blood drawn for group or crossmatch does not have an identification band on I can still take the specimen.  TRUE / FALSE

9. Prior to commencing a transfusion what must be checked and where should it be checked?

10. You are about to commence a transfusion of packed red cells when you discover that the IV access is not patent. There is no-one available to re-cannulate for at least an hour. What should you do?

   A. Put the unit in the ward fridge until the cannula can be replaced
   B. Return the unit to Blood Bank until the cannula can be replaced
   C. Leave the unit at the patient’s bedside so it can be started as soon as the cannula is replaced

11. It is a legal requirement that a record of transfusion of blood components is kept for 20 years Why?

12. Whole blood and packed cells are stored in the Blood Bank refrigerator because:

13. Albumin unlike other blood components does not need to be recorded in the patient’s history.  TRUE / FALSE
14. The greatest risk associated with transfusion of blood components is the administration of blood to a patient who is not the intended recipient. TRUE / FALSE

15. List five common symptoms of a transfusion reaction

16. Baseline observations prior to commencing a transfusion are required because:

17. If the patient already has an IV infusion running that is not Normal Saline this line can be used to infuse blood components. TRUE / FALSE

18. You have commenced a transfusion and the patient is complaining of ‘feeling hot’ and a ‘bit strange’ observations reveal that his temperature has risen from 36.7°C to 38°C since the transfusion was commenced. What do you do?

19. Where can you find the NHMRC guidelines on appropriate use of blood components?

20. As long as I know the patient’s name I can sign out and collect blood from Blood Bank TRUE / FALSE

21. Your patient has a transfusion of red cells in progress. He wants to go outside with his visitors and enjoy the sunshine. What do you do?

22. In the event of an adverse reaction associated with a transfusion I am required to complete an adverse event form. TRUE / FALSE

23. An acute haemolytic transfusion reaction occurs most frequently as a result of:
A. Bacterial contamination of the unit
B. The patient having an allergic reaction
C. The transfusion of ABO incompatible blood

such reactions can be prevented by:

________________________________________________________________________

________________________________________________________________________

24. It is safe to give IV medications whilst blood is running. TRUE / FALSE

WHY/WHY NOT:

________________________________________________________________________

________________________________________________________________________

25. The transfusion of only 5-10ml of blood can result in an acute transfusion reaction. TRUE / FALSE

26. The maximum time for infusion of:
   Whole Blood / packed red cells is _________
   Platelets is _________
   FRESH FROZEN PLASMA is _________

27. Bronchospasm and laryngeal oedema are symptoms of which type of transfusion reaction
A. Febrile nonhaemolytic
B. Circulatory overload
C. ABO incompatibility

28. The purpose of a leucocyte removal filter is

________________________________________________________________________

When should you use one?

________________________________________________________________________

________________________________________________________________________

29. Your patient has Dextrose 5% running and has been ordered 2 units of packed cells. Can you infuse the blood concurrently with this infusion? YES / NO

WHY/WHY NOT

________________________________________________________________________

________________________________________________________________________

30. When should you use a blood warmer?
RESOURCES

Policies and Procedures: Clinical available on-line Western Health Intranet

Australian Red Cross Blood Service Transfusion Manual 2003: available on-line via Western Health Users Shortcut

15. Southern Health Blood Filters Information Sheet

INFORMATION SHEET: BLOOD FILTERS

1. STANDARD FILTERS (In-line, mesh-like filter in blood transfusion giving sets)

Stored blood contains blood clots and particles that are potentially fatal to the recipient. A standard filter removes these clots and particles. If blood/blood components are not filtered the clots and particles will be infused into the patient. This can cause pulmonary complications and death.

STANDARD SETS

Standard blood transfusion sets must be used for all routine transfusions of blood/blood components. Standard sets have an in-line filter (pore size: 170-260 microns), drip chambers, and tubing in a variety of configurations.

GENERAL INSTRUCTIONS

- All filters and infusion devices must be used according to the manufacturer’s instructions.
- With the exception of 0.9% saline, no medications or solutions should be added to whole blood or any blood component.
- Filters are not ordinarily used for the infusion of commercially prepared plasma products such as albumin. The manufacturer’s instructions should be consulted for specific recommendations.

INSTRUCTIONS FOR USE

1. Sets should be primed according to the manufacturer’s directions, using the component itself or 0.9% saline.
2. For optimal flow rates and performance, filters should be fully wetted and drip chambers no more than half full.
3. Filters can ordinarily be used for two (2) to four (4) units of blood. However they must be changed at least every 12 hours because the cells, cellular debris, and coagulated protein trapped in the filter promote multiplication of any bacteria that might be present.
4. The blood transfusion set should also be changed if the filter becomes clogged and/or the flow rate slows.

Blood transfusion giving sets for the Graseby pump which have a standard filter and a secondary line suitable for a saline flush are now available from stores. Stock code: 136 599

SPECIAL SETS

Follow manufacturer’s instructions for use.

1. High-flow sets for rapid transfusion have large filter surface areas, large-bore tubing, and may have an in-line hand pump.
2. Gravity-drip sets for the administration of platelets and cryoprecipitate have small drip chamber/filter areas, shorter tubing, and smaller priming volumes.

3. Syringe-push sets for component administration have the smallest priming volumes and an in-line blood filter that may be inconspicuous.

**2 MICROAGGREGATE FILTERS** (Square, orange filter)

Microaggregate filters have a pore size of 20-40 microns and are designed for transfusion of red cells. There appears to be no benefit to the routine use of microaggregate blood filters for low-volume transfusions.

**3. LEUKOCYTE-REDUCTION FILTERS** (Round, flat filters used for red cells)

The use of the leukocyte-reduction filter removes up to 99.9% of white blood cells from the blood/blood component.

**WHY USE A LEUKOCYTE-REDUCTION FILTER?**

- Transfusion of blood/blood components containing white blood cells may result in febrile non-haemolytic transfusion reactions (FNHTR), alloimmunisation and other immunological reactions.
- The use of a leukocyte-reduction filter can reduce the risk of transmission of the cytomegalovirus (CMV) if CMV negative blood is not available.

△ Do not prime the filter with 0.9% saline as this will interfere with the filtering function.

△ Do not attempt to flush the filter at the completion of the transfusion.

☆ See “Use of Blood Filters” protocol for specific indications.

**INSTRUCTIONS FOR USE**

Leukocyte-reduction filters are used in addition to a standard filter.

1. Prime the standard set with 0.9% saline.
2. Connect the leukocyte-reduction filter to the standard set.
3. Connect the leukocyte-reduction filter to the blood/blood component
4. Prime the filter with the blood component. Do not prime with 0.9% saline.
5. As filters for different components do not use the same technology for leukocyte removal and may have strict priming and flow rate requirements, they must be used only with their intended component and only according to the manufacturer’s instructions.
6. Leukocyte-reduction filters are used for one (1) or two (2) units depending on which type of filter is used. Only use according to the manufacturer’s instructions.
7. Do not attempt to flush the filter at the completion of the transfusion. When the transfusion is complete remove the bag and filter and place in an infectious waste container.
8. After removing the bag and filter, flush the giving set with normal saline.

Leukocyte-reduction filters designed for gravity-drip infusion should not be used with infusion pumps or applied pressure.

4. FILTRATION OF PLATELETS

All platelets supplied by the Australian Red Cross Blood Service (ARCBS) are now leukocyte-reduced before distribution; therefore an additional leukocyte-reduction filter is not required at the time of transfusion. However a standard filter must still be used.

Further information will be available when the new protocol is placed on the intranet. If you have any questions please contact: Julie Domanski, Transfusion Nurse, Ext: 44347, Pager: 4326
16. Peter MacCallum Cancer Centre Self directed learning package and competency tool on the Administration of Red Cells

PETER MacCALLUM CANCER CENTRE

SELF-DIRECTED LEARNING PACKAGE AND COMPETENCY TOOL
ADMINISTRATION OF RED CELLS
Section 1: Aim and learning outcomes

Name_____________________________ Ward/Unit_____________________

AIM:
On completion of this learning package, the nurse will possess the necessary prerequisite knowledge and skills to transfuse packed cells safely and according to the Peter MacCallum Cancer Centre procedure described in the Clinical Policy and Procedure Manual

LEARNING OUTCOMES:
On completion of this package the learner will be able to demonstrate competency by:

• Providing appropriate and adequate patient education regarding blood product administration
• Assessing the appropriateness of blood transfusion with reference to the NHMRC Clinical Practice Guidelines
• Demonstrating the correct process for ordering and accessing blood products
• Completing the documentation required for blood product ordering, administration and adverse reactions
• Positively identifying the patient before cross checking products and product administration
• Demonstrating an understanding of the rationale for the use of leucodepletion/filtration, irradiation, blood warming and diuretics in the transfusion of blood products
• Establishing a patient’s cytomegalovirus (CMV) status prior to transfusion and stating the potential clinical consequences of exposure to CMV
• Identifying the potential adverse reactions that may occur during red cell transfusions and demonstrating knowledge of the appropriate nursing and medical responses
Section 2: Learning resources

The following information and references have been included to direct the learner to the requisite knowledge required to perform this skill competently. It is the responsibility of the learner to access these resources prior to completing competency assessment.

REQUIRED READING:

- Peter MacCallum Cancer Centre Clinical Policy and Procedure Manual Section 34 – Blood

SUGGESTED READING:


(* These resources are available in the Central Cancer Library)

RESOURCE PEOPLE:

- Clinical Support Nurse
- Clinical Nurse Educator
- Transfusion Nurse

POINTS TO NOTE:

Patient education should take place prior to the infusion of any blood product. Education must include the reason for the transfusion, the need for the cross matching procedure, safety issues related to the donated blood, side effects and their management. Ongoing education should be given throughout the transfusion.

The Peter MacCallum Cancer Centre has adopted the NHMRC/ASBT Clinical Practice Guidelines regarding blood product transfusion. These guidelines should be reviewed prior to the infusion, to assist in determining the appropriate usage of blood products. Consideration must also be given to the timing of the blood product transfusion. Blood products should be given during working hours when maximum staff are available should an adverse event occur, unless there is urgent clinical indication for the transfusion.

It is essential that patients are positively identified prior to all stages of preparation for and administration of blood products, specifically specimen collection, requesting and product administration. Nurses must be aware of the potential for serious errors
related to blood product transfusion therapy and the steps taken in the checking process to prevent these errors.

Baseline patient observations should be taken prior to the commencement of each unit of packed cells and 15 minutes into the infusion to assess for a transfusion reaction. The nurse should assess the patient’s condition regularly throughout the transfusion and should be aware that clinical symptoms, not changes in vital signs, may be the first indications of a transfusion reaction.

Prior to the infusion of any blood product, the pack itself should be assessed for any evidence of clumping/discholoration/interruption to pack integrity. The pack must not be used and should be immediately returned to the Pathology Department if there is evidence of loss of integrity.

Blood products should not be administered unless accompanied by the required documentation, including orders for the transfusion from the Medical Officer. The order needs to include the amount of the blood product to be given, the time frame for infusion and any orders for diuretics to be administered following completion of the transfusion. Blood may be infused using an IMED pump or by gravity, using a dedicated blood line.

Aseptic technique must be used at all times when administering blood products to minimize the risk of infection. Universal precautions must be adhered to when transfusing blood products i.e. safety glasses and gloves must be worn.

Following the completion of the transfusion, the appropriate documentation must be completed and empty blood product bags are safely discarded as per the Clinical Policy and Procedure Manual.
The purpose of this competency assessment is to determine the nurse’s knowledge and skill in the administration of red cells. The assessment will be performed using direct observation and questioning.

- It is expected that both the assessor and the learner will have a sound understanding of Peter Mac policies and procedures relating to the administration of blood products.
- It is essential that as well as competently performing the practical aspects of the skill, the learner must also demonstrate:
  - an understanding of the knowledge underpinning the skill and be able to articulate this when being assessed.
  - an appropriate professional demeanour when performing skill.

**COMPETENCY ASSESSMENT TOOL**

The assessment tool for determining clinical competency adopted by Peter Mac is the 5-point Bondy rating scale (Bondy, 1983). The reference points on the rating scale indicate the degree of competency to which the learner has performed the outlined clinical behaviours.

It is expected that the learner will achieve a minimum score of 4 for each of the clinical behaviours outlined in the clinical procedure and be performing at a supervised level in order to be deemed competent. If competency is not achieved, the learner will have access to educational support and guidance and be given the opportunity to be reassessed at a time negotiated by the learner and assessor.

**Bondy rating scale for determining clinical competency at Peter Mac**

<table>
<thead>
<tr>
<th>Scale label</th>
<th>Score</th>
<th>Standard of procedure</th>
<th>Quality of performance</th>
<th>Level of assistance required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent</td>
<td>5</td>
<td>Safe, Accurate, Achieved, intended outcome, Behavior is appropriate to context</td>
<td>Proficient, Confident, Expedient</td>
<td>No supporting cues required</td>
</tr>
<tr>
<td>Supervised</td>
<td>4</td>
<td>Safe, Accurate, Achieved, intended outcome, Behavior is</td>
<td>Proficient, Confident, Reasonably expedient</td>
<td>Requires occasional supportive cues</td>
</tr>
<tr>
<td>Level</td>
<td>Score</td>
<td>Description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>-------</td>
<td>------------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Assisted| 3     | Safe
Accurate
Achieved most objectives for intended outcome
Behavior generally appropriate to context
Proficient throughout most of performance when assisted
Required frequent verbal and occasional physical directive cues |
| Marginal| 2     | Safe only with guidance
Not completely accurate
Incomplete achievement of intended outcome
Unskilled
Inefficient
Required continuous verbal and frequent physical directive cues |
| Dependant| 1    | Unsafe
Unable to demonstrate behavior
Lack of insight into behavior appropriate to context
Unskilled
Unable to demonstrate behavior/procedure
Required continuous verbal and continuous physical directive cues |
| X       | 0     | Not observed                                                                 |
**SELF-DIRECTED LEARNING PACKAGE AND COMPETENCY TOOL**  
**ADMINISTRATION OF RED CELLS**  
**Section 4: Outline of clinical procedure**

<table>
<thead>
<tr>
<th>The nurse:</th>
<th>Bondy score</th>
<th>Bondy score</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦ Educates the patient prior to and during the transfusion,</td>
<td></td>
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<tr>
<td>including discussion about:</td>
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<td></td>
<td></td>
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<tr>
<td>- clinical indications for transfusion</td>
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<td></td>
<td></td>
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<tr>
<td>- possible side effects</td>
<td></td>
<td></td>
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<tr>
<td>♦ Ensures that the indication(s) for the transfusion fall within the</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>NHMRC Clinical Practice Guidelines regarding blood product</td>
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<td></td>
</tr>
<tr>
<td>transfusion</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>♦ Accesses information to ensure validity of cross-match</td>
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<tr>
<td>♦ Assembles correct prescriptive documentation</td>
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</tr>
<tr>
<td>♦ Establishes the need to consider patient’s CMV status and need</td>
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<tr>
<td>for leucodepletion</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>♦ Ensures CMV-negative, leucodepleted or irradiated blood is used</td>
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<tr>
<td>where appropriate</td>
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</tr>
<tr>
<td>♦ Ensures patent venous access prior to retrieval of blood product</td>
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<td></td>
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<tr>
<td>from storage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>♦ Arranges for collection of blood product from storage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>♦ Assembles equipment required for the transfusion, including any</td>
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</tr>
</tbody>
</table>
- Specialized equipment required e.g. filter, blood warmer

- Performs, documents and explains rationale for baseline observations

- Checks blood product at the bedside with another Division 1 RN using Checklist for Administration of Blood Products on the Blood Transfusion Form (MR/17A)

- Identifies ABO compatibilities

- Describes and appreciates the potential for serious errors related to blood product transfusion therapy and the steps taken in the checking process to prevent these errors

- States the appropriate course of action to take if a blood product cannot be administered immediately or is not required

- Identifies appropriate precautions to be taken when handling blood

- Prepares and handles required equipment using aseptic technique

- Primed filter (if indicated) with blood product then primes IV blood giving set

- Commences infusion at prescribed rate, explaining rationale for usual time frame

- Assesses patient for possible transfusion reactions by closely monitoring patient as the first few millilitres of the blood product are transfused

<table>
<thead>
<tr>
<th>Bondy score</th>
<th>Bondy score</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Describes possible transfusion reactions and appropriate management

Manages transfusion and performs ongoing assessments of patient

Reinforces information given to the patient regarding signs and symptoms of potential side effects of the transfusion

Understands the rationale for the use of diuretics in red cell transfusions

Correctly disposes of completed blood product bags and other equipment

Ensures correct documentation is completed

<table>
<thead>
<tr>
<th>Bondy score</th>
<th>Bondy score</th>
<th>Evidence</th>
</tr>
</thead>
</table>

COMMENTS:

_________________________________________________________________________________________________________________
_________________________________________________________________________________________________________________
_________________________________________________________________________________________________________________

ASSESSOR’S NAME & DESIGNATION ............................................................................................................................

ASSESSOR’S SIGNATURE .................................................................................................................................

DATE ....../....../........

LEARNER’S SIGNATURE .................................................................................................................................

DATE ....../....../........
17. Box Hill Hospital B Tags audit Instructions

Blood TAGs - How to complete them

1) **Product Number** – obtained from the unit AND the compatibility form (Must Match Exactly)

2) **Ward** – where did transfusion occur?

3) **Date and Time** – unit commenced

4) **Name and signature** – staff responsible for checking

5) **Clinical Reaction tick box** – if any clinical reaction occurs (No matter the severity). Contact local medical staff for any immediate clinical management.

6) **Clerical error tick box** – if any clerical error is noted.
   *If details on the unit or compatibility report or patient ID do not match exactly – DO NOT PROCEED, until correct ID of patient and unit is established*

7) **Delays** – including time unit takes to arrive from BB (after ED has been notified that the unit is ready), any time delay between arriving in ED and commencement of transfusion *(NB If transfusion of unit is not commenced within 30 mins of arrival from BB – Return to BB, DO NOT TRANSFUSE)*

8) **No problem tick box** – if transfusion completed with no incident

For any queries about correct completion of TAGs, please contact

**Transfusion Nurse**
**Janine Carnell**
**Ext. 3548 or pager 3938**
18. Southern Health Collecting a Specimen of Blood for Crossmatching Protocol

Who
Division 1 Registered Nursing Staff
Division 2 Registered Nursing Staff if specified in their job description and if accredited in venepuncture
Medical Staff

Expected Outcomes
A sample of blood is collected safely from the correct patient.
The sample is labelled with the correct patient details.

Precautions
Take care with patients who have the same or similar names.

Why
To confirm the blood to be transfused is compatible with the recipient’s blood.

Incorrect identification of the patient and/or sample may lead to the patient receiving incompatible blood. This can cause transfusion reactions and/or death.

Equipment
- Blood bank request form
- Personal protective equipment – gloves, gown and goggles
- Vacutainer system/needle and syringe
- 9ml pink EDTA tube (for adults)
- Alcohol skin preparation
- Sharps container
- Labels

Step 1
Check that the requesting doctor has signed the Blood Bank Request form and all sections have been completed (including clinical notes).

Step 2
Explain to the patient what you plan to do and gain consent.

Step 3
Correctly identify the patient. If the patient is conscious ask him/her to identify themselves by given name, surname and date of birth.
Check the patients name against:
- Patient’s identity wristband
- Completed Blood Bank request form
If the patient is unconscious or unable to identify him or herself, ask a relative or second member of staff to verify the patient’s identity.

Step 4
Collect the blood sample into the sample tube required by the blood bank. For adults this is a 9ml pink EDTA tube.
See Blood and Blood Product protocol ‘Venepuncture’.
**Step 5**

Safely dispose of the vacutainer/needle and syringe into the sharps container.

**Step 6**

Label the sample tube clearly and accurately at the patient’s bedside at the time that the sample is being collected. Label with a preprinted patient label or write the patient details on the tube. The following information must be included on the blood sample tube label:

- Patient’s given and surname
- Patient’s date of birth and/or unit record (UR) number
- Date and time of collection
- Signature of the person who collected the sample

Ensure that the patient’s name is spelt correctly. Do not label the tube before obtaining the specimen because of the risk of putting the patient’s blood in the wrong tube.

**Step 7**

Document the time and date of collection on the request form and sign it using your full signature not just your initials.

**Step 8**

Place the labelled blood tube and Blood Bank Request form in the laboratory transport bag and send it to the laboratory.

If an adverse event (actual or “near miss”) is associated with collecting a specimen of blood for crossmatching, document details in the medical record and complete an incident report.

<table>
<thead>
<tr>
<th>SH Policy</th>
<th>Patient Care</th>
<th>ACHS</th>
<th>Continuum of Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reviewer</td>
<td>Blood Bank</td>
<td>Last review date</td>
<td>April 2003</td>
</tr>
<tr>
<td>Authoriser</td>
<td>Executive Quality and Risk</td>
<td>Next review date</td>
<td>April 2006</td>
</tr>
</tbody>
</table>