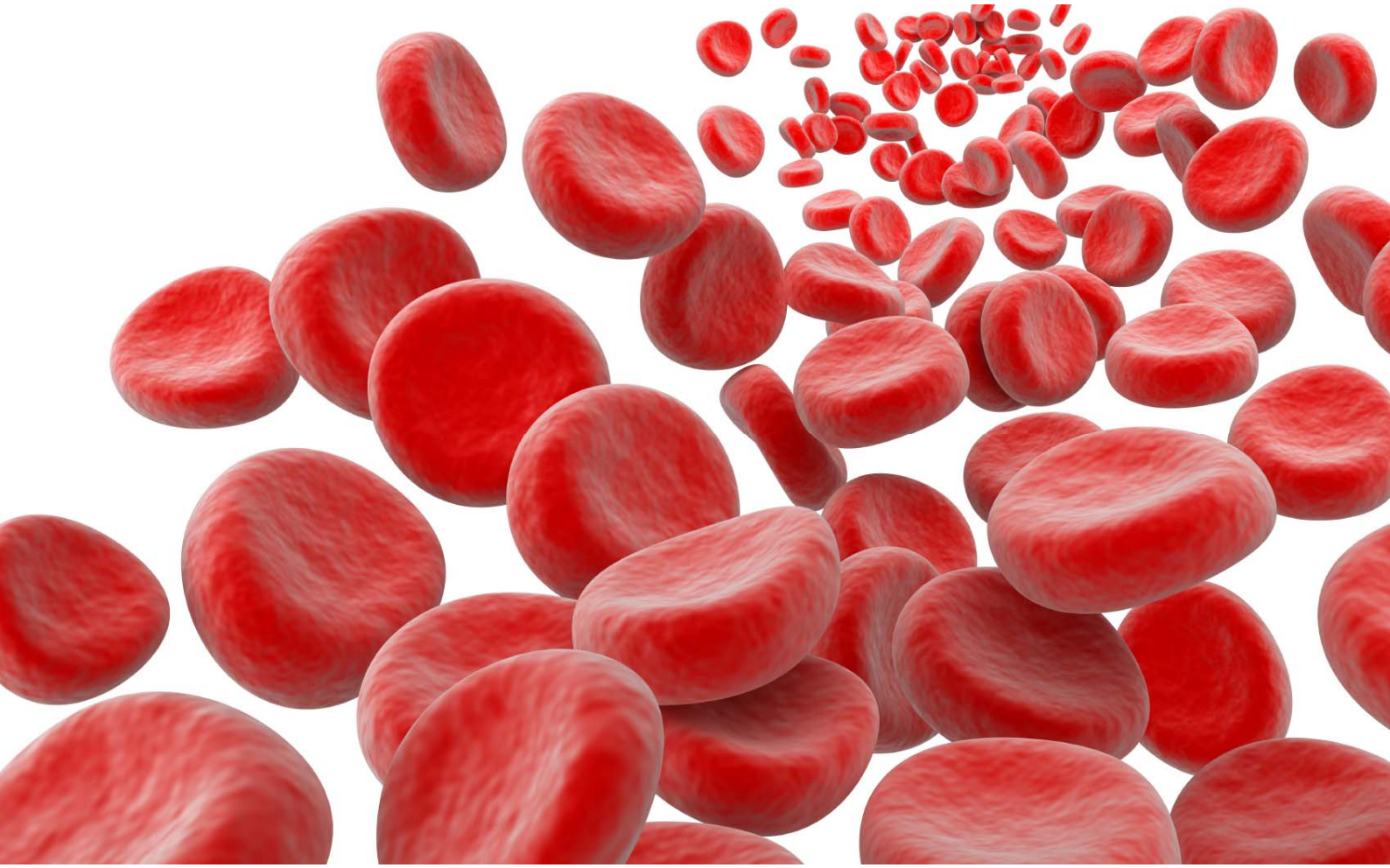
health

Comparative audit of blood transfusion policy and practice 2011

Victoria, Tasmania, Northern Territory and The Canberra Hospital



State Government Victoria

Australian Red Cross BLOOD SERVICE

Department of Health

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May 2012

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Thanks to those in the project team who have been involved at various stages:

Blood Matters: Patient Blood Management Working Group members

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Contents

Executive summary

Over the last decade, an increasing number of clinical transfusion practice improvement programs have been established both here in Australia and internationally to improve the quality and safety of hospital transfusion practices. This has been as a result of transfusion associated morbidity and mortality that occurs within the hospital transfusion processes.

During 2011, the Blood Matters program invited hospitals to participate in an audit to examine the quality of transfusion practice at the bedside, which is a common site of transfusion errors. The audit compares existing hospital policies and actual transfusion practices against national guidelines for best standards of practice. It is a repeat of the audits conducted in 2005 and 2007, which means we can make observations about changes in policy development and transfusion administration practices within hospitals over time.

To make it as practical as possible for participating hospitals, the audit assessed only some elements of the Australian and New Zealand Society of Blood Transfusion (ANZSBT) and Royal College of Nursing Australia (RCNA), *Guidelines for the administration of blood components* (2004*)*. Audit questions were related to the guidelines in order to raise awareness of the guidelines and allow health services to become more familiar with them. These 2004 guidelines were updated in December 2011. Recommendations or learning points from the audit reflect these new revised guidelines. http://www.anzsbt.org.au/publications/index.cfm

The *National safety and quality health service standards* (NSQHSS) were endorsed by Australian Health Ministers in September 2011, and include Standard 7 Blood and blood products. These standards will be mandatory accreditation reporting requirements for Victorian public health services from January 2013. Further information on the standards and guides to assist with implementation is available at http://www.safetyandquality.gov.au/internet/safety/publishing.nsf/Content/PriorityProgram-07

‘Standard 7: Blood and blood products’ highlights the requirement for evidence-based guidelines for blood administration and monitoring and management of transfusion practice in a health service.

The audit was ambitious, with the aim of recruiting all hospitals that transfuse in Victoria, as well as major public hospitals in Tasmania, Northern Territory and The Canberra Hospital (TCH). Audit proformas were sent to 155 hospitals and health services. We received policy and procedure audit responses from 85 organisations (55 per cent of invitees); 82 of these health services submitted prospective administration audit data on 1595 transfusion episodes.

This report compares data from the 2005, 2007 and 2011 audits, individual hospital results have been reported directly to participants.

In summary, the quality of hospital policy to guide transfusion practice has seen ongoing improvement, particularly in the area of providing information to consumers and the informed consent process. Safety in transfusion practice has also shown improvement; however, there are areas where practice can still be improved, such as with reporting and managing adverse transfusion events. These are summarised in the attached checklist tool, located on page 7 of the report.

Abbreviations, acronyms and definitions

ACSQHC	Australian Commission on Safety and Quality in Health Care
AIHW	Australian Institute of Health and Welfare
ANZSBT	Australia and New Zealand Society of Blood Transfusion
inpatient	excludes day unit, emergency, dialysis and hospital in the home
national standards	National Safety and Quality Health Service Standards
policy	procedure, guideline, standard operating procedure, practice points
RCNA	Royal College of Nursing, Australia
RFID	radio frequency identification
SHOT	Serious Hazards of Transfusion
the Blood Service	Australian Red Cross Blood Service
TCH	The Canberra Hospital

Limitations

Limitations identified in this audit include the fact that auditors are not formally instructed to collect the data in a consistent way and we relied on them to follow the audit tool instructions to ensure accuracy of data.

We anticipated that this audit would be undertaken in many clinical specialties, which depend on the level of services available at each individual health service and the choice of the auditor. As there were only a very small number of unconscious patients reported in the data (five per cent), it is unlikely that areas such as theatre and critical care areas were targeted by auditors. These specialties would benefit from a specific audit of transfusion practice in the future.

Policy and practice checklist

The following checklist has been included as a tool for health services to support compliance with policy requirements or improvements for practice. The key lessons and target areas addressed in the checklist are based on the data received and analysed through the audit. The strategies include recommendations from the ANZSBT/RCNA, *Guidelines for administration of blood products 2011* and the national standards (ACSQHC, 2011) *Standard 7 blood and blood product* requirements.

Key lesson/target areas	Strategies implemented by health service to address the issues	Yes	No	WIP*	N/A#
Identification and management of the unconscious patient during transfusion	Regular audits ensure all transfusion patients wear a legible and accurate ID wristband.				
	Develop a guideline to reflect the different processes required for identification of the unconscious patient prior to transfusion.				
Education and training of staff in collection of pre transfusion samples	Staff collecting pathology specimens receive education of i.e. BloodSafe eLearning Australia module on collecting blood specimens. https://www.bloodsafelearning.org.au/				
Education and training of blood administration staff	Training is provided to all staff, including ancillary staff involved in the transfusion process. This can be assisted by provision of and attendance at local education sessions, completion of self directed learning packages or online resources such as BloodSafe eLearning Australia module on clinical transfusion practice https://www.bloodsafelearning.org.au/				
Medical indication for the transfusion	All prescribers of blood products are educated in local and national guidelines and patient's medical files are audited to ensure compliance.				
Monitoring and documentation of the patient observations during a transfusion	Vital signs of temperature, pulse, respiratory rate and blood pressure are measured and recorded before commencement, 15 minutes after commencement and at completion as a minimum. There is regular auditing to ascertain compliance.				
	Start and stop time of the transfusion episode is audited regularly to ascertain compliance.				
Out of hours transfusions – non urgent	There is an out-of-hours transfusion policy and regular auditing of compliance.				
Adverse event management and reporting	A policy or guideline is developed and signs and symptoms of reactions are displayed in clinical areas. Relevant clinical staff are educated in the signs. **The three Rs:** • **Recognise:** recognise an adverse transfusion reaction. • **respond:** manage the patient's symptoms and seek assistance where required. • **report:** know the importance of reporting an incident. If an adverse event occurs, medical staff should be alerted to help treat the patient and pathology should investigate and inform the Blood Service in case other products are at risk, for example in the case of bacterial contamination.				

*WIP-work in progress

Not applicable

Background and methodology

In April 2011, the Blood Matters program audited blood transfusion policy and practice at participating public and private hospital across Victoria, Tasmania, Northern Territory and TCH.

The audit compared blood transfusion policies and practice across hospitals to find out if:

- a blood administration policy is available and consistent with national guidelines
- everyday transfusion practice adheres to the policy.

The audit used two tools to analyse policy and practice:

1. desk top audit of existing local hospital policy for blood transfusion.
2. prospective observational audit of actual everyday transfusion practice.

The first audit tool required sites to outline fundamental elements of their transfusion policy, including:

- the existence of the written policy
- how the policy aligns to guidelines and addresses:
  - labelling of samples for pre-transfusion testing
  - staff who are able to undertake pre-transfusion sample collection and their training
  - provision of information to patients about risks and benefits and the informed consent process*
  - patient identification wristbands worn during transfusion and the information contained on the wristband
  - observation (including visual and measurement and recording of vital signs) of the patients pre- and post-transfusion
  - management of adverse events associated with transfusion.

The second tool was designed as an observational audit of actual transfusion episodes. This included observing:

- where the transfusion took place
- whether the patient was conscious or unconscious
- patient participation in identification check
- whether a wristband was worn by the patient during the transfusion and the information contained on the band
- ability to monitor the patient during the transfusion, visually and through documentation of vital signs in the collection of pre- and post-observations
- documentation (including dates, times, checks of paperwork and signatures of evidence) that checks were undertaken
- management of adverse events, including documentation and reporting.

The hospital transfusion committee (or equivalent) were asked to designate a member of staff to conduct the audit. The time frame for the audit was three months, with either 30 random transfusion episodes or all transfusion episodes during this time period.

* Consent question added to tool in 2011.

Results and discussion

A total of 155 health services were invited to participate in the audit. Eighty-five hospitals responded to the request for information about local policy or procedures governing blood product transfusion (55 per cent return rate). There were 69 responses from public hospitals (81 per cent return rate) and 15 responses from private hospitals (17 per cent return rate). One hospital that responded no longer provides a transfusion service and was not included in further analysis.

Eighty-one hospitals submitted a policy proforma, 82 submitted practice data and 79 submitted both policy and practice data. (One hospital submitted no practice data, as no transfusions occurred during the audit period).

Throughout the results section corresponding recommendations and guidelines from both the *Guidelines for the administration of blood oroducts* (ANZSBT/RCNA 2011) and *Standard 7 Blood and blood products* (ACSQHC 2011) are highlighted where relevant.

Hospital transfusion policy audit

All hospitals that submitted the policy audit tool indicated they had an established hospital-wide transfusion policy.

Recommendation: *Guidelines for the Administration of Blood Products* (ANZSBT/RCNA 2011)

Section 6: Administration of blood products

Recommendation 13: Health services must have a policy for patients receiving transfusion of blood that defines:

- Positive identification of the patient.
- Selection of the appropriate location and timing for the transfusion
- Validation of equipment employed in transfusion
- Administration procedures for components, compatible fluids and medications.
- Optimal observation, care and monitoring of the patient.

These recommendations are further endorsed by the new national standards (ACSQHC 2011) '*Standard 7: Blood and blood products*', which will be mandatory for accreditation of health services in Victoria from 1 January 2013.

Criterion 7.1.1 Blood and blood product policies, procedures and/or protocols are consistent with national evidence-based guidelines for pre-transfusion practices, prescribing and clinical use of blood and blood products.

Criterion 7.1.2 The use of policies, procedures and/or protocols is regularly monitored.

Labelling and cross-matching for transfusion

Correctly labelling pre-transfusion samples is an integral part of the safety of the transfusion process. Policies that detail correct patient identification principles, and which include criteria for testing, will help to ensure staff collect the sample correctly the first time. This reduces the risk of a mislabelled specimen or the need to re-bleed the patient, causing unnecessary harm and potential delay.

The number of hospitals with a policy that encompassed the requirements for labelling blood samples for 'group and cross-match' continued to increase in 2011, to 93 per cent of hospitals. This was a marked improvement from 2005, when only 66 per cent of hospitals reported having labelling requirements in their policy.

Eighty-five per cent of hospitals had a policy governing the categories of staff authorised to draw blood samples for group and cross-match.

In 2011, 56 per cent of reporting hospitals had a transfusion policy that included any requirement for specific training of staff drawing blood samples for group and cross-match, an improvement from 36 percent in 2007.

Although improved in this audit, specific training remains an area for further work. All clinical staff who are authorised to collect pre-transfusion samples should undertake the blood sampling education. A module is available in the national eLearning program. Further information can be found at https://www.bloodsafelearning.org.au/

Recommendation: *Guidelines for the administration of blood products* (ANZSBT/RCNA 2011)

Section 9: Clinical governance

Recommendation 20: Health services should maintain documentation of dedicated transfusion training and competency assessment of their staff involved in the transfusion process

Blood administration policy

All hospitals reported having a policy governing the administration of blood. This is consistent with the national standards. The following policies are all key components of a blood administration policy.

Patient identification policy

Ninety-four per cent of hospitals (see # Note 1 in Table 1) had a policy requiring all patients to wear patient identification wristbands during transfusion. This was an improvement from 84 per cent in the 2007 audit.

Only two hospitals did not specifically address mechanisms for patient identification during transfusion.

Most hospitals (98 per cent) reported having some formal processes to identify before transfusion. Of those hospitals, 99 per cent used a patient identification wristband as the main way to verify the identity of conscious patients. Ninety-nine per cent of hospitals require a patient to affirm their identity by stating their name and date of birth. In unconscious patients, 80 per cent required checking the patient's wristband for name; the same 80 per cent also required checking the patient's wristband for date of birth and hospital number.

***Guidelines for the administration of blood products* (ANZSBT/RCNA 2011)**

Section 6: Administration of blood products

6.9 The pre-administration identity check of patient and blood product

6.9.1 Identification bands (ID bands)

All patients receiving a blood product, whether inpatient, outpatient or day patient MUST be positively identified and SHOULD have an identification band attached to their body that complies with Australian and New Zealand standards/guidelines.
The following minimum core patient identifiers are mandatory:

- Family name and Given names(s) –Family and given names should be clearly differentiated. Family name should appear first in UPPER case text followed by given name(s) in "Title" case. That is, FAMILY NAME, Given name(s); for example, SMITH, John Paul.
- Medical record number (MRN), National Health Index (NHI) number or equivalent
- DOB ("date of birth" written as DD/MM/YYYY)

The Australian Commission for Safety and Quality in Health Care (ACSQHC 2008) developed national specifications for a standard patient identification band and guides health services how to meet the specifications, including colour, size, comfort, usability and method for recording the patient identifiers including allowing for new technology such as radio frequency identification (RFID) tags, barcode technologies or digital photos. Further information is available at: http://www.health.gov.au/internet/safety/publishing.nsf/Content/PriorityProgram-04

Pre- and post-transfusion observations policy

All but one hospital (99 per cent) had a policy mandating pre-transfusion observations. Most of these (78 of 81) required the recording of pulse, temperature, blood pressure, and respiration rate prior to transfusion. Ninety-five per cent of hospitals (n=77) reported that the transfusion policy required post-transfusion observations, with 75 of these 81 hospitals mandating recording of pulse, temperature, blood pressure, and respiration in these policies. This is an improvement over previous years.

Guidelines for the administration of blood products **(ANZSBT/RCNA 2011)**

Section 6: Administration of blood products

6.11 Observations and Monitoring

As a minimum, the vital signs of temperature, pulse, respiratory rate and blood pressure MUST be measured and recorded as follows:

- Prior to start of each individual blood component pack administered
- 15 minutes after commencing administration of each blood component pack
- When administration of each blood component pack is completed

Transfusion reaction reporting policy

Most hospitals (99 per cent, n=80) had a policy regarding the action required in the event of a transfusion reaction. All policies included stopping the transfusion and contacting medical staff, with 98 per cent requiring the hospital blood bank/laboratory to be notified (79 of 81). This is important as the blood bank pathology/ laboratory needs to investigate the reaction and inturn inform the Blood Service or manufacturer so that associated products can be managed or quarantined. A reaction in one health service can potentially affect many other health services and multiple patients, if products have already been allocated or administered.

Management of transfusion reactions and other transfusion-related adverse events is included in the ANZSBT/RCNA 2011 guidelines and also available through the Blood Service website: http://www.transfusion.com.au/adverse_events/management_steps

Recommendation: ***Guidelines for the administration of blood products*** **(ANZSBT/RCNA 2011)**

Section 8: Management of transfusion reactions and other transfusion related adverse events

Recommendation 16: Health Services must have a policy for the management and reporting of adverse events and near miss events relating to blood product therapy that includes the following:

- Requirements for documentation of observations and the subsequent management of an adverse event.
- The procedure for reporting adverse and near miss events in local incident management systems, state or national haemovigilance systems

Policy for provision information to transfused patients

Almost all participating hospitals (93 per cent) had a transfusion policy that requires staff to inform patients about aspects of blood transfusion - this was a significant improvement, up from 64 per cent in 2007 and 26 per cent in 2005. Public hospitals (95 per cent) were more likely to report such requirements in the transfusion policy compared to private hospitals (80 per cent). Pearson's chi-square test shows this is statistically significant (p=0.039).The provision of information (verbal and/or written) for patients should be included within any informed consent policy for transfusion and is endorsed by the ANZSBT/RCNA 2011 guideline's recommendations for informed consent policy as outlined below.

The Blood Matters program has also developed consumer information tools for providing written information. These are available at: http://www.health.vic.gov.au/bloodmatters/consumer.htm

Informed consent statement

Ninety-six per cent of hospitals (78 of 81) have included a statement in their policy about obtaining informed consent for patients undergoing elective transfusion. This question was new in the 2011 audit.

Consent for blood products is now included within the *Guidelines for administration of blood products* (ANZSBT/RCNA 2011) and within the national standards (ACSQHC 2011) '*Standard 7 Blood and blood products'*

Criterion 7.11.1 Informed consent is undertaken and documented for all transfusions of blood and blood products in accordance with the informed consent policy of the health service.

Recommendation: *Guidelines for the administration of blood products* (ANZSBT/RCNA 2011)

Section 2: Consent for blood products

Recommendation 3: Health services must have a transfusion consent policy for both adults and children for:

- Acquisition and documentation of informed consent for blood products
- The period of time that consent remains valid
- Refusal of blood products including policy for Jehovah's Witnesses
- When consent is unable to be obtained

Results of the policy audit

Table 1: Comparative policy audit results

Survey question	Percentage (%) responding yes		
	2005	2007	2011
Number of hospitals responding	**n=88**	**n=75**	**n=81**
Does your hospital have written policies on blood transfusion practice?	94	96	**100**
All hospitals need a written policy on blood transfusion practice.			
Is there a written policy on the labelling of blood samples for grouping and cross-matching?	66	84	**93**
Hospital policy should include statements on labelling of blood samples for group and cross matching that at a minimum should include a statement on positively confirming the patient's identity at the point of collection and labelling. The minimum requirements are full name, hospital medical record number or date of birth, date and time of collection plus signature or initials of the collector.			
Is there a written policy stating which staff can take samples for blood grouping and cross-matching?	42	69	**85**
Hospital policy should include statements on which staff are accredited to take samples for blood grouping and cross matching.			
Is there a written policy on training that should be given to staff who can take samples for blood grouping and cross-matching?	14	36	**56**
Hospital policy should include statements on training and competencies for staff who take samples for grouping and cross matching.			
Is there a written policy that wristbands should be worn during transfusion? (Note 1)			
The policy states wristbands should be worn by all patients?	69	84	**94**
The policy states wristbands should be worn by all patients unless a specified alternative method is used?	30	57	**81**

Hospital policy should include statements on patients wearing wristbands or a specified alternate process in an emergency situation.

Survey question	Percentage (%) responding yes		
	2005	2007	2011
Is there a policy statement about the administration of blood in your hospital?	92	95	**100**

Hospital policy should include statements on blood administration.

Is there a policy statement on how the identity of the patient is verified prior to transfusion?	86	93	**98**
*If yes, state whether it contains the following for conscious patients			
Ask the patient to state given name, surname and date of birth?	71	90	**99**
Check the patient's wristband	96	100	**99**
* If yes, state whether it contains the following for unconscious patients			
Check the patient's wristband for given name and surname	61	77	**80**
Check the patient's wristband for date of birth and hospital number	58	77	**80**

Hospital policy must include statements on verifying patient identity prior to transfusion. The statement should include asking conscious patients for full name and date of birth in addition to checking the details on their wristbands. The statement should include checking an unconscious patient's wristband for full name, date of birth and hospital unit record number.

Is there a policy statement that pre-transfusion observations should be made?	88	91	**99**
*If yes, state whether it contains the following:			
• pulse	94	100	**96**
• temperature	94	100	**96**
• blood pressure	94	99	**96**
• respirations	91	100	**96**
Is there a policy statement that post-transfusion observations should be made?	67	83	**95**
*If yes, state whether it contains the following:			
• pulse	97	98	**97**
• temperature	97	98	**97**
• blood pressure	97	98	**97**

• respirations	93	98	**97**

Hospital policy should include a statement of pre- and post-observation transfusions. Transfusion observations should include pulse, temperature, blood pressure and respiration.

Survey question	Percentage (%) responding yes		
	2005	2007	2011
Is there a policy statement that specifies what to do in the event of a transfusion reaction?	90	93	**99**
*If yes, state whether it includes the following:			
• stop transfusion	99	99	**100**
• contact blood bank (laboratory or supplier)	89	97	**98**
• seek advice from medical staff	97	99	**100**

Hospital policy should include statement on adverse reactions. The statement should include stopping the transfusion, contacting the blood provider and seeking advice from medical staff.

Does the written policy state that hospital staff must give information to patients about blood transfusions before the blood transfusion?	36	64	**93**

Hospital policy should include a statement on giving information to patients about blood transfusion before the transfusion takes place.

Does the written policy state that hospital staff should provide an informed consent process for elective transfusions?	n/a	n/a	**96**

The national standards require the implementation of an informed consent process and documentation for all transfusions for all blood and blood product use in accordance with the organisation's informed consent policy.

Note 1: For the question 'Is there a written policy that wristbands should be worn during transfusion?', for ease of interpretation, the results of this two part question need to be amalgamated into one figure: those who said **yes** to either question (98 per cent).

* The denominator for these questions is derived from the number of **yes** responses to the relevant overarching question.

Hospital transfusion practice audit

There were a total of 1595 transfusion episodes in the audit data provided by 82 hospitals. Of the transfusion episodes reported, 1170 (73 per cent) were classified as inpatients, 335 (21 per cent) were patients in day stay units, four per cent were located in emergency departments and the remaining in 'other' episodes included dialysis, chemotherapy day units and one event identified as hospital in the home.

We cannot make any conclusions about transfusion practice in specific clinical areas from this information, as the location of the episode was chosen by the person who collected the information.

Transfusion episodes by hospital classification

The Australian Institute of Health and Welfare (AIHW 2011) classification system to group hospitals was used and outlined in Table 2. Further details of the classification definitions are provided in Appendix 2. Private hospitals are not included in the AIHW peer review data, but have been included as a collective group for comparison.

Table 2: Classification of hospitals

Classification	Number of hospitals	Average episodes/hospital	Range
Principal referral and women's and children's specialist hospitals	20	27	1–30
Large hospitals	12	25	7–30
Medium hospitals	15	17	6–30
Small acute hospitals	13	11	1–21
Sub-acute and non-acute hospitals*	7	5	1–14
Private hospitals	14	22	8–30

* Includes un-peered hospitals

Location and timing of the transfusion episodes

Of the transfusions observed for this audit, 10 per cent (n = 163) occurred in secluded areas, where it is not easy for staff to visually monitor the transfusion episode. This is a fall of a further two per cent from 2007, although two transfusion episodes in 2011 were performed on an unconscious patient in a secluded area.

The majority of audited transfusions (90 per cent) took place between the recommended times of 8 am and 8 pm, with nine per cent of these transfusions reported as emergency transfusions.

Of the audits reporting an actual start time, seven per cent took place outside recommended hours (between 8 pm and 8 am). Of the 102 transfusions that occurred out of hours, 65 per cent (n=66) were not considered an emergency (excluding three cases with missing data). Six of these transfusions had an adverse event occur and none of these was considered an emergency.

The Serious Hazards of Transfusion (SHOT 2005) report highlighted the increased risk of overnight transfusion and found that 37 per cent of errors in which the time was reported, took place overnight between 8 pm and 8 am. In its 2005 annual report, SHOT recommended avoiding blood transfusion out of core hours. (SHOT 2005 recommendation 4). The SHOT 2010 annual report states further that 'Transfusion should only take place if there are sufficient competent staff available to monitor the patient and the patient can be readily observed throughout the transfusion episode.'

Some overnight transfusions are necessary and unavoidable during these hours however the current audit could not determine the necessity of the transfusion.

Nearly all transfusion episodes reported involved conscious patients (93 per cent, n = 1493 conscious, versus only five per cent, n = 74 episodes involving unconscious patients).

Guidelines for the Administration of blood products (ANZSBT/RCNA 2011)

Section 6: Administration of blood products

6.7 Location and timing of the transfusion

Transfusion must only take place when it is appropriately resourced, that is, enough trained staff are available to monitor the patient, where the patient can be observed and where emergency medical support is readily available. Overnight/out-of-hours transfusion should be avoided unless clinically indicated.

Informed consent

The question about informed consent was added in 2011 to align the audit with the national standards for future years. We are pleased that 83 per cent of the episodes reported, followed an informed consent process.

Criterion 7.11.1 Informed consent is undertaken and documented for all transfusions of blood or blood products in accordance with the informed consent policy of the health service organisation

Patient identification

Correct patient identification is a critical aspect of the transfusion process. Table 3 provides a summary of the number of identification wristbands worn compared to the total number of transfusion episodes by hospital classification.

Table 3: Identification wristbands as a percentage of all episodes by hospital classification

Classification	Episodes	Wristband worn	%
Principal referral and women's and children's specialist hospitals	542	526	97%
Large hospitals	301	284	94%
Medium hospitals	270	251	93%
Small acute hospitals	142	141	99%
Sub-acute and non-acute hospitals*	35	35	100%
Private	305	276	90%

* Includes un-peered hospitals

The 2011 audit shows that 95 per cent (n = 1513) of the patients wore an identification wristband during transfusion which is a slight drop from 2007 (two per cent). In five per cent of transfusion episodes, wristbands were either not present during transfusion (n = 53) or the question was unanswered (n = 29)

Inpatients were more likely to be observed wearing wristbands compared to outpatient or day patients (99 per cent and 90 per cent, respectively, $p < 0.001$).

When this audit was conducted, the 2004 ANZSBT/RCNA *Guidelines for the administration of blood components* were in place, and these excluded the requirement for emergency and retrieval/neonate/day-stay outpatients from wearing an identification bands while having a blood transfusion. The new updated 2011 guidelines, in contrast, state that all patients receiving a blood

product, whether inpatient, outpatient or day patient should have an identification band attached to their body.

Seventy-eight hospitals reported having a policy detailing patient identification steps prior to transfusion. Two hospitals that did not specifically address patient identification in their policy, reported all patients were asked to affirm their identification in the audit. Ninety-nine per cent of hospitals require conscious patients to affirm their identity by stating their name and date of birth.

Thirty-four hospitals reported at least one or more patients were not asked to verbally affirm their identification. In one hospital, 70 per cent of its patients (n=21 of 30) were not asked to confirm their identification, with an additional four hospitals not asking 40 per cent or more of their patients to verbally affirm their identification. From the audit information, it is impossible to know if patients who were not asked to confirm their identity were capable of doing so.

In the 74 unconscious transfused patients reported in this audit, two transfusions were administered to patients not wearing wristband identification and who received their transfusion in a secluded area, not easily visually monitored.

The SHOT 2008 annual report indicates the most common cause of error was in the final bedside check.

National specifications for a standard patient identification bands in Australia state 'wherever possible inpatients should wear some form of patient identification'.

***Guidelines for the administration of blood products* (ANZSBT/RCNA, 2011)**

Section 6: Administration of blood products

6.9 The pre-administration identity check of patient and blood product

6.9.1 All patients receiving a blood product, whether inpatient, outpatient or day patient MUST be positively identified and SHOULD have an identification band attached to their body that complies with Australian and New Zealand standards/guidelines

6.9.2 The patient's identity must **always** be confirmed prior to transfusion

6.9.2.2 Ask the patient (if conscious and rational) to state and spell their family name and given name in full, and DOB (where possible), ensure that the stated full name and DOB are identical to those on the identification band

The following table outlines the information elements recorded on wristbands and the improvements from 2005 to 2011.

Table 4: Identification wristband elements totals

	Number with details on the wristband			Percentage (%) of all wristbands		
Identification wristband	2005 n = 1,228	2007 n = 1,265	**2011 n = 1,513**	2005	2007	**2011**
Surname	1,228	1,262	**1,512**	100	100	**100**
First name	1,208	1,260	**1,512**	98	100	**100**
Date of birth	1,090	1,165	**1,503**	88	92	**99**
Hospital identification number	1,198	1,249	**1,510**	97	99	**100**
Match with Compatibility Report and/or prescription form	1,207	1,232	**1,470**	98	98	**92**

From the 2011 audit, 43 transfusion episodes indicated patient identification did not match with compatibility report and/or prescription form. The audit did not identify what process was followed once the discrepancy was recognised.

> ***Guidelines for the administration of blood products*** **(ANZSBT/RCNA 2011)**
>
> **Section 6: Administration of blood products**
>
> **6.9 The pre-administration identity check of patient and blood product**
>
> 6.9.2.3 If discrepancy is found during the checking procedure, the blood component should not be transfused until the discrepancy is resolved with the transfusion service provider.

Administration documentation

The following data outlines individual administration steps reported as documented in the patient record. In most transfusion episodes the signature of the person administering the blood, and the date and time of commencement were recorded as shown in Table 5. Stop times, which are important for accurate identification of transfusion reactions, continue to be poorly documented – while there was a slight improvement of five per cent from previous years, 24 per cent of transfusions still did not have a stop time recorded.

> ***Guidelines for the administration of blood products*** **(ANZSBT/RCNA 2011)**
>
> **Section 6: Administration of blood products**
>
> **6.13 Checklist for medical/clinical record documentation of transfusion**
>
> The following information must be documented:
>
> - Commencement and completion time of each unit

Table 5: Records of signatories, date and times of transfusion comparative data

	Number with records			Percentage (%) of all episodes		
Administration record	2005 n = 1,329	2007 n = 1,309	**2011 n = 1,595**	2005	2007	**2011**
Signature of person administering the blood	1,303	1,294	**1,580**	99	99	**99**
Date of transfusion	1,294	1,277	**1,568**	98	98	**98**
Commencement time of transfusion	1,219	1,219	**1,544**	93	94	**97**
Stop time of the transfused unit	933	911	**1,213**	76	71	**76**

The majority of episodes (97 per cent) had at least one pre-transfusion observation recorded, with only some minor variation in the scope of these recorded observations. Table 6 illustrates the individual observation elements reported on patients before transfusion.

Table 6 : Pre-transfusion observations

	Number			Percentage (%) of all episodes		
Pre-transfusion observations	2005 n=1,329	2007 n=1,309	**2011 n=1,595**	2005	2007	**2011**
Blood pressure	1,257	1,243	**1,554**	96	96	**97**
Pulse	1,274	1,252	**1,564**	97	96	**98**
Temperature	1,244	1,246	**1,553**	95	96	**97**
Respiration	1,202	1,207	**1,531**	92	93	**96**

In contrast, fewer episodes recorded post-transfusion observations. Table 7 outlines the numbers of patients reported as having recorded post-transfusion observations.

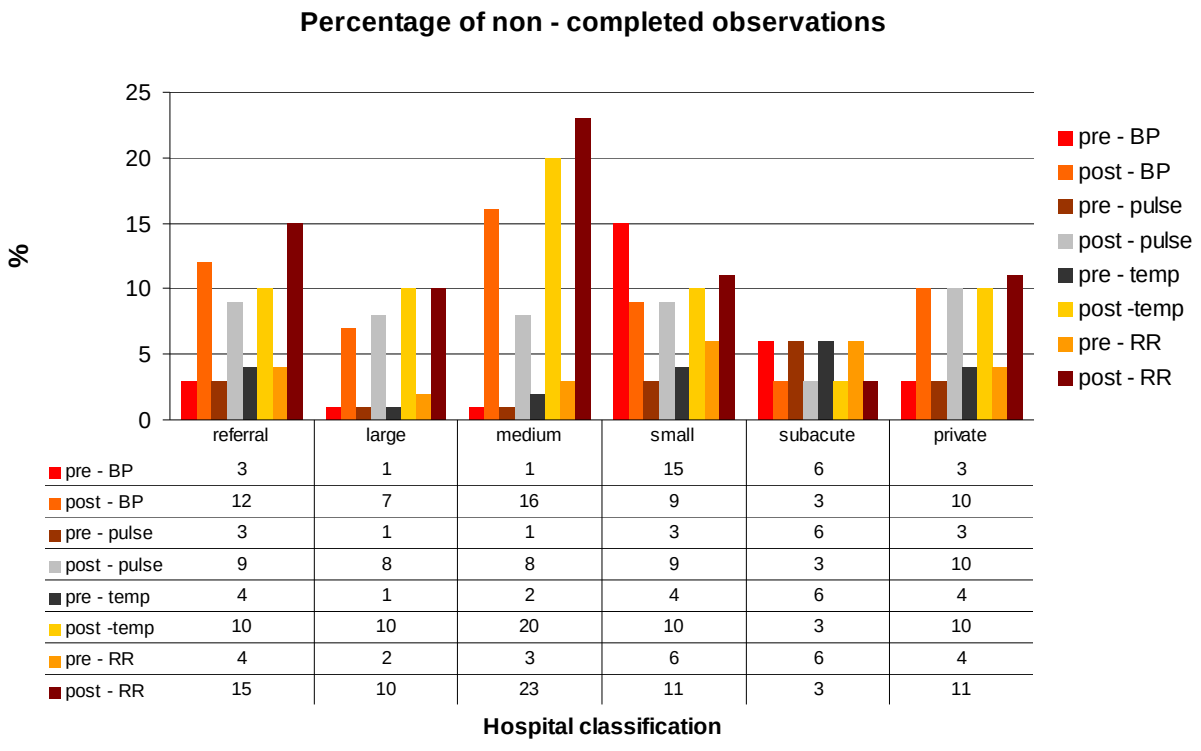
Table 7: Post-transfusion observations

	Number			Percentage (%) of all episodes		
Post-transfusion observations	2005 *n=1,329*	2007 *n=1,309*	**2011 *n=1,595***	2005	2007	**2011**
Blood pressure	1,084	1,136	**1,430**	86	88	**90**
Pulse	1,097	1,139	**1,399**	85	88	**88**
Temperature	1,065	1,126	**1,376**	87	87	**86**
Respiration	1,059	1,103	**1,308**	84	85	**86**

These findings were consistent with fewer hospitals mandating the recording of post-transfusion observations in hospital policy (see pre- and post-observations policy above).

While vital sign observations were recorded before nearly all transfusions, 10 percent of transfusion episodes do not record post transfusion observations. Figure1 outlines the breakdown of pre- and post-observation for each hospital classification.

Figure 1: Non-completed pre- and post-transfusion observations as a percentage of all episodes for each hospital classification



	referral	large	medium	small	subacute	private
pre - BP	3	1	1	15	6	3
post - BP	12	7	16	9	3	10
pre - pulse	3	1	1	3	6	3
post - pulse	9	8	8	9	3	10
pre - temp	4	1	2	4	6	4
post -temp	10	10	20	10	3	10
pre - RR	4	2	3	6	6	4
post - RR	15	10	23	11	3	11

Guidelines for the administration of blood products **(ANZSBT/RCNA, 2011)**

Section 6: Administration of blood products

6.11 Observations and monitoring

As a **minimum** the vital signs of temperature, pulse, respiration rate and blood pressure **must** be measured and recorded as follows:

- Prior to the start of each individual blood component pack administered
- 15 minutes after the commencing administration of each blood component pack
- When administration of each blood component pack is completed

Recording of reason for transfusion

In 82 per cent of transfusion episodes the patient file contained a reason for transfusion. The rate of failure to record a reason for transfusion did not differ significantly between patient locations. This is a 5 per cent improvement.

Guidelines for the administration of blood products **(ANZSBT/RCNA 2011)**

Section 6: Administration of blood products

6.13 Checklist for medical/clinical record documentation of the transfusion

The following information must be documented…

Indication for blood product transfusion

Section 9: Clinical governance

9.4 Checklist for local transfusion policies and procedures

Local transfusion policies and procedures should include guidance on:

…Documentation requirements for transfusion

Adverse transfusion events

The audit data shows that 23 of 82 hospitals reported transfusion episodes that were associated with some type of adverse effect in the transfused patient (two per cent of the total episodes, 38 cases). In 2011, 16 per cent (n=6) of these adversely affected patients had no notation in the medical record that an adverse transfusion effect had occurred. In comparison to 2007, where 30 per cent had no record in medical notes and seven per cent had no record in nursing notes.

Reporting of adverse events to the blood bank / pathology laboratories or the supplier was not documented in 48 per cent of cases in 2011. There has been no significant improvement in documentation of adverse events reporting, or if these reports were provided to the transfusion service provider.

Transfusion adverse event management is included within the *Guidelines for administration of blood products* (ANZSBT/RCNA 2011) and within the national standards (ACSQHC 2011) '*Standard 7 Blood and blood products'*

Guidelines for the administration of blood products **(ANZSBT/RCNA 2011)**

Section 6: Administration of blood products

6.12 Completing the transfusion

If there is any suspicion of a transfusion reaction the transfusion service provider must be informed of the clinical details and the product/product pack or bottle should be returned

6.13 Checklist for medical/clinical record documentation

The following information must be documented…occurrence and management of any adverse reactions if applicable

- Requirements for reporting to the transfusion service provider and/or Blood service or manufacturer

Criterion 7.3 Ensuring blood and blood product adverse events are included in incidents management system and investigation system

Criterion 7.6.1 Adverse reactions to blood or blood products are documented in the patient clinical record

Results of practice audit

Table 8: Comparative results of the practice audit

Audit element	Percentage % responding yes		
	2005 Audit	2007 Audit	**2011 Audit**
Location of patient during transfusion – inpatient	82	82	**72**
Was an informed consent process followed?	NA	NA	**83**
Is the patient having the transfusion in an area that is not secluded, where the patient can easily visually monitored by staff throughout the transfusion episode?	88	87	**90**
Is the patient conscious?	94	95	**93**
If conscious, was the pateint asked to state their identification details (last name, first name and date of birth)?	NA	85	**87**
Is the patient wearing a legible identification wristband?	93	97	**95**
If yes, does the wristband contain the patient's surname?	99	100	**100**
If yes, does the wristband contain the patient's first name?	98	100	**100**
If yes, does the wristband contain the patient's date of birth?	88	92	**99**
If yes, does the wristband contain the Patient Hospital Identification Number?	97	99	**100**
Does the identity on the patient wristband match the compatibility report of the blood being transfused?	98	98	**NA**
If yes, were details on the patient wristband compared to patient details on the blood bag (and compatibility report and/or prescription form)?	NA	NA	**94**
Were there any discrepancies found during bedside check?	NA	NA	**6**
Did checks take place immediately prior to commencing the transfusion?	NA	NA	**98**

Audit element	Percentage % responding yes		
	2005 Audit	2007 Audit	**2011 Audit**
Is one of the two people who undertook the blood and patient identity check the person spiking bag?	NA	NA	**98**
Is the compatibility report and/or the prescription form signed by the person administering the blood?	99	99	**99**
Is the date of the transfusion recorded on the prescription form or equivalent form?	98	98	**98**
Was commencement time recorded?	93	94	**97**
Has the stop time of the unit been recorded on the prescription form or equivalent form?	76	71	**76**
Was the actual time the unit commenced (24-hour clock) recorded?	98	97	**NA**
Was a pre-transfusion blood pressure recorded?	96	96	**97**
Was a pre-transfusion pulse recorded?	97	96	**98**
Was a pre-transfusion temperature recorded?	95	96	**97**
Was a pre-transfusion respiration recorded?	92	93	**96**
Was a post-transfusion blood pressure recorded?	86	88	**89**
Was a post-transfusion pulse recorded?	85	88	**90**
Was a post-transfusion temperature recorded?	87	87	**88**
Was a post-transfusion respiration recorded?	84	85	**86**
Is there a clear statement in the medical notes (or similar) giving the reason for the transfusion?	78	77	**82**
Was the transfusion considered an emergency procedure?	NA	NA	**10**

Audit element	Percentage % responding yes		
	2005 Audit	2007 Audit	**2011 Audit**
Is there any documentation of the patient having had an adverse effect due to the transfusion (symptoms include: fever more than one degree Celsius above baseline pre-transfusion, rigors, pain in the chest or abdomen, hypotension (decreased BP), tachycardia (increased HR), rash/itching, breathlessness, nausea/vomiting, haemoglobinuria)	2	2	**2**
If a transfusion adverse event has occurred is it recorded in medical notes?	73	70	**NA**
If a transfusion adverse event has occurred is it recorded in nursing notes?	82	93	**NA**
If a transfusion adverse event has occurred is it documented in the patient's medical history?	NA	NA	**88**
If a transfusion adverse event has occurred, was it reported to pathology and/or the supplier?	NA	44	**52**

Practice risk assessment and overall ranking

The following table outlines the benchmark of best practice standards in areas of transfusion practice risk. The algorithm to determine best practice standard is outlined in appendix 3.

Table 9: Practice risks

Practice risks	Percentage (%) at best practice standards			Best practice descriptor
	2005	2007	2011	
Risk from non-continuous monitoring	88	87	**90**	Patients must be visually monitored by staff during the transfusion episode to reduce risk of delay in detecting an adverse transfusion reaction
Incomplete or no wristbands	80	88	**94**	A wristband must contain all the following elements – given name, first name, date of birth and hospital identification number
Pre-administration identity check of patient and blood product*	90	93	**92**	Details on the patient wristband are compared to patient details on the blood bag and compatibility report and/or prescription form **and** checks are taken place immediately prior to commencing the transfusion **and** one of the two people who undertook the blood and patient identity check, is the person spiking/hanging the bag **and** the compatibility report or the prescription sheet is signed by the person administering the blood?
Transfusion documentation incomplete	53	57	**61**	Transfusion documentation must contain transfusion date and time, transfusion reason and transfusion stop time.
Incomplete pre-transfusion documentation of observations	87	91	**94**	Pre-transfusion observations must include, blood pressure, pulse, temperature and respiration.
Incomplete post transfusion documentation of observations	76	81	**84**	Post-transfusion observations must include, blood pressure, pulse, temperature and respiration.
Incomplete documentation and reporting of an adverse event	25	33	**65**	In the event of an adverse reaction to a transfusion, is the event documented and reported appropriately.

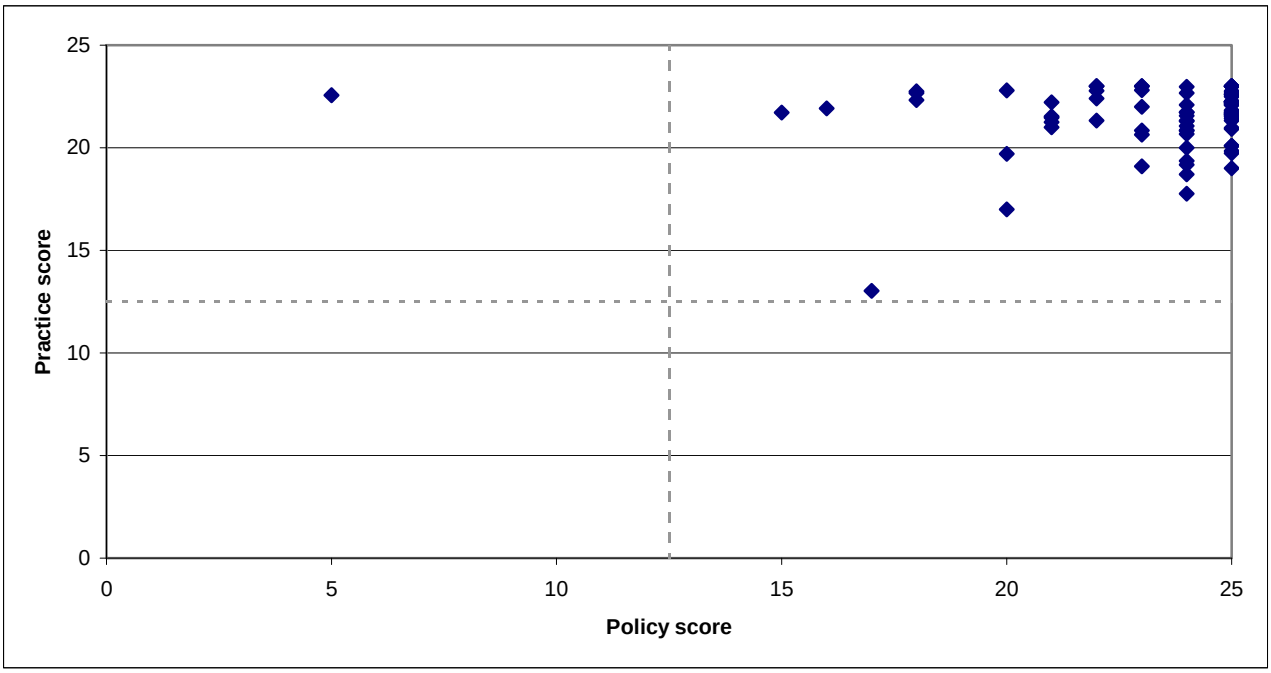
* The components included in this have changed from previous years due to changes in the audit questions.

The 79 hospitals that provided both policy and practice audits were scored according to their alignment with national best practice for transfusion safety. The definitions used to determine this score are outlined in Appendix 3.

The results are displayed in a scatter plot as shown in the Figure 2 with both policy and practice scores presented as independent factors. The scatter plot shows a positive shift of hospitals to the right upper quadrant similar to that demonstrated in 2007. This illustrates sustained and ongoing improvement in written policies and bedside transfusion practice for the participating hospitals.

In 2011, four hospitals attained the benchmark of achieving the full score for policy and practice. There was an additional variable included in the protocol score for 2011, namely inclusion of an informed consent process for elective transfusions. The practice score included an additional four variables: informed consent process, patient wristband check against blood bag and compatibility report, identity check occurred immediately prior to commencing transfusion, and the person spiking the blood bag was one of the two who undertook the blood and patient check.

Figure 2: Policy-practice scatter plot



Appendix 1

Audit forms and Information sheets

The Blood Matters Program - Victoria

Audit of Blood Transfusion Policy, Procedures and Administration Practice

Background

Blood and blood components are administered by a range of staff across hospitals. Access to and knowledge of hospital protocols for blood administration is important for patient safety and organisational risk management. This audit includes both the initial specimen collection for crossmatch and subsequent administration of blood product at the bedside.

The Blood Matters Program wishes to work with hospitals to ensure that blood components are administered to patients appropriately and safely. Blood Matters Program has identified the area of blood product administration policy and practice as an area for targeted desk and clinical audits in order to determine current practice across the State.

Definition of Policy and Procedure:
The policy/procedure document refers to a document that is for **hospital-wide use** and that is authorised in accordance with hospital clinical policy/procedure processes for such documents [eg the hospital executive or delegate is responsible for authorising the document(s)].

Audit Aims

To improve the quality of care provided to patients by ensuring that blood product administration policies and procedures are available, appropriate and practised within hospitals.

Objective

- To determine if blood product administration policies and procedures are available and used within hospitals and consistent with national guidelines.
- To determine if blood product administration policies are consistent with the ANZSBT/RCNA guidelines 2004.

Standards

Standards have been developed from the ANZSBT/RCNA Guidelines for the Administration of Blood Components 2004.

For a copy of the 'Guidelines for the Administration of Blood Components (ANZSBT/RCNA), please refer to the website: http://www.health.vic.gov.au/best/tools/guidelines.htm

The Blood Matters Program - Victoria

Data Set for Blood Product Administration

The hospital transfusion committee (or equivalent), are asked to take this opportunity to ensure that the required steps for safe blood product administration are included in administration policy and procedures. This includes adequate documentation in the medical record. ANZSBT/RCNA guidelines (2004) recommend that medical record documentation includes:

- the compatibility report
- identity of the person administering the products
- checks made
- patient observations
- transfusion reactions and action taken

Methodology

The approach is to conduct two audits.

1. A short desk audit of the existing administration policy and procedures
2. A prospective observational audit of 30 random (or for smaller health service the number transfused in the audit time period) transfusion administration episodes at the bedside. It is important that the observational part of the audit is conducted AT the time of transfusion and should be undertaken in a range of clinical settings within the hospital.

The Transfusion Committee (or equivalent) should designate member(s) of staff to record the information requested on the two proformas. A paper copy is included for ease of data collection at the bedside, however, all data is to be submitted electronically through the Blood Matters website. Further information for the data collection can be found in the 'Audit Information Sheet'.

All data collection forms comply with the Privacy Acts.

Time Frame:

Either 30 random transfusion episodes or all transfusion episodes from **18 April to 18 July 2011.**

A designated member of Hospital staff will undertake data collection and submit the data via the Blood Matters website.

The Blood Matters secretariat will co-ordinate the audit, taking responsibility for the distribution of audit collection tools and analysis, and will collaborate with the Blood Matters Advisory Committee in formulating the audit report. The Advisory Committee will disseminate results to the participating hospitals.

The Blood Matters Program - Victoria

Audit Information Sheet

Aim of the audit is to improve the quality of care provided to patients by ensuring that blood product administration policies and procedures are available and practised within the hospital. These policies and procedures should be consistent with the ANZSBT/RCNA 2004 Guidelines for the Administration of Blood Components.

- Two audit forms are provided, these include:
  - The 'Audit of hospital-wide policy and procedures for Blood 'Transfusion'. This is a desk audit requesting assessment of the hospital policy in line with the 'Guidelines for the Administration of Blood Components' ANZSBT/RCNA.
  - The 'Prospective Audit of Blood Product Administration practice'. This is an observational audit requiring an auditor to go to the bedside of a transfused patient.
- Each hospital is provided with a code. This is to aid data analysis and ensure confidentiality of results published. All results published from the audit will be de-identified.
- Both of the audit tools (the desk audit and the observational audit) should be completed by all hospitals. For the observational audit (the Prospective Audit of Blood Product Administration Practice) a template has been provided which may be used to collect data on 30 blood product administrations, or the number transfused in the time frame if less than 30; however, the data should be submitted electronically via the Blood Matters website. For the purpose of this audit the transfusion of each single unit of a blood component is considered an administration episode. It is recommended that only one unit per patient administration episode (if the patient is receiving more than one unit of a blood component for the current indication) be recorded.
- The desk audit tool 'Audit of hospital-wide policy and procedure for transfusion' may be completed at any time. The 'Prospective Audit of Blood Product Administration Practice' (observational audit) requires attending the patient bedside at the time of transfusion. For ease of data collection, it is recommended that the practise audit template be printed and manually filled in for up to 10 events and the information then transcribed to the electronic form. Within this observational audit there are requests for information recorded at the completion of the transfusion. It is recommended that the audit be done as closely as possible to the completion of the unit, but maybe retrospective through the medical record if this is not possible.
- Return date for audit data is **25 July 2011.**

  Data is to be entered **electronically** via the Blood Matters website 'electronic form' located at http://www.health.vic.gov.au/best/audit.htm. This electronic form will be available for use from mid April 2011.

If further information is required please contact:

- Jo Perillo, Transfusion Education Nurse –Tel: 03 9096 1303
- Lisa Stevenson, Transfusion Nurse- Tel: 03 9096 0476
- Blood Matters on email: bestaudit@health.vic.gov.au

Page 3 of 3

Policy Audit template

blood matters
better safer transfusion program

Audit of Hospital-wide Policy and Procedure(s) for Blood Transfusion

Definition of policy and procedure(s): The policy/procedure document refers to a document that is for **hospital-wide use** and that is authorised in accordance with hospital clinical policy/procedure processes for such documents [e.g. the hospital executive or delegate is responsible for authorising the document(s)].

1. Hospital Code_____

2. Form completed by: _____

3. Position Title: _____

4. Email Address: _____

5. Does your hospital have written policies on blood transfusion practice? Yes No

If **NO** you have completed the questionnaire, please return this questionnaire electronically via the Blood Matters website at www.health.vic.gov.au/best/audit.htm.

If **YES** please continue to question 6

6. Does the written policy state that hospital staff:

a) routinely give information to patients about blood transfusions before the blood transfusion? Yes No

b) provide an informed consent process for elective transfusions Yes No

7. Within your hospital's policies is there:

a written statement on the labeling of blood samples for blood grouping and cross matching? Yes No

a written statement on which staff can take samples for blood grouping and cross matching? Yes No

a written statement on what training should be given to staff who can take samples for blood grouping and cross-matching? Yes No

a written statement that wristbands should be worn by all patients unless a specified alternative method is used (i.e. positive patient ID process or photo ID) Yes No

8. Is there a policy statement about the administration of blood in your hospital? Yes No

Audit of Hospital-wide Policy and Procedure(s) for Blood Transfusion

9. Within your hospital's policies is there a written statement on how the identity of the patient is verified prior to transfusion? Yes No

10. If **YES** does it contain the following for conscious patients?
- Ask the patients to state forename and surname and DOB Yes No
- Check the patient's wristband? Yes No

11. If **YES** does it contain the following for unconscious patients?
- i) Check the patient's wristband for forename and surname Yes No
- ii) Check the patient's wristband for DOB and hospital number Yes No

12. Is there a policy statement that pre-transfusion observations should be made? Yes No

13. If **YES** does it include:
- i. Pulse Yes No
- ii. Temperature Yes No
- iii. BP Yes No
- iv Respirations Yes No

14. Is there a policy statement that post-transfusion observations should be made? Yes No

15. If **YES** does it include:
- i. Pulse Yes No
- ii. Temperature Yes No
- iii. BP Yes No
- iv Respirations Yes No

16. Is there a policy statement that specifies what to do in the event of a transfusion reaction? Yes No

17. If **YES** does it include:
- i. Stop transfusion Yes No
- ii. Contact blood bank (Transfusion laboratory or supplier) Yes No
- iii. Seek advice from medical staff Yes No

Thank you for taking the time to complete this questionnaire

Audit forms are to be returned electronically via the Blood Matters website at www.health.vic.gov.au/best.

If audit tools are misplaced, or further information is required please contact:
Blood Matters on Tel 03 9096 9037
or BeSTaudit@health.vic.gov.au

Prospective audit blood transfusion practice (single audit tool)

blood matters
better safer transfusion program

Prospective Audit of Blood Product Administration Practice

Hospital Code_____

This form must be completed at the time of the transfusion episode. Please write **Y** for 'Yes' in each column where evidence is found or **N** for 'No' where there is no evidence present, alternatively N/A where the statement is not applicable to the transfusion episode.

4. Location of patient during transfusion (Options: Inpatient; Day Unit; Emergency; Other)	
5. Was an informed consent process followed?	
Is the patient having the transfusion in an area that is not secluded, where the patient can easily be visually monitored by staff throughout the transfusion episode?	

6. Patient Identification

Under current Australian guidelines two members of staff shall be responsible for carrying out the identity and product check. The members of staff shall be doctors, or nurses holding current registration.

	Y/N
Is the patient conscious?	
If conscious, were they asked to state their identification details (last name, first name and date of birth)?	
Is the patient wearing a legible identification wristband?	
If yes, does the wristband contain the patient's surname?	
If yes, does the wristband contain the patient's first name?	
If yes, does the wristband contain the patient's date of birth?	
If yes, does the wristband contain the Patient Hospital Identification Number?	
If yes, were details on the patient wristband compared to patient details on the blood bag and compatibility report AND/or prescription form?	
Were there any discrepancies found during the bedside check?	
Did the checks take place immediately prior to commencing the transfusion?	
Is one of the two people who undertook the blood and patient identity check, the person spiking/hanging the blood bag	

7. Concerning the actual unit being transfused at the time of the audit

	Y/N
Is the compatibility report AND/or the prescription form signed by the person administering the blood?	
Is the date of the transfusion recorded on the prescription form or equivalent form?	
Has the stop time of the unit been recorded on the prescription form or equivalent form?	

Victoria

Prospective Audit of Blood Product Administration Practice

8. What time did the unit commence? (please write a time in accordance with the 24/24 clock, i.e. 1700 if no time recorded enter 9999)	

9. Considering the unit currently being transfuse

	Y/N
Was a pre-transfusion blood pressure recorded?	
Was a pre-transfusion pulse recorded?	
Was a pre-transfusion temperature recorded?	
Was a pre-transfusion respiration rate recorded?	
Was a post-transfusion blood pressure recorded?	
Was a post-transfusion pulse recorded?	
Was a post-transfusion temperature recorded?	
Was a post-transfusion respiration rate recorded?	

10. Transfusion Indication

	Y/N
Is there a clear statement in the medical notes (or similar) giving the reason for the transfusion?	
Was the transfusion considered an emergency procedure?	

11. Adverse Transfusion Event

	Y/N
Is there any documentation of the patient having had an adverse effect due to the transfusion (Symptoms include: fever >1 ° C above baseline pre-transfusion, rigors, pain in the chest or abdomen, hypotension (decreased BP), tachycardia (increased HR), rash/itching, breathlessness, nausea/vomiting, haemoglobinuria)	
If a transfusion adverse event has occurred is it documented in the patient's medical history?	
If a transfusion adverse event has occurred, was it reported to Pathology and/or the supplier?	

Audit forms are to be returned electronically via the Blood Matters website at www.health.vic.gov.au/best.

Appendix 2

Definitions

Hospital classification definitions for peer groups were published by the Australia Institute for Health and Wellbeing (2011).

Principal referral and specialist women's and children's hospitals	Major city hospitals with >20,000 acute casemix-adjusted separations, and regional hospitals with >16,000 acute casemix-adjusted separations per annum. Specialised acute women's and children's hospitals with >10,000 acute casemix-adjusted separations per annum.
Large hospitals	Major city acute hospitals treating more than 10,000 acute casemix-adjusted separations per annum. Regional acute hospitals treating >8,000 acute casemix-adjusted separations per annum, and Remote hospitals with >5,000 casemix-adjusted separations
Medium hospitals	(Group 1) Medium acute hospitals in regional and major city areas treating between 5,000 and 10,000 acute casemix-adjusted separations per annum. (Group 2) Medium acute hospitals in regional and major city areas treating between 2,000 and 5,000 acute casemix-adjusted separations per annum, and acute hospitals treating <2,000 casemix-adjusted separations per annum but with >2,000 separations per annum.
Small acute hospitals	Small regional acute hospitals (mainly small country town hospitals), acute hospitals treating <2,000 separations per annum, and with less than 40 per cent non-acute and outlier patient days of total patient days. Small remote hospitals (<5,000 acute casemix-adjusted separations but not 'multi-purpose services' and not 'small non-acute'). Most are <2,000 separations.
Sub-acute and non-acute hospitals	Small non-acute hospitals, treating <2,000 separations per annum, and with more than 40per cent non-acute and outlier patient days of total patient days. For example, geriatric treatment centres combining rehabilitation and palliative care, with a small number of acute patients.
Un-peered and other hospitals	Prison medical services, dental hospitals, special circumstance hospitals, major city hospitals with <2,000 acute casemix-adjusted separations, hospitals with <200 separations et cetera.

Appendix 3

Practice risks algorithm

Report variable	Best practice descriptor	Questions from the practice audit included in the analysis
Risk from non-continuous monitoring	Patients must be visually monitored by staff during the transfusion episode to reduce risk of delay in detecting an adverse transfusion reaction.	An episode was considered at risk if the patient was reported to be in an area that was not easily visually monitored by staff. Best practice determined using denominator based on total audits.
Incomplete or no wristbands	A wristband must contain all the following elements – family name, first name, date of birth and hospital identification number.	An episode was considered at risk if any of the wristband elements were not complete (surname, first name, date of birth, and hospital identification number. Best practice determined using denominator based on total audits.
Pre-administration identity check of patient and blood product	Product details must match the information on a patient's wristband and the blood bag and compatibility report **and**/or prescription form.	An episode was considered at risk if the patient's wristband was not compared to blood bag and compatibility report; checks take place immediately prior to commencing the transfusion; the person spiking the bag is one of the two who undertook the identity check; compatibility report not signed by the person administering the blood. Best practice determined using denominator based on total audits.
Transfusion documentation incomplete	Transfusion documentation must contain transfusion date and time, transfusion reason and transfusion stop time.	An episode was considered at risk if there were any of the following was not documented: date of transfusion, time of commencement, stop time, clear statement of reason for transfusion. Best practice determined using denominator based on total audits.
Incomplete pre-transfusion documentation of observations	Pre-transfusion observations must include blood pressure, pulse, temperature and respiration.	An episode was considered at risk if any of the pre-transfusion observations were not recorded. Best practice determined using denominator based on total audits.
Incomplete post-transfusion documentation of observations	Post-transfusion observations must include blood pressure, pulse, temperature and respiration.	An episode was considered at risk if any of the post-transfusion observations were not recorded. Best practice determined using denominator based on total audits
Incomplete documentation and reporting of an adverse event	In the event of an adverse reaction to a transfusion, the event is documented and reported appropriately.	An episode was considered at risk if a patient had an adverse event and there was no documentation in medical notes and/or not reported to pathology. Best practice determined using denominator based on total number of adverse events

Policy-practice scatter plot

The policy score was derived from the policy audit by tallying all the ‘yes’ responses, resulting in a maximum of 25.

The practice score was derived from a set of questions assessed on the practice audit for their ‘yes’ responses, resulting in a maximum of 24. Questions on the practice audit eliciting responses not directly aligned to transfusion policy were not assessed (transfusion setting, type of patient, levels of consciousness, date and time fields, adverse event entries).

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