

Serious Transfusion Incident Reporting (STIR) 2011-13

Blood Matters



Haemovigilance

Definition:

- Haemovigilance is an organised set of surveillance procedures covering the entire transfusion chain from donor to patient, and encompassing products and processes.
- To collect and assess information on unexpected and undesirable effects resulting from the therapeutic use of labile blood components and to prevent their occurrence or recurrence.¹

1. Faber JC. Worldwide overview of existing haemovigilance systems. *Transfusion and Apheresis Science* 2004;31:99–110.

STIR

- The Blood Matters program commenced in 2002 as a collaboration between the Victorian Department of Health and the Australian Red Cross Blood Service, with the aim of improving clinical transfusion practice.
- STIR commenced in 2006. It now has private and public health services from four states reporting (Victoria, Tasmania, ACT, and NT).
- STIR is a voluntary reporting system that aims to capture information on incidents, reactions and near misses relating to transfusion of blood products.

STIR (cont.)

- All data reported is de-identified, with no patient details except for age and gender.
- Health services are identified by a code assigned by the STIR office, and these codes are not used in any expert reviews or reporting.
- Summary reports for health services are available as requested or on a six monthly basis.
- A STIR report is made available publically every two years and includes summary data, case studies and recommendations.

Reporting categories

The system captures two main categories of incidents, clinical and procedural.

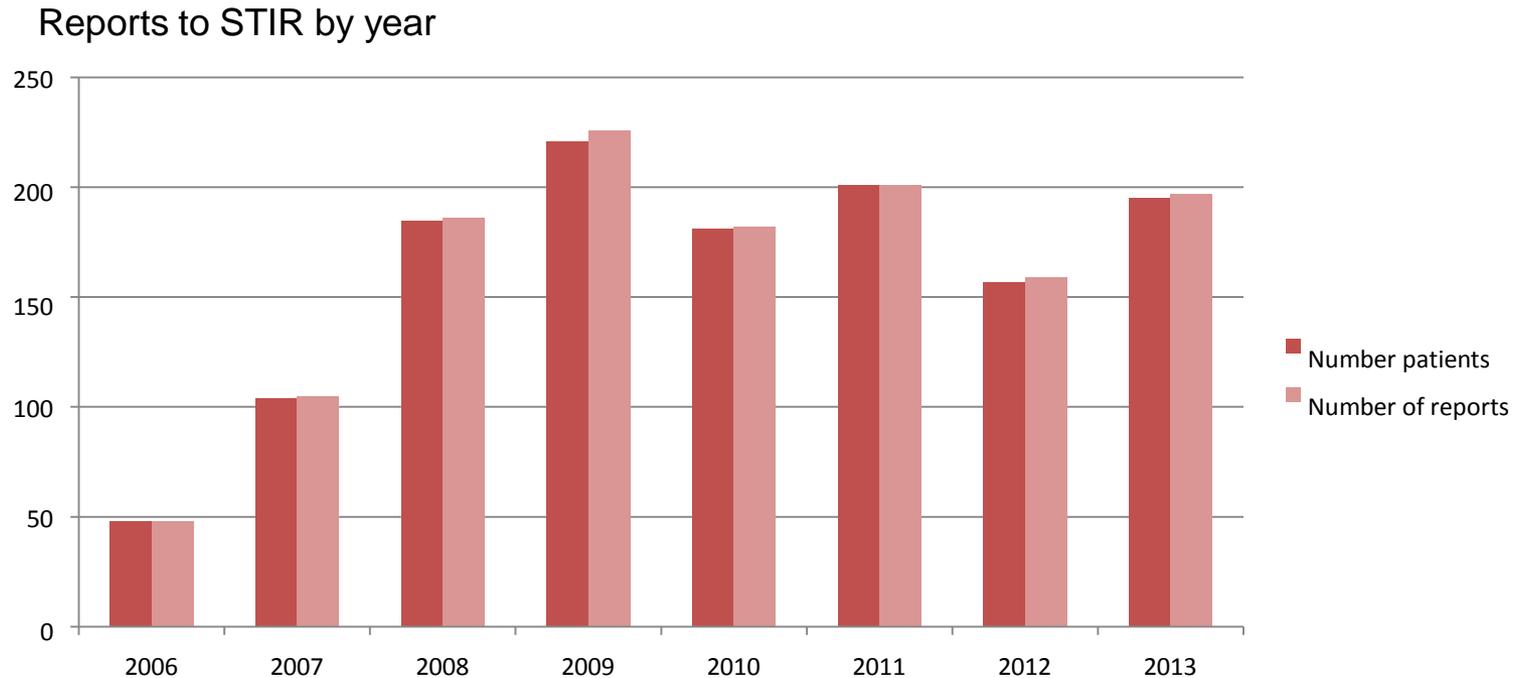
Clinical reporting forms:

- Acute transfusion reactions –this includes febrile non-haemolytic reactions, allergic or anaphylactic reactions and acute haemolytic reactions
- Transfusion related acute lung injury (TRALI) / transfusion associated circulatory overload (TACO)
- Delayed reactions
- Transfusion associated graft versus host disease (TAGVHD)
- Post transfusion purpura (PTP)
- Bacterial / other infection
- Viral infection

Procedural reporting forms:

- Incorrect blood component transfused (IBCT)
- Wrong blood in tube (WBIT)
- Other near miss

Report for 2011-13

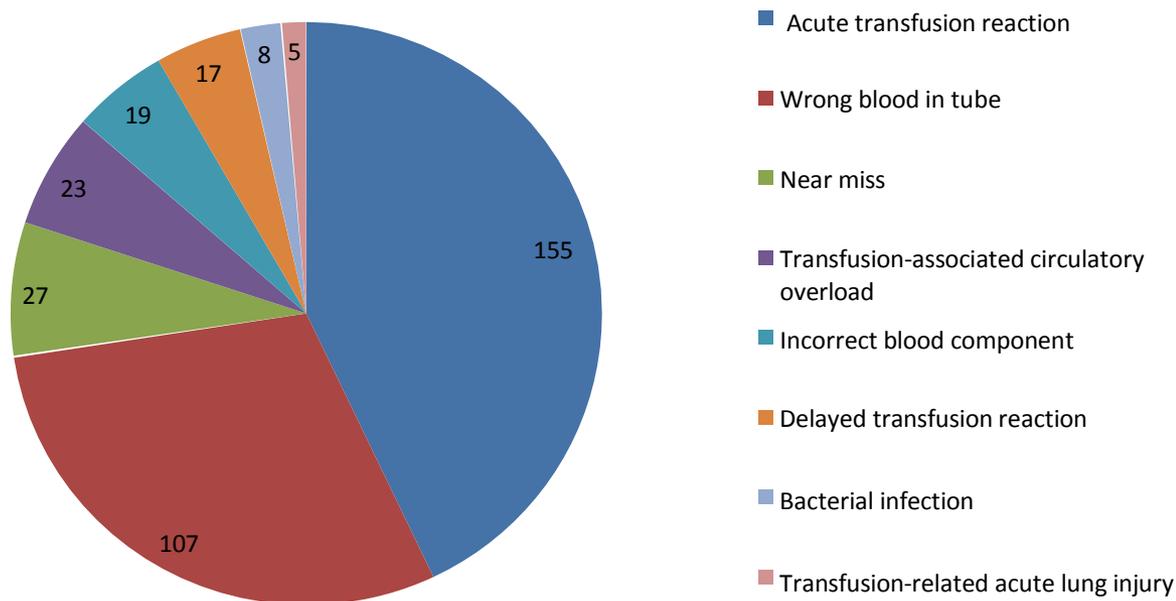


Reporting to STIR has remained steady after several years of increasing reports. This may be due to changes in the reporting criteria, that has reduced the number of minor reactions being reported.

There were 356 notifications reported for the period July 1, 2011- June 30, 2013, resulting in 361 adverse events.

Types of events reported 2011-13

361 events



Acute transfusion reactions includes –Febrile non-haemolytic reactions (59)
- Allergic reactions (61)
- Acute haemolytic reactions (5)

There were no reports of post-transfusion purpura or viral infection in this period.

Blood products implicated

Product	Number	Percentage
Red Cells	171	48
Platelets	38	11
Fresh Frozen Plasma	26	7
Cryoprecipitate	2	1
Multiple products	17	5
Other*	102	29

*Events involving pre-transfusion specimens

Patient outcomes reported at notification

Outcome	Number
Full recovery with minor morbidity or requirement for extended length of stay	151
Full recovery with no ill effects	70
Death*	9

*Although deaths were reported, none were attributed directly to the transfusion event.

Recommendations



Recommendation 1:

- TACO is under-reported and under-recognised, but associated with potentially high mortality for transfusion recipients. STIR recommends transfusing health services must ensure there is improved monitoring and assessment of at risk-individuals, especially those with pre-existing cardiac failure prior to transfusion.
- STIR recommends health services should investigate and implement the use of a single-unit guideline for high-risk clinical areas to help prevent TACO.
- Information on a single-unit guideline, including tools and resources is available through the National Blood Authority website www.blood.gov.au/single-unit-transfusion.

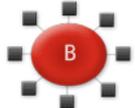
TACO case study

- A paediatric patient in sickle cell crisis was admitted for a red cell exchange.
- One unit of red cells was administered. At the end of the transfusion the patient developed reduced oxygen levels and difficulty breathing at a rate of 50 breaths per minute.
- The patient was managed with oxygen and diuretics. A chest X-ray confirmed acute pulmonary oedema.
- In the preceding 24 hours the patient had received multiple blood and blood products, which may have contributed to the circulatory overload.

Recommendations (cont.)

Recommendation 2:

- As recommended in the previous STIR report, STIR recommends the development of a regional or national database of antibody results that may assist in preventing re-exposure to antigen-positive units and the consequences of some acute and/or delayed haemolytic transfusion reactions.

	Group A	Group B	Group AB	Group O
Red Blood Cell Type				
Antibodies Present in Plasma	 Anti-B	 Anti-A	None	 Anti-A and Anti-B
Antigens Present on Red Cells	 A Antigen	 B Antigen	 A and B Antigens	No Antigens

ABO Blood groups

http://www.transfusion.com.au/blood_basics/blood_groups/abo_rh

Delayed haemolytic case study

- Patient presented to the emergency department following referral from the GP with symptomatic low Hb (67g/L) for investigation. The patient was admitted for a 2 unit transfusion and referral to the surgical team for investigation of chronic anaemia.
- Pre-transfusion screening was unremarkable and transfusions were administered without any issue.
- The patient re-presented to the emergency department 6 days post discharge (Hb 83g/L). Lethargic, now with dark urine and a day history of left flank pain and feeling unwell (temperature of 39°C).
- The laboratory noted haemolysis on blood specimens and investigated for a delayed haemolytic transfusion reaction, which was confirmed. Antibodies were detected and a blood sample was sent to the Australian Red Cross Blood Service Red Cell Reference laboratory for further antibody investigation. Antibodies were confirmed against three red cell antigens Jk(a), c and E.
- The patient was diagnosed with a delayed haemolytic reaction and acute renal failure, with the Jk(a) antibody the most likely cause of the haemolytic reaction. Future red cell transfusion must be with antigen-negative units.

Recommendations (cont.)

Recommendation 3:

- Patient identification issues with sampling, request and administration still occur too frequently. STIR recommends health services investigate the use of technology such as 2D barcode scanning for sampling and administration practices for transfusion to reduce patient identification/product errors if possible.
- To reduce ongoing blood sampling errors STIR recommends laboratories should strictly follow guidelines to identify pre-transfusion specimens and enforce a 'zero tolerance' for non-conforming pre-transfusion specimens on arrival in the laboratory.
- STIR recommends education of clinical staff and laboratory staff in transfusion practice from sampling to administration to assist in reducing errors related to patient identification.
- Free courses are available through BloodSafe eLearning Australia <www.bloodsafelearning.org.au>

BloodSafe
eLearning Australia
Award winning transfusion practice and patient blood management education

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Learn the risk:
Mistakes in collecting blood specimens can start a chain of interconnected events leading to the transfusion of incorrect blood.

Transfusion Practice Courses
For direct access to the course or modules select the tab below. Further details on the course or module is available from Our Courses

- Clinical Transfusion Practice

Alternatively you may only need to access certain modules of the Clinical Transfusion Practice course.

- Collecting Blood Specimens
- Transporting Blood

Patient Blood Management Courses
For direct access to the course select the tab below. Further details on the courses are available from Our Courses.

- Patient Blood Management
- Critical Bleeding
- Iron Deficiency Anaemia
- Perioperative
- Postpartum Haemorrhage

Learn more about Patient Blood Management (PBM) with clinicians discussing PBM and the reasons for change.

Iron Deficiency Anaemia (IDA) App
access for **free** from your mobile device

- iPhone
- iPad
- Android

Wrong blood in tube case study

- A sample for a full blood examination (FBE) was sent to the laboratory and on processing, the scientist noted significant discrepancies with recent results.
- Blood group analysis was performed on the sample and it was noted to be AB RhD positive. The historical record for the patient was O RhD positive.
- The health service noted it was collected from the correct patient who required a FBE, however it was labelled with another patient's details, and labelled away from the patient with no direct checking procedure with the patient being undertaken.

The ABCD of blood sampling
Get it right the first time, get it right every time

A Ask the patient to state and spell their name (first and last) and their date of birth.

B Before leaving the patient, label the specimens.

C Confirm the sample request form, the specimens and patient ID details all match.

Declaration: Document collector details, signature, date and time of collection on request form.

D

Get it right the first time, get it right every time

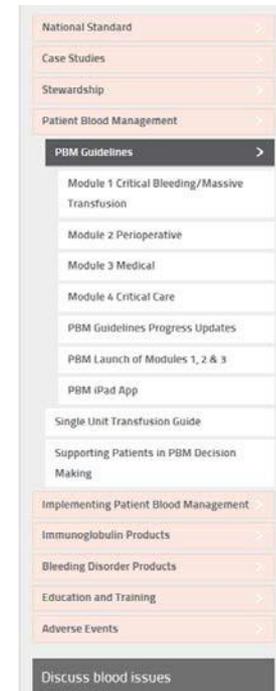
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<http://www.health.vic.gov.au/bloodmatters/>

Recommendations (cont.)

Recommendation 4

- Patient blood management (PBM) is the management and preservation of patients' own blood to reduce or avoid the need for a blood transfusion.
- The aim of patient blood management is to improve outcomes for each patient by recognising anaemia, risk factors for procedural bleeding and minimising or avoiding unnecessary exposure to blood components.
- STIR recommends the implementation of the PBM guidelines for specific clinical areas to reduce unnecessary patient exposure to blood products.
- The guidelines, including tools and resources for implementation, are available through the National Blood Authority website www.blood.gov.au/implementing-pbm.



Patient Blood Management Guidelines

The National Blood Authority (NBA) is funding and managing the development of the following six modules as part of a comprehensive, evidence-based, Patient Blood Management (PBM) Guidelines:



Module 1 Critical Bleeding/Massive Transfusion is intended to assist and guide health-care professionals in making clinical decisions when managing patients with critical bleeding who require or are likely to require massive transfusion.



Module 2 Perioperative is intended to inform health-care practitioners, health educators, health service managers and policy makers about the pre, intra and postoperative care of patients undergoing surgery or invasive procedures, particularly those in which blood loss is anticipated.



Module 3 Medical is intended to assist and guide clinical decisions and coordination of health-care across the primary, secondary and tertiary care setting for patients with acute or chronic medical conditions requiring haematological intervention.



Module 4 Critical Care is intended to assist and guide health-care professionals in making clinical decisions when managing patients requiring critical care.

Module 5 Obstetrics and Maternity is in its final stages of development after a six week public consultation period. Quarterly updates are available on this site at [Patient Blood Management Guidelines Progress Updates](#).

Module 6 Paediatrics/Neonates module is currently under development. Quarterly updates are available on this site at [Patient Blood Management Guidelines Progress Updates](#).



Conclusion

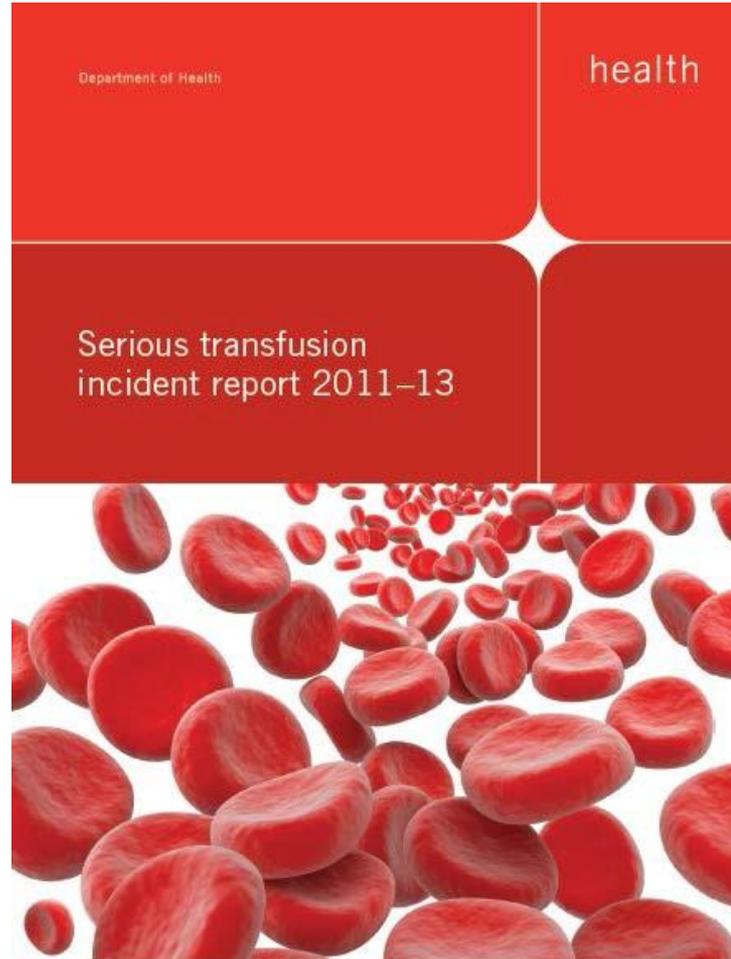
- Errors and incidents can occur at any point in the transfusion chain.
- It is important that all staff involved in this chain are aware of their role and the risk to patients.
- Serious errors are rarely just one mistake or lapse, there are often several steps that have gone wrong.
- The final bedside identity check is the last opportunity to find an error from earlier in the chain, and it is therefore vital to get right every time.

Conclusion

- Some incidents will occur regularly with there is little clinical or laboratory staff can do to prevent them e.g. allergic reactions.
- Some incidents will occur rarely due to the steps taken to prevent them e.g. bacterial contamination of products.
- Some incidents occur regularly, and may have disastrous results for patients. These are generally preventable with good patient/ product identification procedures e.g. wrong blood in tube, incorrect blood component transfused.
- All staff should be aware of their role in the transfusion chain and what they can do to prevent incidents.

The report is available at:

<http://www.health.vic.gov.au/bloodmatters/>



References

1. Faber JC. Worldwide overview of existing haemovigilance systems. *Transfusion and Apheresis Science* 2004;31:99–110.
2. Bolton-Maggs, P. SHOT. Haemovigilance and the UK schemes. Oct 2014. <http://www.shotuk.org/wp-content/uploads/SHOT-Information-and-teaching-slide-set-Oct-2014.pdf>

Acknowledgements

“We would like to acknowledge the Australian Red Cross Blood Service and the Australian governments that fully fund the Blood Service for the provision of blood products and services to the community”.