Introduction
The Northern Territory Transfusion Committee (NTTC) provides oversight and clinical governance for the Central Australia and Top End Health Services' haemovigilance system which includes the:

- Transfusion Incident Review Group (TIRG)
- RiskMan electronic incident management system
- Blood Matters Serious Transfusion Incident Reporting (STIR) system

The TIRG was established in March 2011. It is an expert group which meets monthly to review all transfusion-related incidents. It reports to the NTTC. TIRG responsibilities include:

- monitoring and investigating transfusion-related incidents
- collating and analysing transfusion incident data
- investigating and reporting serious transfusion incidents
- coordinating root cause analyses (RCA) if required
- making recommendations for transfusion education and practice improvement

Method
1. 2010-2014 transfusion incident data was collected from the NTG-wide RiskMan electronic incident management system. Data includes the number of incidents (Figure 1), incident classification (Figure 2), and severity rating (Figure 3).
2. The RiskMan transfusion classification has four main categories: administration, transfusion reaction, blood product and documentation, plus additional sub-categories e.g. consent and identification (Table 1).

Table 1: Incident Definitions

<table>
<thead>
<tr>
<th>Incident</th>
<th>Procedure errors</th>
</tr>
</thead>
<tbody>
<tr>
<td>adverse event resulting from the transfusion of a blood product or the use of a blood product</td>
<td>incidents which were the result of a preventable error</td>
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RiskMan Transfusion Categories

- Administration
- Reactions
- Blood product
- Documentation

Sub-categories

- Identification errors: e.g. incorrect patient identification, incorrect blood product transfused, wrong blood in tube, incorrect test results
- Consent: informed consent not documented

Table 2: RiskMan Incident Severity Rating (ISR)

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<tr>
<th>Level of Impact</th>
<th>Patient</th>
<th>Equipment/Infrastructure</th>
</tr>
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<tr>
<td>ISR 1 Catastrophic</td>
<td>Death or permanent loss or reduction of functioning and recovery is unlikely. Includes sentinel events</td>
<td>Event resulting in loss of damage to equipment or infrastructure</td>
</tr>
<tr>
<td>HDR 2 Major</td>
<td>Significant harm or impact. Loss or reduction in functioning is temporary and full recovery is expected</td>
<td>Event resulting in loss of damage to equipment or infrastructure</td>
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<tr>
<td>HDR 3 Moderate</td>
<td>Harm which may require a higher level of care or observation. No loss or reduction in function</td>
<td></td>
</tr>
<tr>
<td>HDR 4 Minor</td>
<td>Harm is minimal. Additional level of care not required</td>
<td></td>
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<td>No harm. Includes near miss</td>
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Results

- 498 discrete incidents were reported in the 5 year period 2010-2014
- 588 incident categories were selected (>1 category can be selected for each incident)
- 398 incidents involved one or more procedural errors e.g. blood products discarded due to incomplete cold chain documentation; delay in transfusion due to incorrect specimen labelling
- 100 incidents did not involve a procedural error:
  - 97 transfusion reactions
  - 3 concerns about laboratory service changes
- 50% involved blood product or documentation errors
- 56% were ISR insignificant or minor; 37% moderate; 6% major; and <1% catastrophic

Discussion

- Since the TIRG was formed in 2011, there has been a downward trend in the number of reported incidents, in particular incidents due to preventable error (Figure 1).
- There was a large spike in incidents in 2013 (Figure 1), mainly due to an increase in blood product and documentation incidents (Figure 2). These incidents were classified as either insignificant or minor and did not adversely affect patients (Figure 3). The increase in reported incidents may be indicative of under-reporting in previous years rather than an increase in incidents.
- In 2013 a senior transfusion scientist implemented an education program targeting blood product/documentation issues. There was a decrease in errors in 2014.
- Transfusion reaction reporting increased from 7 in 2010 to 25 in 2011. This corresponds with the introduction of a transfusion reaction report. In 2011, laboratory staff began issuing a copy of the report with all fresh blood products. Since the report was introduced an average of 23 reactions have been reported each year. This is more likely due to under-reporting of reactions in previous years rather than an increase in reaction occurrence.
- The data shows the most common reported adverse transfusion incidents in the NT are the result of preventable error, i.e. human factors. This corresponds with the findings of international haemovigilance systems such as the ‘Serious Hazards of Transfusion’ (SHOT) UK and ‘Transfusion Reactions in Patients’ (TRIP) Netherlands, which show the main transmission risks remain human factors. It has been estimated that 50% of reported serious transfusion incidents are the result of human error.1,4
- Future considerations include the introduction of an electronic identification system (EIS) into NT health services. EIS has been shown to significantly improve hospital transfusion safety.5
- The TIRG is a well-established component of the NTG haemovigilance system and will continue to review all transfusion incidents and make recommendations for improvement.

References

Figure 1: NT Transfusion Incidents 2010-2014

Figure 2: Incidents by Classification

Figure 3: Incidents by Severity

ISR 5 Insignificant
ISR 1 Catastrophic
ISR 2 Major 20
ISR 3 Moderate 166
ISR 4 Minor 245