Bacterial contamination of platelet concentrates produced in New Zealand

Michelle Dickson, Dorothy Dinesh

Abstract

Aims To identify the rate of bacterial contamination of platelet concentrates in New Zealand and compare with other countries who use the BacT/ALERT screening system. To report on septic transfusion reactions associated with platelet transfusion in New Zealand.

Methods Six mL of platelet concentrate is inoculated into a BacT/ALERT BPA (aerobic culture) bottle on Day 2 post-collection. Bottles that are flagged as positive are sent to the microbiology laboratory, with the associated unit, for confirmatory testing. Platelet units that have expired are sampled again. Results from the four blood processing sites in New Zealand were reviewed.

Results 59,461 (65%) platelet components were sampled on Day 2 and 15,560 (17%) were re-sampled post-expiry, between December 2003 and September 2011. The rate of confirmed bacterial contamination was 0.04% for Day 2 sampling and 0.04% for post-expiry sampling. The rate in the published literature ranges from 0.01-0.74% and is lower (0.01–0.18%) when diversion of the initial flow of blood is utilised. There were five bacterial transfusion transmitted infections associated with platelet transfusion reported during the study period.

Conclusions BacT/ALERT screening reduces the transfusion of bacterially contaminated platelet concentrates. Day 2 sampling does not identify all contaminated units.

Bacterial contamination of blood products can lead to severe transfusion reactions and death. The warmer storage temperature of 22°C for platelet concentrates, compared to other blood components, facilitates the growth of bacteria.

The New Zealand Blood Service (NZBS) has implemented a number of measures to prevent and reduce the risk of transfusion-transmitted bacterial infections (TTBIs). These are summarised in Table 1. Reduction of risk commences at the donor interview and follows steps along the transfusion chain to prevent bacteria entering the closed processing system. The six NZBS blood centres are audited by Medsafe annually and must comply with the Code of Good Manufacturing Practice (GMP).

Variation in the methods for detecting bacterial contamination and the day of sampling exists between countries. The timing of sampling for bacterial culture, the volume of the initial inoculum and species of bacteria are factors that impact on the rate of bacterial growth and the sensitivity of the screening system.
Table 1. Measures to reduce the risk of bacterial contamination and transfusion-transmitted bacterial infections

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Details of the procedure and the mechanism of risk reduction</th>
</tr>
</thead>
</table>
| Donor Session Record (DSR)       | – Donor completes health questionnaire prior to interview, identifies infectious risks  
– Infective symptoms  
– Recent visit to doctor, dentist or hospital  
– Recent use of antibiotics/medicines  
– Gastrointestinal symptoms  
– Skin conditions (eczema, acne, psoriasis) |
| Health interview                 | – Registered nurse reviews questionnaire and checks donor, deferred if risk of bacteraemia  
– General appearance check  
– Venepuncture site check  
– Review DSR                                                                                                                                                                                        |
| Skin disinfection                | – Ensure adequate cleansing of venepuncture site  
– Chlorhexidine 2% followed by a 70% isopropyl alcohol swab, stroke or circular method, ≥6 cm × 6 cm area  
– Monitored 3 monthly per site, at least annually per staff member, using commercial RODAC agar plates                                                                                       |
| Diversion pouch                  | – Prevents small plug of skin entering the unit  
– First 30–40 mL aliquot of blood is diverted into a pouch, used for testing (implemented 2003)                                                                                                           |
| Post-donation information        | – National procedure ensures prompt withdrawal of blood components and prevention of transfusion  
– Special notice card given to all donors, includes the donation number and a free phone number to use within the next 48 hours  
– Donors are advised to call if they develop infection, diarrhoea or illness; recall information not mentioned in the interview or feel that their blood should not be used for transfusion |
| Closed system processing         | – System does not breach integrity of the sterile blood pack assembly  
– Single use, closed tubing  
– Use of sterile connecting device for connecting 2 closed systems  
– Leucodepletion filter incorporated into closed system (2001)                                                                                                                                  |
| Bacterial contamination screening| – Microorganisms produce CO₂ which causes a sensor to change colour and flags as positive  
– BacT/ALERT Microbial Detection System  
– Sampling of platelet concentrate on Day 2 and Day 8  
– 6 mL used to inoculate the aerobic culture bottle  
– Platelets are released into stock while culture continues over the shelf life                                                                                                                 |
| Appropriate storage and transport conditions | – Warming of components above specification may promote bacterial replication  
– Use of validated transport systems  
– Maintain temperature specifications  
– Protect contents of containers and contain any leakage                                                                                                                                 |
| Visual check                     | – Infected units may have visible clots, altered colour and loss of swirling  
– Integrity of bag  
– Turbidity/abnormal colour  
– Clumping of the contents  
– Swirling                                                                                                                                                                                          |
| National Haemovigilance Programme | – Surveillance of septic transfusion reactions and sterility testing  
– Voluntary reporting of transfusion related events, includes specific category for transfusion-transmitted infections  
– Commenced in New Zealand in 2005                                                                                                                                                                |

In New Zealand over 13,000 units of platelet concentrates are transfused annually. These include platelets collected by apheresis (usually 2 units per procedure) and pools of four buffy coats from donors with identical ABO Rh D group. All units are leucocyte reduced by filtration. Table 2 summarises the specifications for platelet concentrates.
Table 2. New Zealand Blood Service specifications for platelet concentrates

<table>
<thead>
<tr>
<th>Volume</th>
<th>Pool: 200–350 mL</th>
<th>Apheresis: 180–400 mL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leucocyte count</td>
<td>≤5 × 10^6 / unit</td>
<td></td>
</tr>
<tr>
<td>Platelet count</td>
<td>&gt;2.4 × 10^11 / unit</td>
<td></td>
</tr>
<tr>
<td>pH at expiry:</td>
<td>6.4–7.4 (Day 6)</td>
<td></td>
</tr>
<tr>
<td>Storage</td>
<td>22 ± 2 °C, with continuous gentle agitation</td>
<td></td>
</tr>
<tr>
<td>Expiry</td>
<td>5-day shelf life (same if irradiated)</td>
<td></td>
</tr>
<tr>
<td>Whole blood donation (buffy coat for platelet pool)</td>
<td>Donation time must not exceed 12 minutes*</td>
<td></td>
</tr>
</tbody>
</table>

*Prolonged collection time may be associated with increased risk of contamination by skin bacteria

NZBS commenced bacterial testing of platelet concentrates using the BacT/ALERT system in 2003. The scheme was progressively rolled out such that by the end of 2007 all six sites in New Zealand that produce platelets were participating. All sites endeavour to sample as many platelet concentrates as possible.

During 2010 NZBS tested approximately 84% of all apheresis platelet donations and 81% of platelet pools. The results of bacterial screening are not currently used as pre-release criteria when platelets are issued, i.e. platelets may be transfused prior to sampling and whilst BacT/ALERT results are pending, if there is a clinical demand.

The National Haemovigilance Programme was established by NZBS in 2005. Reporting to the scheme is voluntary. The annual reports include a summary of transfusion transmitted infections and are accessible via the website (www.nzblood.co.nz). Transfusion reaction investigations associated with platelet concentrates routinely involve sending the platelet bags for microbiological testing (if the bags are returned to the laboratory).

We report the first 5+ years experience of our national surveillance system using the BacT/ALERT screening of platelet concentrates, as well as TTBIs reported through the National Haemovigilance system.

**Methods**

Platelet concentrates from apheresis donations (Haemonetics MCS+ Cell Separator) and buffy coat pools are sampled on Day 2 (Day 0 = day of collection) using a sterile connected pouch (MacoPharma sampling bag, France) to maintain a closed system.

Approximately 12 mL of platelet concentrate is transferred to the pouch. 6 mL is used to inoculate a BacT/ALERT BPA (Biomerieux, Durham, North Carolina) bottle which contains culture media that supports the growth of aerobic microorganisms.

The system utilises a colorimetric sensor and reflected light to monitor the presence and production of carbon dioxide (CO₂) that is dissolved in the culture medium. If microorganisms are present in the test sample, CO₂ is produced as microorganisms metabolise the substrates in the culture medium and this results in a colour change (to yellow) of the gas-permeable sensor installed in the bottom of each culture bottle. The remaining 6 mL is retained for follow up Gram stain and culture in the event that a positive BacT/ALERT result is obtained.

Inoculated bottles are loaded into the BacT/ALERT instrument and remain there until flagged as positive or until the end of Day 7 if negative. Bottles that are flagged as positive are sent to the local hospital accredited microbiology laboratory for Gram stain, culture and identification. Platelet and red cell components from the same unit are traced and recalled for testing.
Where components have been transfused, clinical follow up by a medical officer is required. The retained sample pouch is stored at 22°C and sent for testing when the platelet component is not available.

BacT/ALERT BPA bottles flagged as positive by the BacT/ALERT 3D Signature system that are negative on the Gram stain and culture for the platelet component (or platelet sample pouch if component not available) are recorded as *false positive*. BacT/ALERT BPA bottles flagged as positive by the BacT/ALERT 3D Signature system and are positive on the Gram stain and/or culture for the platelet component (or platelet sample pouch if component not available) are recorded as *true positive*.

Platelet concentrates that were sampled on Day 2 and reach expiry are held in a platelet incubator until Day 7 and sampled again on Day 8. The Day 8 samples are incubated for 24 hours and follow the same procedure if they are flagged as positive. BacT/ALERT testing is performed at the four blood processing sites in New Zealand. A summary report is prepared by each site every month and forwarded to the relevant technical, medical and quality staff. Data from all four blood processing sites from October 2003 to September 2011 was collated and reviewed.

Information regarding cases of reported TTBIs associated with the transfusion of platelet concentrates was obtained from the National Haemovigilance Programme.

An OVID Medline literature review was undertaken, using the search words platelets and bacterial contamination, to identify publications in the English language from 1996 onwards, which coincides with the introduction of the Serious Hazards of Transfusion (SHOT) haemovigilance scheme in the United Kingdom. Published data from other countries utilising the BacT/ALERT system for screening platelet concentrates, was reviewed.

**Results**

A total of 91,262 platelet components were produced by six centres in New Zealand between December 2003 and September 2011. Pooled platelets comprised 57% and 43% were apheresis collections.

25,009 (64%) apheresis platelet units were sampled on Day 2 and 7,845 (20%) were sampled again post-expiry, on Day 7 or Day 8. 34,452 (66%) platelet pools were sampled on Day 2 and 7,715 (15%) were sampled post-expiry, on Day 7 or 8.

Overall the sampling rate was 65% for Day 2 and 17% for post-expiry units. There were a total of 130 BacT/ALERT positive results, 102 were from Day 2 samples (0.17%) and 28 were sampled post-expiry (0.18%). 28 (21.5%) of the BacT/ALERT positives were confirmed by positive culture, two results were unavailable due to loss of the sample or the pouch and 100 (77%) had negative microbiology laboratory results, i.e. were false positives (Table 3).

The overall rate of confirmed bacterial contamination of a platelet unit, sampled on Day 2 was 0.04%. The rate of a true positive result for post-expiry testing was the same (0.04%).

**Table 3. BacT/ALERT positive results (n=130)**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Day 2 positive</th>
<th>Post-expiry positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>False positive</td>
<td>79</td>
<td>21</td>
</tr>
<tr>
<td>True positive</td>
<td>22</td>
<td>6</td>
</tr>
<tr>
<td>Undetermined</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>102 (0.17%)</strong></td>
<td><strong>28 (0.18%)</strong></td>
</tr>
</tbody>
</table>
All of the microorganisms with the exception of Enterobacter were identified as Gram positive. The specificities of the isolates are listed in Table 4. Two thirds (19) of the contaminated units were pooled platelet concentrates and nine were apheresis units. All of the isolates have the potential to be pathogenic in a neutropenic cancer patient.

Table 4. Organisms isolated from platelet concentrates screening using BacT/ALERT

<table>
<thead>
<tr>
<th>Variables</th>
<th>Group /species</th>
<th>Platelet component</th>
<th>Day of sampling</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pool</td>
<td>Apheresis</td>
<td>Day 2</td>
</tr>
<tr>
<td>Gram-positive bacteria</td>
<td><em>Staphylococcus: coagulase-negative</em></td>
<td>13</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td><em>Staphylococcus aureus</em></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><em>Staphylococcus lugdenensis</em></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Viridans streptococci</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td><em>Streptococcus agalactiae</em> (Group B)</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><em>Streptococcus Group G</em></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><em>Bacillus spp</em></td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td><em>Brevibacterium spp</em></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Mixed skin flora</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Gram-negative bacteria</td>
<td><em>Enterobacter aerogenes</em></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>19</td>
<td>9</td>
<td>22</td>
</tr>
</tbody>
</table>

*Includes strains reported as *Staphylococcus epidermidis* and *Staphylococcus* species

All except two platelet units associated with the 30 true positive or undeterminable BacT/ALERT results were discarded because of the positive BacT/ALERT result or a technical problem or expiry. Two of the 22 culture positive units were transfused, one was a viridans *Streptococcus*-positive apheresis unit and the second was a coagulase negative *Staphylococcus* involving a pooled platelet unit.

The recipient of the Viridans positive unit was a 12-year-old boy with AML (acute myeloid leukaemia) who had a low grade fever prior to transfusion and reported an allergic transfusion reaction (urticaria and dyspnoea), however the unit was culture negative after 5 days incubation. The second case was reported to the National Haemovigilance Programme by one of the authors (2005, Table 5).

The National Haemovigilance Programme has been collecting data since May 2005. Five cases of bacterial transfusion transmitted infection associated with platelet transfusion have been reported to date. Infections that are confirmed by detection of the same strain of bacteria in both the recipient’s blood and the transfused unit are assigned a higher imputability score.

Apheresis platelet concentrates were implicated in three cases and two cases involved pools. All five recipients reported symptoms and recovered. The five cases are summarised in Table 5. Coagulase-negative staphylococci were identified in four cases and *Streptococcus bovis* in one case.
Table 5. Bacterial transfusion-transmitted bacterial infections associated with platelet transfusion

<table>
<thead>
<tr>
<th>Year</th>
<th>Patient</th>
<th>Symptoms</th>
<th>Platelet unit</th>
<th>Organism</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>49-year-old male, AML</td>
<td>Rigors, shivering</td>
<td>Pool(^a)</td>
<td>CNS</td>
</tr>
<tr>
<td>2008</td>
<td>Premature infant</td>
<td>Fever, tachycardia</td>
<td>Apheresis(^b)</td>
<td><em>Streptococcus bovis</em></td>
</tr>
<tr>
<td>2009</td>
<td>38-year-old male, AML</td>
<td>Fever, rigors</td>
<td>Pool(^1)</td>
<td>CNS</td>
</tr>
<tr>
<td>2010</td>
<td>64-year-old male, AML</td>
<td>Fever, flushing, rash</td>
<td>Apheresis(^c)</td>
<td>CNS</td>
</tr>
<tr>
<td>2011</td>
<td>67-year-old female, multiple myeloma</td>
<td>Fever, chills, rigors</td>
<td>Apheresis(^d)</td>
<td><em>Staphylococcus lugdunensis</em></td>
</tr>
</tbody>
</table>

AML = acute myeloid leukaemia, CNS = coagulase negative staphylococcus

\(^a\) BacT/ALERT positive result available after patient transfused

\(^b\) Donation not sampled for BacT/ALERT screening

\(^c\) Unknown if screened by BacT/ALERT

The contamination rate of platelet components (true positive rate), using the BacT/ALERT detection system ranges from 0.01 – 0.74%, in the published literature. Diversion of the initial flow of blood into a pouch reduces the rate of contamination, range 0.01–0.18%. The rates reported by other authors are shown in Table 6.

Table 6. Comparison of confirmed positive rates using BacT/ALERT screening

<table>
<thead>
<tr>
<th>Country</th>
<th>Number tested</th>
<th>Confirmed positive</th>
<th>Sampling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia(^1)</td>
<td>302,386</td>
<td>0.18%(^a)</td>
<td>APCs &amp; PPCs Day 1 (24 hour) 7.5-10 mL aerobic &amp; 7.5-10 mL anaerobic</td>
</tr>
<tr>
<td>Belgium(^2)</td>
<td>107,827</td>
<td>0.74%(^b)</td>
<td>APCs Day 0 (2-18 hour) PPCs Day 0 (22 hour) 5-7 mL aerobic &amp; 5-7 mL anaerobic</td>
</tr>
<tr>
<td>Canada(^1)</td>
<td>489,847</td>
<td>0.01%</td>
<td>APCs &amp; PPCs Day 1-2 (24-48 hour) 4-10 mL aerobic only</td>
</tr>
<tr>
<td>China(^4)</td>
<td>8,000</td>
<td>0.06%</td>
<td>APCs Day 0 (18-24 hour) 5 mL aerobic &amp; 5 mL anaerobic</td>
</tr>
<tr>
<td>Denmark(^2)</td>
<td>22,165</td>
<td>0.15%(^c)</td>
<td>PPCs Immediately post-production 8-10 mL aerobic only</td>
</tr>
<tr>
<td>Denmark(^2)</td>
<td>22,057</td>
<td>0.32%(^b)</td>
<td>APCs &amp; PPCs Day 0-1 (&lt;30 hour) 10 mL aerobic only</td>
</tr>
<tr>
<td>Germany(^8)</td>
<td>4,355</td>
<td>0.05%</td>
<td>APCs &amp; PPCs Day 1 5 mL aerobic &amp; 5 mL anaerobic</td>
</tr>
<tr>
<td>Germany(^7)</td>
<td>52,243</td>
<td>0.07%</td>
<td>APCs &amp; PPCs Day 0 (18 hour) 7.5–10 mL aerobic &amp; 7.5-10 mL anaerobic</td>
</tr>
<tr>
<td>Ireland(^6)</td>
<td>43,230</td>
<td>0.03%</td>
<td>APCs &amp; PPCs Day 2 (36 hour) 7.5 mL aerobic &amp; 7.5 mL anaerobic (35% aerobic only during first 10 months)</td>
</tr>
<tr>
<td>New Zealand</td>
<td>59,461</td>
<td>0.04%</td>
<td>APCs &amp; PPCs Day 2 6 mL aerobic only</td>
</tr>
</tbody>
</table>

\(^1\) APCs & PPCs

\(^2\) APCs & PPCs

\(^3\) APCs & PPCs

\(^4\) APCs & PPCs

\(^5\) APCs & PPCs

\(^6\) APCs & PPCs

\(^7\) APCs & PPCs

\(^8\) APCs & PPCs
<table>
<thead>
<tr>
<th>Country</th>
<th>Number tested</th>
<th>Confirmed positive</th>
<th>Sampling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norway</td>
<td>36,896</td>
<td>0.03%</td>
<td>APCs &amp; PPCs Day 1 5–10 mL aerobic only</td>
</tr>
<tr>
<td>Taiwan</td>
<td>2,338</td>
<td>0.34%</td>
<td>APCs and PPCs Day 1–5 1 mL aerobic &amp; 1 mL anaerobic</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>38,664</td>
<td>0.67%</td>
<td>PPCs Day 1 (16-24 hour) 7.5 mL aerobic &amp; 7.5 mL anaerobic</td>
</tr>
<tr>
<td>USA</td>
<td>5,211</td>
<td>0.21%</td>
<td>PPCs Day 1 or later 8 mL aerobic only</td>
</tr>
<tr>
<td>USA</td>
<td>388,903</td>
<td>0.02%</td>
<td>APCs Day 1 (24–36 hour) 4–5 mL aerobic &amp; 4-5 mL anaerobic</td>
</tr>
<tr>
<td>USA</td>
<td>1,004,206</td>
<td>0.02%</td>
<td>APCs 4 mL aerobic</td>
</tr>
<tr>
<td>USA</td>
<td>781,936</td>
<td>0.02%</td>
<td>APCs 8 mL aerobic</td>
</tr>
<tr>
<td>Wales</td>
<td>54,828</td>
<td>0.06%</td>
<td>APCs &amp; PPCs Day 1 8–10 mL aerobic &amp; 8–10 mL anaerobic</td>
</tr>
</tbody>
</table>

APC apheresis platelet concentrate
PPC pooled platelet concentrate
* includes indeterminate results
* did not use diversion pouch
* not stated whether diversion used
* prior to implementation of diversion pouch
* after sample diversion implementation

**Discussion**

Our reported true positive rate of 0.04% is comparable to that reported by others (Table 6) although there is variability in the timing and volume of sampling, as well as culture media (aerobic only versus aerobic and anaerobic).

We found that the rate of contamination in expired platelet units was the same as that for platelets sampled on Day 2. This indicates that Day 2 screening in New Zealand detects 50% of contaminated units. This is comparable to the Welsh experience where Day 1 culture was reported to have a sensitivity of 40%. However the number of expired units sampled was relatively small. Sampling on Day 1 or Day 2 may not detect contaminated units when the bacterial load is below the level of detection.

Conversely, bacteria in contaminated units may die during the storage and not cause septic reactions. This may explain the phenomenon we recently observed where one unit of an apheresis platelet donation was contaminated with *Staphylococcus aureus* and the other unit was negative on sampling at Day 2 and post-expiry (Figure 1).
False positive BacT/ALERT results were not included in our comparison. It is possible that these may include contaminated units which are negative on culture; i.e. the true positive rate may be underestimated. Eder et al\textsuperscript{13} reported on nine negative apheresis platelet culture results which were associated with 11 septic reactions.

Similarly, we identified one case where a contaminated unit (\textit{Staphylococcus lugdunensis}) was transfused in 2011 and the unit was negative on culture when tested as part of a transfusion reaction investigation.

The major source of contamination is skin bacteria and it has been shown that diversion of the first aliquot of blood during collection reduces the risk of BTTIs.\textsuperscript{11,15}
BacT/ALERT screening of platelet concentrates produced without diversion of the first aliquot of blood during collection are associated with a higher contamination rate of > 0.21% (Table 6).

Over seven years of haemovigilance reporting, there have been five reports of BTTI associated with platelet transfusion in New Zealand, all recipients were immunosuppressed. One would expect a higher frequency of septic reactions based on the confirmed contamination rate at expiry. Possible explanations for the relatively small number of reports include:

- Under-reporting of transfusion reactions
- Febrile reactions not investigated
- Antibiotic therapy in the recipient
- Contamination may have occurred into the sampling pouch and not the platelet bag
- Bacteria in unit may not survive (this has been observed in apheresis units from one collection were one unit was contaminated and the other unit was sterile)

Day 2 screening in New Zealand prevented the transfusion of 16 pooled platelets and 15 apheresis units which were contaminated. Ideally 100% of platelet concentrates should be screened for bacterial contamination to minimize the risk of BTTI and NZBS aims to reach this target. This has implications on meeting the clinical demand for platelets, which could be compromised if units are not released until Day 2 sampling is completed.

Special donations such as HLA matched platelets and situations where there is a shortage of supply may over-ride the requirement for hold until Day 2 for sampling. BacT/ALERT screening does not detect all contaminated units, so despite all the preventative measures in place (Table 1) there is a residual risk, albeit small.

Our data shows a contamination rate of 1 in 2,500 platelet components produced. It is important for clinicians to be aware of the risks associated with transfusion as these are relevant to the process of obtaining informed consent from the patient prior to transfusion.

The Haemovigilance Programme plays an important role in the surveillance of screening and reported BTTIs. These systems allow us to identify contamination of platelet concentrates and transmission of bacteria that lead to transfusion reactions. It is important to focus on these so that we can measure the effectiveness of strategies used to reduce the risk and identify other factors that contribute to these reactions.

Competing interests: Nil.

Author information: Dorothy Dinesh, Transfusion Medicine Specialist, New Zealand Blood Service, Wellington; Michelle Dickson, Haematology Registrar, Blood and Cancer Centre, Wellington Regional Hospital, Wellington

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Correspondence: Dr Dorothy Dinesh, New Zealand Blood Service, Private Bag 7904, Wellington 6242, New Zealand. Fax: +64 (0)4 3895608; email dorothy.dinesh@ccdhb.org.nz

References:


