Australian Red Cross
BLOOD SERVICE

BACTERIAL CONTAMINATION SCREENING OF PLATELETS

From 28 April 2008, all ARCBS platelet components will be screened for bacterial contamination.

Worldwide, bacterial contamination of platelets is recognised as the most significant residual infectious risk of transfusion in developed countries. As a cause of death from transfusion, bacterial sepsis is second only to ABO incompatibility.

Available international data from microbiological culture studies of platelet units suggest that the overall incidence of bacterial contamination ranges from approximately 1 in 3000 to 1 in 1000 units of apheresis platelets and 1 in every 600 to 1 in every 200 units of pooled platelets (pool of 4).

Quality control surveillance of platelet components at ARCBS since July 2005 and preparatory studies for the implementation of 100% platelet bacterial contamination screening suggest that detected contamination rates will be in the order of 0.2%.

Each platelet component will be sampled at 24 hours after collection. The samples will then be screened on the bioMerieux® BacT/ALERT® Automated Microbial Detection System utilising both aerobic and anaerobic culture bottles. After sampling, platelets will be available for issue from ARCBS as 'negative to date' with respect to their bacterial contamination screening status. However, the cultures will continue to be incubated over the full shelf life of the components.

If a culture becomes positive it will be automatically flagged by the screening equipment. This is termed an 'initial machine positive' (IMP). It is important to note that the IMP is not conclusive evidence that the component is contaminated and many will eventually be found to be false positives. As a sample could potentially flag as a positive at any time during the day, ARCBS will be setting up technology to allow for remote monitoring of the testing system 24 hours a day, 7 days a week (24/7), as well as incorporating the ability to have 24/7 recall in conjunction with a new National Recall Office.

If the platelets and/or their associated components (i.e. red cell or clinical plasma) have already been issued by the ARCBS at the time of the IMP, the National Recall Office will notify the relevant transfusion laboratory so that recall of the platelet unit and any associated component can be arranged.

If the platelet or associated component has been transfused, this will allow the transfusion laboratory to contact the treating clinician enabling them to manage the patient with the knowledge of the preliminary result.

All IMPs will be sent by ARCBS to an external laboratory to have a Gram stain and culture performed. All organisms seen at microscopy in the Gram stain will be notified to the relevant transfusion laboratory. Negative Gram stain results will not be notified as they are a poor predictor of the absence of contamination and are unlikely to change the management of the patient. Gram stain results will generally be available several hours after the IMP is obtained.

As relevant additional information becomes available, ARCBS will forward a progress report to the transfusion laboratory, for example, donor information that might assist therapeutic management of the patient or further information from the culture including bacterial identification.

In all cases where components have been transfused, a final report will be forwarded to the transfusion laboratory when all laboratory investigations are complete. Every attempt will be made to provide the identification of cultured bacteria. Where ever possible, antibiotic sensitivity testing will also be performed.

ARCBS believes the addition of this testing will be a significant step in further improving the safety of the blood supply. The removal of potentially bacterially contaminated components from the blood supply prior to transfusion will help avoid adverse outcomes. Additionally, knowledge of potential bacterial contamination should enable early clinical review and consideration of patient blood cultures as well as antibiotic intervention in situations where components have already been transfused.

The implementation of bacterial screening has been carefully planned so that there will be minimal impact on platelet inventory. Inventory levels will be closely monitored prior to and following implementation.

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