

2PS-05-05

COMPARISON OF THREE BACTERIAL DETECTION METHODS UNDER ROUTINE CONDITIONS

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Background and Objectives: Since 2004, bacterial screening of platelets has been required in the US and also in many European countries. The German Red Cross (GRC) blood donor services conducted a prospective multi-center study in order to investigate the prevalence of bacterially contaminated pool platelet concentrates (PPCs) and apheresis platelet concentrates (APCs). This sub-study compares three different bacterial detection systems.

Study Design and Methods: Platelet concentrates were tested in parallel with BacT/ALERT and ScansystemTM (n=4,099 PPC), BacT/ALERT and Pall eBDS (n=521 PPC; 4730 APC), or all three systems (n=6,307 PPC). All initially positive results were evaluated by a standardized procedure including evaluation by a microbiology reference laboratory.

Results: Two of 10,927 PPCs were confirmed positive by BacT/ALERT, whereas Pall eBDS and ScansystemTM failed to detect these samples. Only three samples were initially reactive with Pall eBDS without proof of any bacteria strains. The rate of false positive results was substantially higher for BacT/ALERT (0.64%, 70/10,927 of PPCs; 0.82%, 39/4,730 of APCs) than for eBDS (0.04%, 3/6,828 of PPCs) or Scansystem (0.0%, 0/10,406 of PPCs). Two of 4,730 APCs were confirmed positive by BacT/ALERT. These were negative with Pall eBDS.

Conclusion: Sensitivity was best for BacT/ALERT, whereas specificity was enhanced for Pall eBDS and ScansystemTM. ScansystemTM required specially trained staff, whereas BacT/ALERT and Pall eBDS were easy, quick, user-friendly and objective methods. This study was conducted by the GERMS (German Evaluation of Regular Monitoring Study) Group of the Red Cross Transfusion Services