



e-Network Forum

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Single Donor Platelets are associated with fewer Septic Reactions than Platelet Concentrates

In the July 2001 issue of *Transfusion* (volume 41, p 857-861), it is reported by [The Johns Hopkins Medical Institutions](#) that the **use of single donor platelets reduced the risk of septic platelet transfusion reactions (SPTR)**. To quote the study: "In 12 years, the use of single donor platelets (SDPs) increased from 51.7 percent to 99.4 percent of all platelet transfusions at one institution. SPTRs fell from three events in 1 year to the current rate of one event per year. The incidence of SPTRs decreased from 1 in 4,818 transfusions to 1 in 15,098 transfusions. The rate of SPTRs due to PCs was 5.39 times higher than that of SPTRs due to SDPs (95% CI, 1.89,12.9). The use of SDPs is a simple means of reducing SPTRs".

Some past e-Network Forum **related discussions** have focused on:

- the use of [pooled donor platelets versus pheresis platelets](#) (or single donor platelets)
- the [risk of leukocyte contamination of pheresis platelets](#), and
- how best to handle [pheresis platelets that are issued for transfusion but returned to the lab unused](#).

In light of the report from The John's Hopkins Medical Institutions, **several questions arise**:

- How many members of the e-network are using **pheresis platelets as their primary source** of platelets?
- How many are using **pooled** platelet concentrates as their primary source, and
- Does anyone feel **compelled to change** their practice, and if so, **how**?
- What is the experience in the field regarding **detection of septic platelet transfusion reactions** in facilities that use pooled donor platelets or pheresis platelets?

Here is a **sampling of the opinions** expressed by the e-Network Forum:

1. One member reported that his facility transfuses about 50,000 platelet concentrates per year (these are given as pooled platelets) versus about 2000 pheresis platelets annually. In the reporting member's opinion, the Hopkins study data **did not prove conclusively** that the decline in bacterial sepsis was due to a switch to pheresis platelets from pooled platelets. The reporting member intends to continue to use pooled platelets for routine transfusions, but to use pheresis platelets whenever crossmatched or HLA matched platelets are indicated.
2. A **member from France** commented that the experience of the French Bacthem case control study (Perez, P et al., *Transfusion*, July 2001) showed that in 6 out of 41 cases of Transfusion Associated Bacterial Contamination (TABC), the incriminated blood product was pooled platelets. However, since no control patient was transfused with pooled platelets, the Odds ratio was not computable, even though there seemed to be a higher risk for pooled platelets. Moreover, the estimations of TABC incidence rates in France were more than 2 times higher in pooled platelet recipients than in pheresis platelet recipients. However, it has to be underlined that the clinical severity of TABC was lower in cases transfused with pooled platelets (no death out of 6) than in cases transfused with pheresis platelets (2 deaths out of 9), but this may be related to the recipient characteristics or the nature of contaminating bacteria (6 gram negative rods out of 9 pheresis platelets, and no gram negative rods out of 6 pooled platelets).
3. A **major University in one of the Carolinas** reported that they use **>99% pheresis** platelets. The primary reason they favor using pheresis platelets was to reduce the risk of bacterial contamination, which has been their policy for over 10 years. During the last decade they report having had only one documented case of bacterial contamination; unfortunately it resulted in a death.
4. Another blood banker reported that her institution provides **pheresis platelets almost exclusively** to their hospital clients. They continue to produce platelet concentrates which are given as pooled

platelets, but they use them only as back-up. They still use single platelet concentrates for pediatric patients, as it is difficult to rationalize using a large volume pheresis platelet unit to provide a single small volume infusion; if a pediatric/neonatal patient is needing repeat platelet transfusions, they will dedicate a pheresis platelet unit and sterile dock in order to provide multiple small transfusions over the shelf life of the pheresis platelet unit.

5. A **New York blood banker** reported that his hospital uses **nearly 100% pooled platelets**, except for about 100 HLA matched pheresis platelets per year (total about 25,000 units overall). He is of the opinion that when you use leukoreduced ABO identical platelets the severe clinical platelet transfusion refractoriness rate is <5% and approaches 1%. His hospital does NOT plan to change practices based upon the Hopkins findings, in part because they **do not believe that the Hopkins results are definitive**, although they are interesting. The reporting member mentioned the French study described above in reply #2 which reported that the only deaths occurred in patients who received pheresis platelets. The reporting member concluded that the **cost to benefit ratio still strongly favored using pooled platelets**, given the resource utilization issues, the extreme rarity of detectable (to date) severe adverse events, the impact on the donor pool of using exclusively pheresis platelets, the impracticality of using only pheresis platelets (in his opinion), and the cost of using exclusively pheresis platelets. In fact, this member stated that since switching to five day platelet storage his hospital has identified only one case of post-transfusion platelet sepsis, many years ago. His blood bank only cultures platelet products when the patient has a severe reaction or one involving hypotension. They have done several dozen cultures over the years. All have been uniformly culture negative. The reporting member believes ACUTE bacterial sepsis has been proven to be rare after platelet transfusion. What remains to be studied, in his opinion, is the incidence of delayed onset sepsis, where the organisms colonize the infusion line or patient and symptoms occur hours to days later. He suggests that a study be done, in which all platelet transfusions are cultured prospectively and compare the results with later isolates from patients that develop infections over the ensuing week or two.
6. A blood banker who works near the Rock and Roll Hall of Fame reported that her hospital has seen a **reduced risk of bacterial contamination with pheresis platelets** compared to pooled platelets. Her hospital's data have been presented at the AABB in abstract form as follows: Dykstra A, Jacobs M, Yomtovian R. Prospective microbiologic surveillance (PMS) of random donor (RDP) and single donor apheresis platelets (SDP). Transfusion 1998;38:104S. In essence, this showed that unit per unit the rate of bacterial contamination was statistically the same in each random donor unit and each single donor unit. **Because, however, random units are pooled, the risk is basically a multiple of the number of units in the pool.** The text of the abstract is provided for those interested in specific details. PROSPECTIVE MICROBIOLOGIC SURVEILLANCE (PMS) OF RANDOM DONOR (RDP) AND SINGLE DONOR APHERESIS PLATELETS (SDP). A. Dykstra, M. Jacobs, and R. Yomtovian. University Hospitals, Cleveland, OH. Background: To compare the longitudinal pattern and incidence of platelet bacterial contamination (PBC) in RDPs and SDPs we performed PMS on all transfusions (tx) containing 4 and/or 5d old platelet units over 6* years. Methods: From 7/91-12/97, a pre-tx Gram Stain (GS) and culture (cult) were obtained in all txs containing 4 and/or 5d old units. Any initial positive (+) GS or cult required additional cult confirmation. For pattern analysis, data was aggregated into 6 intervals (I-VI) beginning July of each year. Each interval was 12 mos except the final interval, which was 18-mos, 7/96-12/97. Differences in PBC of RDPs among the 6 intervals were compared using Fisher's Exact Test. A comparison of the incidence for PBC of RDPs vs. SDPs for the 6* period was analyzed using Fisher's Exact Test. Results: The interval rates of 4&5d old PBC/RDPs txed (and organisms identified) were - I: 4/6620 {3 coagulase negative staphylococci (CNS) and 1 Bacillus cereus}; II: 1/5208 (1 CNS); III: 0/5044; IV: 2/3924 (2 CNS); V: 5/2594 (5 CNS); VI: 2/2665 (1 Serratia marcescens and 1 CNS). Colony counts ranged from 1×10^2 /ml - 4×10^{11} /ml. The rate of PBC in interval V was significantly different from the other intervals ($p < 0.007$). The interval rates of 4 & 5 day old PBC/SDPs txed (and organisms identified) were - I: 0/802; II: 0/711; III: 1/807 (Streptococcus uberis); IV: 2/1641 (2 CNS); V: 0/1186; VI: 0/1405. Colony counts ranged from 2×10^3 /ml to 5.6×10^6 /ml. While the rate of PBC for RDP vs. SDP units was identical ($P = 1.0$), the tx risk of PBC with a standard pool of 5 RDPs becomes 5x the risk of a SDP. Conclusions: (1) There is **variability** in the incidence of PBC in RDPs over **time**. (2) The risk of PBC of individual RDP units vs. SDP units is identical; however, the transfusion **risk for a RDP pool is significantly greater reflecting the number of units/pool.**
7. A **blood banker in Virginia** said that they use primarily **pooled** platelets but would love to switch. Major problems are increased cost and availability.
8. A **Texas Blood Center** reported that they supply **pheresis platelets almost exclusively**, with no intent to change. They say that they have **no record of a septic platelet transfusion reaction in at least the last 7 years.**

Please submit comments to the [e-Network Forum](#).



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Posted: July 18, 2001

Addenda:

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