

LETTER

Vox Sanguinis

The ethics of wasting the donor's gift of buffy coat

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Dear Editor,

Schrenzenmeier and Seifried [1] observed that – albeit rare – donor reactions with plateletapheresis collections can be more frequent/severe compared with whole-blood collections. They then argued that – because all platelet transfusion needs of patients not alloimmunized to HLA antigens can be met by pooling (already-available) buffy coats from the whole-blood donations – donor reactions to any plateletapheresis collections represent an ‘additional’ (hence unnecessary and hard to justify) risk.

As Table 1 shows for the US [2], any country with a North-American/Western-European health-care system requires several times more red-blood-cell (RBC) than platelet or fresh frozen plasma (FFP) doses to meet the needs of all its transfusion recipients. Modern apheresis technology permits blood operators to collect large-size units of plasma, as well as ‘double’ RBCs, in addition to single-donor platelets. Furthermore, it allows blood operators to collect RBCs along with platelets and/or plasma [3, 4]. Thus, modern apheresis technology could enable national blood services to provide for all of a country's RBC, platelet, and plasma needs by subjecting a number of donors to the rare risks of donation, which would not exceed the number of donors bled today by the same blood services to produce components from whole-blood collections.

Importantly, and in contrast to the historical literature on donor reactions reviewed by Schrenzenmeier and Seifried [1], this modern approach to meeting all of a country's needs should not be associated with any increase in donor

Table 1 Number of therapeutic doses of each blood component transfused in the US in 2006^a

Component	Number (in thousands)
RBCs	14 650
Platelets	1731
Plasma	4010
Cryoprecipitate	993

^aA dose is defined here as 1 unit of RBCs, 1 single-donor platelet concentrate (or a pool of 6 whole-blood-derived platelet concentrates), 1 unit of FFP, or 1 unit of cryoprecipitate [2, pp. 21–22].

Table 2 Moderate and severe donor reactions by collection type^a

Collection type	Reaction rate per 10 000 (number of reactions/number of procedures)	Odds ratio (95% confidence interval) ^b
Whole-blood donation	52 (2872/552 183)	N/A ^b
Platelet-/plasmapheresis	17 (93/54 841)	0.54 (0.34–0.85) ^c
'Double' RBC collection	15 (21/164 179)	0.67 (0.49–0.91) ^c
RBC collection along with platelets and/or plasma	45 (2/18 790)	0.95 (0.58–1.55)

^aComparison of each of three types of apheresis collections to whole-blood donation; based on 793 293 allogeneic whole-blood and apheresis collections made in 2007 in the US [5].

^bCompared to the odds of a donor reaction(s) following whole-blood donation; from a multivariate model into which (in addition to collection type) the following variables were eligible for entry: donation site (fixed vs. mobile), association type (high school vs. college vs. other), age, sex, race, donation history, blood volume, weight, body mass index, pulse, systolic blood pressure, diastolic blood pressure, and blood centre identifier [5].

^cStatistically significant ($P < 0.05$) reduction in the odds of a donor reaction in association with the specific apheresis collection versus whole-blood donation [5].

reactions. In the largest reported multivariate analysis of moderate and severe donor reactions, Kamel *et al.* [5] observed no increase in donor reactions following each of three types of apheresis collections compared with whole-blood donation (Table 2).

Even if donor reactions were higher with plateletapheresis (compared with whole-blood) collections in Germany today [1], the rights of transfusion recipients supersede any rights of donors who have given informed consent for the procedure and are aware of its risks [6]. The duty of national blood operators in countries with North-American/Western-European health-care systems is to maximize the safety and efficacy of all transfused blood components for the benefit of transfusion recipients. Although Schrenzenmeier and Seifried [1] correctly assess that – based on the available data – the efficacy of buffy-coat PWBD vs. single-donor platelet concentrates does not differ, there is a ≥ 2 -fold difference in the safety of the two components with regard to emerging transfusion-transmitted infections; and, in countries that use platelets from first-time whole-blood donors in buffy-coat pools, a ≥ 2 -fold difference in the risk of human immunodeficiency virus, hepatitis C

virus, and hepatitis B virus infections as well. The difference in infectious risks is due to the difference in the number of allogeneic-donor exposures (4–6 vs. 1, respectively [7]) per therapeutic platelet dose given to a transfusion recipient. Depending on the assumptions made, the plausible range for the difference in risk between PWBD and apheresis components varies from 2- to 6-fold [7]. While bleeding of ‘additional’ donors will not be needed for providing 100% single-donor platelets when modern apheresis technology is comprehensively used by national blood services, avoidance of the incremental infectious risk of buffy-coat PWBD platelets will continue to justify wasting the donor’s gift of buffy coat (rather than using it to produce PWBD platelets).

References

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