

# Requests for Phenotyped RBCs in a Large Multi-State Blood Supplier

## Background

Transfusion of phenotyped units to patients with antibodies is common. Very little data exists about the phenotypes requested, the frequency of requests, and their geographic distribution. A program to provide the same turnaround time for patients with antibodies as for patients without antibodies was instituted in a large multistate regional blood supplier with a 20 state geographic footprint and great ethnic diversity in its donor base. The following data were observed.

State	Common	Uncommon	Rare	Very Rare	Total Distribution of Phenotyped Units	Total Distribution
CA	3819 (1.75%)	5829 (2.5%)	1180 (0.5%)	14	10842	230984
AZ	5500 (3.1%)	4256 (2.4%)	99 (0.1%)	9	9864	178118
TX	1342 (0.9%)	1423 (1.0%)	40 (0.0%)	0	2805	147389
LA, MS	1369 (1.0%)	1347 (1.0%)	320 (0.2%)	21	3057	132032
NV	1344 (1.8%)	1485 (1.9%)	62 (0.1%)	25	2916	76229
ND, SD	712 (1.2%)	675 (1.1%)	5 (0.0%)	3	1395	60810
NM	343 (0.6%)	832 (1.5%)	55 (0.1%)	0	1230	57031
MT, WY	602 (1.7%)	471 (1.3%)	12 (0.0%)	0	1085	35533
<b>Total</b>	<b>15031 (1.6%)</b>	<b>16318 (1.8%)</b>	<b>1773 (0.2%)</b>	<b>72</b>	<b>33194</b>	<b>918126</b>

Table 1

## Study Design:

ABO/RhD, number of phenotyped units requested, urgency, location, and specific phenotypes were determined and entered in a spreadsheet and the data was analyzed. The requests were classified based on types and number of antigens including C,c,E,e,K,Fy<sup>a</sup>,Fy<sup>b</sup>,Jk<sup>a</sup>, Jk<sup>b</sup>,S,s. The categories were as follows: Common (negative for C,c,E,e and K only, or other antigens excluding Fy<sup>a</sup>,Fy<sup>b</sup>,Jk<sup>a</sup>, Jk<sup>b</sup>,S,s), Uncommon (C,c,E,e,K and one to two of the following antigens Fy<sup>a</sup>,Fy<sup>b</sup>,Jk<sup>a</sup>, Jk<sup>b</sup>, Jkb,S,s), Rare (C,c,E,e and K, with three or more of the following antigens Fy<sup>a</sup>,Fy<sup>b</sup>,Jk<sup>a</sup>, Jk<sup>b</sup>,S,s), and Very Rare (high frequency antigen negative units).

## Findings:

The mean number of RBC units collected per month in 2012 was 80,357 and of those 32,081 (39.9%) were previously phenotyped at least for RhCcEe and K. An average of 9.7% of non-previously phenotyped donors were screened for RhCcEe and K each month. Out of 918,126 total RBC's distributed 33,194 units were phenotyped (3.6%). The most frequently requested phenotyped units (14144 [43%]) were in the RH (CEce) and KEL (K) systems only. The common requests as defined above consisted of 15031 units and made up 45% of the total phenotyped units. Table 1 summarizes the frequency of requests by classification and geography.

## Conclusion:

Of all requests for phenotyped RBC units, 43% can be met by blood centers typing and labeling all units for RhCcEe and K. Geographic variation of phenotype requests may require systems to pre-position phenotyped products to better meet current and historical local needs.