

Using an integrated automated system to optimize retention and increase frequency of blood donations

J. Garrett Whitney and Robert F. Hall

BACKGROUND: This study examines the impact of an integrated, automated phone system to reinforce retention and increase frequency of donations among blood donors.

STUDY DESIGN AND METHODS: Cultivated by incorporating data results over the past 7 years, the system uses computerized phone messaging to contact blood donors with individualized, multilevel notifications. Donors are contacted at planned intervals to acknowledge and recognize their donations, informed where their blood was sent, asked to participate in a survey, and reminded when they are eligible to donate again.

RESULTS: The report statistically evaluates the impact of the various components of the system on donor retention and blood donations and quantifies the fiscal advantages to blood centers.

CONCLUSIONS: By using information and support systems provided by the automated services and then incorporating the phlebotomists and recruiters to reinforce donor retention, both retention and donations will increase.

However, most FTDs do not become routine donors, and blood donations are often inadequate to maintain inventory among providers of blood to the medical community.³ An integrated, automated phone system has proven effective at retaining FTDs, increasing donations by repeat donors, and optimizing overall donations.

Blood centers can use this type of system to augment their recruitment effectiveness and integrate an objective mechanism to quantify their increase in donations both through retention and increased donations. The effect of an automated service is established by correlating the donors' level of satisfaction and the elements of the donation experience with increases in additional expected donations. Satisfaction measures are evaluated by conducting analyses of data collected by administration of a "Commitment and Satisfaction" (C & S) survey isolating the donor's experience across five major categories. In addition, analyses are performed on the impact of "Celebration" messages sent out by the automated service informing the donor of the name of the hospital where their prior blood donation was sent and providing a reminder of their next eligibility date. Analyses of these components indicate a significant increase in donations.

This study demonstrates how blood bank managers have effectively used automated services and donor input to optimize donations and cost efficiency. Ongoing data collection and analyses serve to suggest modification and development of supplemental services to continually improve donor retention. The study further demonstrates that not all levels of donor satisfaction are equal in predicting repeat donations; some categories have significant effect while others have a supporting effect. In addition to providing other supporting data, this study identifies those customer service categories and levels of service that predict additional blood donations from FTDs and describes past donation patterns that help blood centers retain more first-time and regular donors in the future.

INTRODUCTION

Blood donations are critical to maintaining a strong public health system and ensuring the capability to respond to routine and emergency medical events.¹ If all first-time donors (FTDs) were to subsequently become regular contributors, there would likely be an ongoing and adequate supply of blood.²

ABBREVIATIONS: C & S = Commitment and Satisfaction; FTD(s) = first-time donor(s).

From Bloodbankpartners, Fort Worth, Texas.

Address reprint requests to: Garrett Whitney, MA, Bloodbankpartners, 6500 W. Vickery Boulevard, Fort Worth, TX 76116-9109; e-mail: gwhitney@bloodbankpartners.com.

doi: 10.1111/j.1537-2995.2010.02738.x

TRANSFUSION 2010;50:1618-1624.

STUDY DESIGN AND METHODS

This study evaluates the automated phone system as developed by Bloodbankpartners. The automated phone

system contacts donors by telephone within 10 days of their donations with a two-part recorded message. The first part of the recorded message thanks each individual donor on behalf of the blood center with a recorded testimonial from a blood recipient. All phones answered by an answering machine or in person are provided this testimonial message. The second part of the message invites donors who answer the phone in person to participate in a “tele-survey.” If the respondent agrees to participate in the survey, the automated system asks four questions. Responses are automatically associated with donors’ unit IDs and donor numbers. The manner in which the phone was answered (in person, answering machine, or not answered) is also automatically associated with the unit IDs and donor numbers. “No answers” are called two more times on subsequent days before being considered “not answered.” Depending on the blood center, on average 88-93% of the phones are answered either by an answering machine or by a person. Donors who do not answer their phones nor hear the message on an answering machine are used as the control group.

All analyses of the data were performed by an independent third-party contractor to ensure objectivity and eliminate any bias on the part of Bloodbankpartners. The results as reported have not been altered or modified. The final report was further reviewed by the independent contractor to verify that the manner in which the results are presented accurately reflect the inference of the analyses. All inferences regarding the impact the results of these analyses may have on productivity or fiscal efficacy have been calculated and verified by the contractor (W. Migala and D. Villegas, CBCP, Fort Worth, TX, September 2009).

Statistical analysis

The database and foundation for analyses was established by recoding data from text files into a Statistical Package for Social Sciences (SPSS-12, SPSS, Chicago, IL) format. Basic descriptive analyses and cross-tabulations to construct donor satisfaction profiles were performed. Logistic regression analyses were conducted to isolate the best predictors of future donations. Five categories of satisfaction were measured. These included

- “Importance of Donation”: level of importance donor placed on their donation.
- “Staff Courtesy”: level of courtesy perceived by donor on the part of clinic staff.
- “Phlebotomist”: donor’s impression of phlebotomist’s level of competence and friendliness.
- “Good Stick”: level of comfort/pain of donor regarding the actual needle stick.

- “Reasonable Time Invested”: donor’s satisfaction with how much time was required.

The categories are measured by asking donors to respond to a positive statement describing one of the above categories of customer service. The respondent is asked to press the number on their telephone keypad that best reflects the degree they agree with the statement. The respondent is asked to record his or her satisfaction on a scale of 1 through 7, with “1” indicating “strongly disagree” and “7” indicating “strongly agree” with the statement. Donor ratings of their donation experiences were analyzed for associations between level of satisfaction and subsequent donations. Logistic regression analyses provided insight into those elements of the donation experience most significantly correlated with repeat donations. Results were further associated with geographic, temporal, and demographic data to establish an optimal model for repeat donations. Additional analyses correlated the types of donor responses (i.e., no answer, answered with an answering machine, answered in person, and answered in person who also took the survey) and how their responses correlated with additional blood donations.

Another automated telephone message informs donors when and where their donation was sent. The call includes a reminder of his or her next eligibility date. These calls are automated but customized to reflect the characteristics and information for the individual donor being contacted. Analyses were conducted to determine the correlation between the automated services and additional donations. Again, donors who did not answer their phones were used as the control group.

RESULTS

The study includes a total of 751,338 donations from three blood centers over the course of 7 years. These donations represented 148,123 FTDs and 603,215 repeat donors (or those who have donated on more than one occasion), with 54.0% being male and 46.0% being female. Results are provided in rates per 1000 to adjust for sample size within each category and allow for accurate comparability.

The results presented in Table 1 indicate that repeat donors (donors who have donated on more than one

TABLE 1. Analysis of donor responses to C & S survey

	First-time donors (FTDs) n = 148,123	All other donors n = 603,215
Total 751,338		
Answering machine	449.50 (n = 66,581)	433.72 (n = 261,625)
In-person (did not take survey)	300.57 (n = 44,521)	290.93 (n = 175,495)
In-person (took survey)	159.54 (n = 23,631)	190.55 (n = 114,944)
No answer/bad number	90.40 (n = 13,390)	84.80 (n = 51,151)

Note: All rates per 1000.

TABLE 2. Fiscal impact of C & S intervention

# of units	% of donors reached	# of donors reached	Increase in donations	Increase in units	\$/unit	Value in \$ of donations	Cost of service	Return per \$ invested
Donor classified as in-person reached by automated service and took the survey								
751,338	0.184	138,575	0.065	9007	\$200	\$1,801,400	\$265,368	\$6.79

occasion) were 19.4% more likely to answer/respond to the survey than FTDs. Among all donors, a person actually responding to the survey made 6.5% (Table 2) more donations than when the automated message reached a person who did not take the survey or reached an answering machine.

TABLE 3. Statistical analysis of survey responses

	B	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
						Lower	Upper
Importance	1.059	24.092	1	0.000	2.883	2.401	3.362
Courtesy	0.370	11.534	1	0.001	1.447	1.114	1.865
Phlebotomist	0.211	9.879	1	0.002	1.234	1.028	1.438
Discomfort	0.201	7.160	1	0.007	1.222	1.003	1.391
Time	-0.002	1.631	1	0.915	0.998	0.697	1.169
Constant	1.186	301.011	1	0.000	3.272		

Results—C & S

Analyses were conducted comparing FTDs with repeat donors based on those who rated each measure a “7” (highest level of satisfaction) as opposed to those who rated their level of satisfaction at any other level (1-6). The results of regression analyses isolated the best predictors (among question categories) for FTDs to donate again. The following provides results for analyses conducted by comparing those who answered “all 7s” versus “all others” for each of the measures (Table 3) and a brief narrative explaining the results:

Importance: Among FTDs, those who felt most strongly about the importance of donating blood (rated this measure a “7”) are 2.88 times more likely to donate blood again. In other words, those who rated the importance of donating blood at the highest level were 288% more likely to donate blood again.

Courtesy: Similarly, when FTDs rated their level of satisfaction at “7,” they were 1.45 times (or 145%) more likely to donate again.

Phlebotomist/Discomfort (“Good Stick”): Respondents who rated their Phlebotomist and their Discomfort (needle stick) at “7” were 23% and 22%, respectively, more likely to donate blood again.

The perceived “Importance of Donation” was found to be the best predictor for FTDs becoming future donors, followed by “Courtesy” and “Rate your Phlebotomist.” No significant difference was observed in the bivariate regression analysis for the measure “Time.” In other words, rating this measure a “7” by FTDs indicated no significant difference when compared with those who donated blood more often.

Results—fiscal impact analyses

As per Table 2, analysis of C & S on the frequency of donation and subsequent fiscal impact is as follows:

For the purposes of the study, each unit of blood was considered as a separate donor. Therefore, of the 751,338 units of blood donated, 138,575 donors (18.4%) took and completed the survey. To isolate the impact of the automated service, those who took the survey were considered having participated in the service and all others were treated as the control group. The resulting analysis indicated that among all repeat donors, those who took the survey made 6.5% more donations compared with all others who were not reached or did not take the survey. The 6.5% increase represented the donation of 9007 more units of blood. To relay these results in more tangible terms, the value of this increase of donations is estimated at \$1,801,400 (using an estimate of \$200 per unit). The overall cost of the C & S survey for the 751,338 units donated was \$262,968.30, which is approximately \$0.35 per donor. Therefore, the ratio, as calculated by the statistical contractor, is 6.79:1.00. In fiscal terms, the analyses suggest there is a \$6.79 return for every \$1.00 invested.

Results—celebration message

The response to the “Celebration” message provided as part of the automated service was analyzed to calculate statistical differences in the ratio of donations between those who heard and who did not hear the celebration message. Table 4 provides a synopsis of the analyses for the three blood centers (listed as A, B, and C).

Cumulatively for the three blood centers included in these analyses, the specific stratum ratio differences revealed an increase in donation counts among all those who heard the celebration message. The overall ratio difference for the blood centers revealed a statistically significant ($p < 0.0001$) ratio difference of 9.54% among those who heard the message compared with those who did not hear the message^{4,5} (Table 4).

TABLE 4. Statistical analysis for celebration message

	Did not hear message— did not donate again	Did not hear message— donated again	Ratio	Heard message— did not donate again	Heard message— donated again	Ratio	Ratio %	Chi-square test	p value
A	5,582	5,871	1.0518	27,940	31,389	1.1234	7.17	10.42	0.001
B	4,414	4,588	1.0394	41,711	48,574	1.1631	12.37	25.88	<0.0001
C	6,338	6,506	1.0285	48,708	54,318	1.1152	8.87	19.60	<0.0001
Total	16,334	16,965	1.0386	118,359	134,221	1.1340	9.54	56.76	<0.0001

TABLE 5. Percent of donors who repeat after each donation

Frequency implications on donations	
First-time donor	33.9%
Second-time donor	41.6%
Third-time donor	47.3%
Fourth-time donor	52.4%
Fifth-time donor	55.4%
Sixth-time donor	61.4%
Seventh-time donor	62.8%
Eighth-time donor	65.4%
Ninth-time donor	68.5%
Tenth-time donor	69.5%

Results—temporal insights

Of the many insights provided by the collection and analysis of donor data, temporal indicators, or results based on time of year or how many times someone donates, were also revealed. As evidenced by the results reported in Table 5, success in progressively encouraging donors to make subsequent donations increases the likelihood of donor commitment. As presented in Table 5, the odds of an FTD returning to make another donation are 33.9%. When an FTD makes one more donation, the likelihood the donor (now a second-time donor) will make another donation increases to 41.6%. Becoming a second-time donor increases the likelihood of receiving another donation by 7.7% by using exactly the procedures already in place at the blood center. The automated system isolates these mechanisms to increase the efficiency of retaining donors and increasing subsequent donations.

In addition, analyses suggest that once a donation is made, the likelihood of subsequent donations decreases substantially after about 100 days. As presented in Fig. 1, the number of donations per day decreases considerably over time as the number of days past eligibility dates increase.

The “Number of days to donate after prior donation” charts only donors who have made repeat donations and tracks the number of days between donations. Approximately 50% of the donors that will donate again will make that donation in the first 100 days (or within the first 44 days of eligibility). Remarkably, the data seemed to cycle at 7-day intervals, indicating that donors tend to make their donations on the same day of the week.

DISCUSSION

As presented in the Results section of this report (Table 3), the results of the “C & S” survey indicate that the donor’s perception of the importance of their donation is the category that best predicts whether a donor will make subsequent donations (2.88; sig.000; CI: 2.401, 3.362). The courtesy experienced by the donor is also a strong predictor (1.45; sig.001; CI: 1.114, 1.865). The automated services internalize and reinforce the importance of donating to the individual donor while also providing insight to the blood center regarding the customer service that impacts the likelihood of future donations.

Blood centers can increase donor participation and frequency of donation by utilizing integrated automated services. Subsequently, as demonstrated by this study, the statistical inference indicates the increase in donations more than compensates for the cost of the system (Table 2). By isolating demographic, temporal, and satisfaction measures associated with increased donations, blood centers can expect an increase in return donors. Similarly, when blood centers have identified individual donor preferences, blood centers can use the automated retention service more effectively.⁶ The automated service increases donations and also provides blood centers with data that quantify how donor satisfaction is related to donor retention. As presented in Table 2, donors responding to the “C & S” survey reflected a 6.5% increase in donations. Descriptive and statistical data further provided blood centers with insights and strategies to optimize their telerecruitment guidelines.

As per Table 5, contrary to the belief held in the blood bank community that when a donor donates three to four times they can be considered a regular donor, donors who have given three to four times have about a 50% chance of returning.⁷ The automated system continually applies proven intervention techniques to ensure that frequent donors are retained regardless of their past history of contributions.

Given the current climate of health-care reform, there is increasing pressure to obtain blood donations at reduced costs without a reduction in service or quality. Although FTDs represent a sufficient donor base to meet demand, many of these individuals do not return to make subsequent donations. In addition, those regular donors

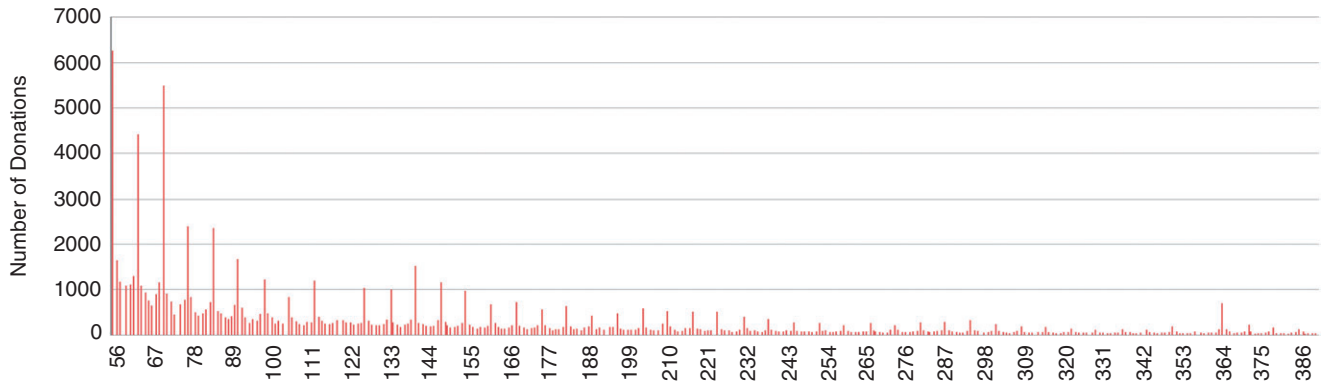


Fig. 1. Number of days to donate after prior donation.

who still associate their donations with the need represented by World War II are increasingly dying off or becoming ineligible to donate.⁸ These limitations require blood banks to focus on those activities that influence donors to make subsequent donations.

Research has historically indicated that recruitment of new customers is five times the cost of retaining existing donors.^{9,10} The automated system as presented in this report increases FTD retention by informing the donor of the name of the hospital where his or her donation was sent and the immediate impact his or her action may have had on someone’s life. In addition, the automated intervention impacts those who have already donated blood and eliminates the large percentage of contacts who are recruited by blood centers but who never provide a single donation. Again, existing research indicates that only 5-10%¹¹ of the population donates blood; therefore, it is most effective to target the costs of recruitment toward that segment of the population that has already demonstrated the willingness to donate. The automated system efficiently communicates only with donors who have established eligibility, have demonstrated the willingness to donate, and no longer see their donation experience as a mystery but rather associate their actions as having an immediate and important social benefit.

Although donors often complain about the time it takes to donate, the results of this study find that “Time” is not a predictor for FTDs. However, “Time” becomes more important as donor frequency increases, and retention may increase by offering expedited services to those who have met a threshold for repeated donations.

As mentioned, increased pressure to economize fiscal resources have led hospitals to expect their suppliers to participate in cost-saving strategies.¹² This automated system specifically targets a smaller, already proven group of donors, thereby targeting a more efficient, cost-effective market cohort than the general population. Also, previous

donors have already met donor qualifications regarding health and travel restrictions.

As the results of this study have indicated that “Importance of Donation” is the most remarkable predictor of future donations, blood centers can design and institute programs that consistently reinforce the impact of every donation. This reinforcing message emphasizes that their donations actually and directly save lives. Along the same vein, donors who score a blood center low in “Courtesy” direct the facility to improve their customer service. In general, the results of analyses provide data-driven focus on the training and resources directly associated with donor retention and donation frequency.

In addition to the insights provided by the Satisfaction survey, the Celebration Program is an automated component of the system that contacts each donor and reemphasizes the importance of donating. The system informs the donor of the name of the hospital where their blood was sent and how quickly their donation was sent to the facility and reminds donors of their next eligibility date. Analysis indicates that by emphasizing to donors the importance of their donation, blood centers received nearly 10% (Table 4: 9.54%) more blood from donors who heard these messages than from donors who did not. For most blood centers, this represents a substantial increase in donations.

A unique feature of the system used in this study is the “Celebration” call. The demonstrated impact of this service on increasing donations may be explained as a result of successfully recognizing and addressing the needs of the donor and not just the blood center (Fig. 2). Historically, when telerecruiters contact donors to request donations, the donor is essentially informed of the needs of the blood center. Conversely, the “Celebration” call addresses the needs of the donors by informing them of where their donation was sent, thereby validating their effort and contribution. The resulting synergistic effect of recognizing both the needs of the donor and of the blood

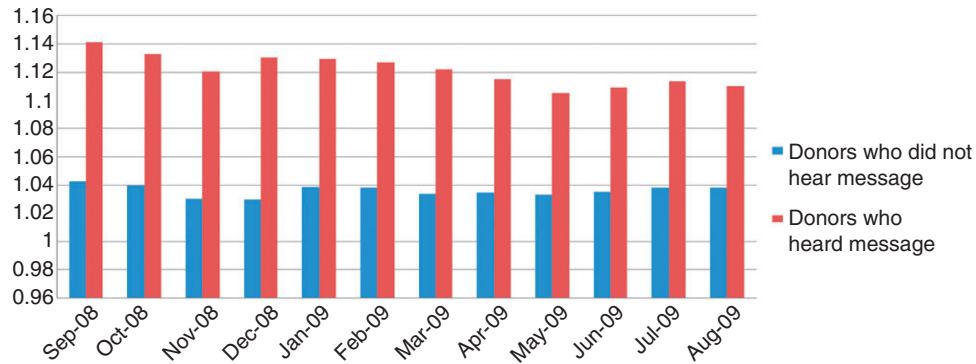


Fig. 2. Frequency for donors who heard celebration message versus donors who did not hear celebration message.

center increases donations more than either service could achieve independently.

The results of the “Number of days to donate after prior donation” chart (Fig. 1) suggest blood centers can be more effective when they telerecruit immediately when donors become eligible. The telerecruitment department may want to customize their telerecruiters’ scripts to include: “I notice you gave on Tuesday last time you donated. Would next Tuesday be a convenient time to donate again?” Personally customized interventions can make the message more effective. The data suggest that a telerecruitment message suggesting a donation on the same day of the week as their previous donation will be a preferred day a little more than 46% of the time. An additional implication for blood centers is that both individual recruitment and campaign efforts can be more effective if driven by these data. Campaigns held at times of year when shortages are anticipated can be followed with efforts approximately 2 months later, when donors are again eligible and fall within the time when they are most likely to donate again.

By informing donors of where their blood was sent to save a life, the donor recognizes the importance of his or her actions and realizes the need for continual support of this worthwhile action. By using the information and support system provided by the automated services and then incorporating the phlebotomists and recruiters to reinforce donor retention, both retention and donations will increase. Indeed, the results of this study reflect an increase of 6.5-9.5%, a meaningful difference in terms of efficacy, service delivery, and revenue for any blood center.

Limitations

The analysis conducted in this study used only FTDs who took the survey and made repeat donations compared with FTDs who did not take the survey and made subsequent donations. The analyses did not include those donors who may have responded to the survey after their

first donation. This may have resulted in underreporting the number of donors who responded to the survey, thereby subsequently diminishing the calculated effect.

ACKNOWLEDGEMENT

The authors wish to acknowledge the significant contribution of amazing statisticians Witold Migala, PhD, MPH, CBCP, and Dorian Villegas, MPH, in ensuring the objectivity and statistical validity of the data included in this article.

CONFLICT OF INTEREST

Garrett Whitney and Robert Hall are principals in Bloodbankpartners.com, Inc.

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