Received: 8 February 2021 | Revised: 29 March 2021 | Accepted: 7 May 2021

DOI: 10.1111/trf.16448

TRANSFUSION

COVID-19 convalescent plasma donor recruitment experience from the perspective of a hospital transfusion medicine service

Since the first documented case of SARS-CoV-2 infection in the United States in January of 2020, the number of confirmed cases has skyrocketed to over 20,000,000 with more than 350,000 deaths.[1] At the time of this writing, no licensed therapeutics are available despite several clinical trials, including studies of passive antibody therapy. Administration of antibodies against a particular agent to protect or treat susceptible individuals has been used since the 1890s.[2] In the context of the COVID-19 pandemic, anti-SARS-CoV-2 antibody-containing plasma is obtained by apheresis or separated from whole blood donated by convalescent donors. In March 2020, the FDA published standards for convalescent plasma (CP) donation, and by August 2020 they recognized the potential efficacy of CP with issuance of an emergency use authorization (EUA) for CP in hospitalized COVID-19 patients.[3] Libster et al. recently showed early administration of high-titer CP to mildly ill infected older adults reduced the progression of COVID-19.[4]

At our institution, we actively recruited potential CP donors from patients previously hospitalized for COVID-19 in our healthcare system. Potential donors met criteria derived from the April 2020 FDA guidance: evidence of COVID-19 infection either by a diagnostic test or positive serological test for SARS-CoV-2 antibodies and complete resolution of symptoms for at least 28 days prior to donation.[3] Investigational Review Board approval was obtained to contact prospective donors who met these criteria. During telephone recruitments, individuals' interest in donating CP was assessed, questions about CP and the donation process were answered, and, if interested in donation, their contact information was forwarded to LifeSouth Community Blood Center Inc. The outcome of each call including reasons for declining donation was recorded. LifeSouth then contacted the potential donors to set up collection screening. The CP units collected from recruited donors were returned to our healthcare system for use in future hospitalized COVID-19 positive patients.

In total 545 individuals were contacted from April 29 – August 18, 2020. See Table 1 for prospective donor demographics. One-hundred and three individuals agreed to donate (18.9%) while 442 declined (81.1%). Rates of declination were similar between males and females. The average age of those who were willing to donate was 57 while the average age of those who declined to donate was 61 ($p = .02$) (Table 1). Of those amendable to donation, 15 individuals (2.8%) donated 45 units of CP between April and June 2020. By targeting patients who were sick enough to require hospitalization, we hoped to select for patients who would have a high antibody titer.[4] Consequently, of the 34 units that had antibody data (titer and/or signal-to-cutoff ratio) available, 30 were considered high titer. Given the low yield from recruitment combined with lower than anticipated demand for CP at our institution, CP was simply ordered from LifeSouth starting August 2020 as opposed to relying on recruited donor CP. However, recruitment efforts have allowed the blood bank to keep a stock of CP in case of shortages.

Reasons for declination were divided into 10 categories (Table 1). The most common reason was inability to contact the individual. After four unsuccessful attempted calls, we removed the individual from the call list and marked them as "declined to donate". Important to note is the number of attempts made by the recruiter was dependent on his/her motivation and persistence. Thus, not every potential donor was contacted a total four times if there was no response to prior attempts (see Figure 1). The second most common reason was ineligibility to donate blood products due to past medical history, e.g. anemia, sickle cell disease, or recent transfusion. This is in keeping with previously observed factors that hinder blood donation. Marantidou et al. cited "health problems" as the most commonly stated reason for self-deferral among donors in Greece.[5] Notably, 5% of potential donors still felt symptomatic even though most were contacted an average of 42 days (6 weeks) after discharge, reflective of the potential residual effects of the virus, which are still largely unknown.

From our experience, tremendous time and effort are required to identify, contact, and recruit eligible CP

TABLE 1

Demographic Information	Number (%)
Female	245 (45.0)
Male	253 (46.4)
Gender not recorded	47 (8.6)
Age range	20–97 years
Age mean	64 years
Decline to Donate	**Number of individuals (%)**
Total	442 (81.1)
Female	196/245 (80)
Male	200/253 (79)
Gender not recorded	46/47 (97.9)
< 64 years of age	232/298 (77.9)
> 64 years of age	210/247 (85)
Reason to Decline	**Number of individuals (%)**
Still symptomatic	21 (4.8)
Ineligible to donate blood products	87 (19.7)
Non-English speaking or hearing impaired	30 (6.8)
Unwilling to donate due to frustration, fear or disinterest	23 (5.2)
Previously donated CP	6 (1.4)
Unable to contact	171 (38.7)[d]
Negative experience with prior donations/needlesticks	9 (2.0)
Deceased since discharge	20 (4.5)
Discharged to hospice/nursing home/rehabilitation	30 (6.8)
Other[a]	45 (10.2)
Convalescent Plasma Donor Characteristics	**Number of individuals (%) or Years**
Males	6 (40)
Females	9 (60)
Caucasian	10 (67)
African American	5 (33)
Age range	28–75
Average age	51
Convalescent Plasma Characteristic (no. units)[e]	**Value**
Titer[b] range (30)	306–31,341
Titer average (30)	11,071
Signal-to-cutoff ratio[c] range (11)	0–18.3
Signal-to-cutoff ratio average (11)	10.2

[a]Other category includes individuals who were: unsure (n = 17), did not think CP is beneficial (n = 1), wanted additional testing (n = 1), wanted to donate but did not want to be a part of study (n = 1), and gave no reason for decline (n = 25).
[b]SARS-CoV-2 antibody titers were measured by an in-house enzyme linked immunosorbent assay (ELISA) using 6x His-tagged receptor-binding domain (RBD) of the SARS-CoV-2 Wuhan-Hu-1 strain (NR52309; GenBank: MN908947). Strong neutralization is generally seen in samples with linear titer of ~3000.
[c]Signal-to-cutoff ratio of 12 or greater, determined by the Ortho VITROS SARS-CoV-2 IgG test at LifeSouth, was considered high titer as per the FDA issued EUA.
[d]Total number of individuals unable to be contacted from 4 rounds of attempted calls.
[e]Some units were unable to be tested for antibody titer given logistical barriers in testing or obtaining a sample prior to administration to the patient.

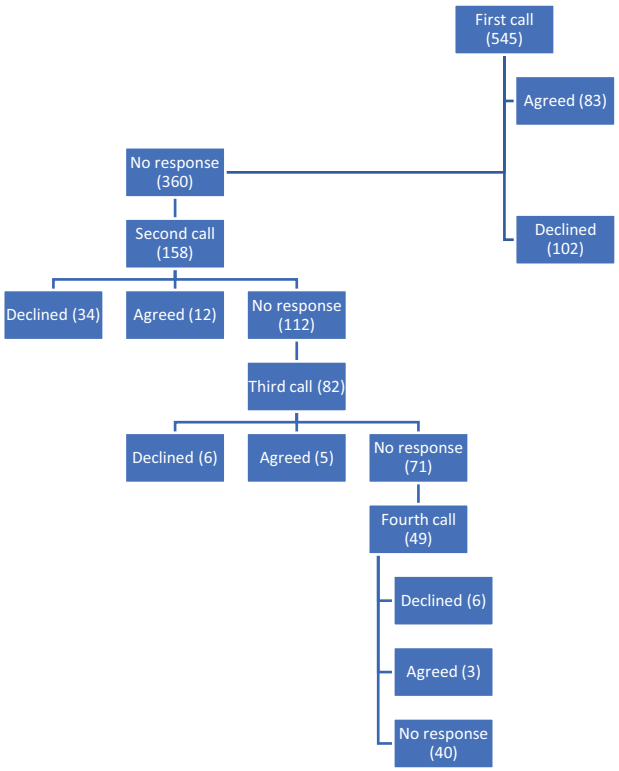

FIGURE 1 Break down of phone calls and responses. Each of the potential 545 donors were called at least once during the recruitment process. For each round of attempted phone calls, the number of individuals who agreed to donate, declined to donate, and did not respond was documented. This same calling and documentation process was repeated up to four times. The number of subsequent phone calls an individual received was dependent on the recruiter and his/her motivation and persistence. Thus, not all individuals marked as a "no response" received a subsequent call [Color figure can be viewed at wileyonlinelibrary.com]

donors. These challenges highlight barriers to establishing donor recruitment and retention methods in maintaining supply of CP, particularly during a global pandemic. An advantage of a hospital service partnering with a free-standing blood center is the identification of prospective donors from the pool of convalescent patients, especially early in the pandemic when the American public was largely unaware of CP and donor eligibility. This partnership expedited obtaining this rare, precious, and potentially life-saving resource during the early stages of the pandemic. Contacting discharged patients also allowed us to tap into a donor pool that is generally not solicited. This strategic model could be built into a disaster plan for a hospital and blood center if another pandemic should arise in the future.

CONFLICT OF INTEREST

The authors have disclosed no conflicts of interest.

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