Received: 19 May 2022 | Revised: 7 September 2022 | Accepted: 7 September 2022

DOI: 10.1111/trf.17120

BLOOD DONORS AND BLOOD COLLECTION

TRANSFUSION

'Stay at home and limit contact': The impact of stay-at-home advice on the behavior of Australian donors aged 70 and over in the first year of the pandemic

Sanda Naing[1] | **Rachel Thorpe**[1,2] | **Kyle Jensen**[2] | **Barbara Masser**[2,3] | **Nicky Guerin**[2]

[1]Melbourne School of Population and Global Health, University of Melbourne, Melbourne, Victoria, Australia

[2]Clinical Services and Research, Australian Red Cross Lifeblood, West Melbourne, Victoria, Australia

[3]School of Psychology, The University of Queensland, St Lucia, Queensland, Australia

Correspondence
Rachel Thorpe, Australian Red Cross Lifeblood, 100-154 Batman Street, West Melbourne Victoria 3003, Australia.
Email: rthorpe@redcrossblood.org.au

Abstract

Background: Early in the COVID-19 pandemic, Australian donors aged 70 and over were advised to temporarily stop donating. The aim of this research was to understand the factors associated with some of these donors continuing to donate despite the advice, and whether adherence to the advice had negative implications for donor retention.

Study Design and Methods: Survey data from 2078 donors were analyzed to understand the factors associated with donating blood during the first 6 months of the pandemic, and the impact of following stay-at-home advice during the first 6 months of the pandemic on donor return 6–12 months into the pandemic. Panel data were used to gain an overview of donation behavior before, during, and after the initial phase of the pandemic.

Results: Donations by donors aged 70 and over decreased disproportionately to other age groups during the early stages of the pandemic. Sex, total donation count, awareness of stay-at-home advice from the Blood Collection Agency, the mode of receiving stay-at-home advice, donor risk perceptions and attitudes toward stay-at-home advice were associated with donation behavior in the first 6 months of the pandemic. Donors who did not donate in the first 6 months of the pandemic had lower odds of returning 6–12 months into the pandemic.

Conclusion: Stay-at-home advice was partially successful in preventing older donors from donating; however, more tailored communication approaches may have prevented more donors from donating. Implementation of stay-at-home advice should be accompanied by strategies to prevent ongoing donor lapse in the medium- to long-term.

KEYWORDS

COVID-19, donation behavior, donor return, pandemic, stay-at-home advice

1 | INTRODUCTION

Older donors play a key role in the provision of a stable blood supply. Donation by older people is safe for both the donor and recipient[1,2] and older donors contribute to the blood supply more frequently than younger donors.[1,3] In Australia, donors aged 50+ return quicker, donate more frequently, and have fewer adverse events than younger donors.[4,5] While donors aged 70 and over (hereon in referred to as 70+) are a comparatively small cohort, their contribution to the blood supply is valuable. In the 12-months before the COVID-19 pandemic,[6] donors aged 70+ comprised 3.1% of the donor panel and contributed 3.9% of donations. In a context where demand for blood is rising due to aging populations,[7,8] the importance and potential of older donors in ensuring an adequate blood supply are increasingly recognized.

While the health and wellbeing of donors aged 70+ are known, outside of blood donation those in this age group are generally viewed as fragile, vulnerable, and in need of protection.[9] In the context of the COVID-19 pandemic, these perceptions coupled with the association of age with COVID-19 mortality risk,[10] led to benevolent public health recommendations targeted at older people designed to reduce the risk of COVID-19 infection.[10,11] In late March 2020, the Australian Federal Government advised those aged 70+ to stay at home and limit contact with others. Consistent with this, from 3/31/2020, Australian Red Cross Lifeblood (Lifeblood), the Blood Collection Agency (BCA) responsible for the collection and distribution of all blood and blood-related products in Australia, communicated with donors aged 70+ to reaffirm this advice, and more specifically discourage (but not bar) their attendance at donor centers. Strategies taken by other BCAs were similar but enforced. For example, NHS Blood and Transplant in the UK made donors aged 70+ temporarily ineligible to donate.

1.1 | The current study

In light of the advice given by the government and reaffirmed by Lifeblood, one aim of the research was to document older donors' behavior following the advice and to identify the factors associated with donors' response to this advice. Donors may weigh up the advice given by the government and by Lifeblood in light of perceptions of their own health, along with their perceptions of risk of contracting COVID-19 through attending to donate.[4] Alternatively, non-adherence may be motivated by simple disagreement with the public health messaging or reflect simply not receiving the messaging. However, for those who donated during the pandemic, other motivations such as a want to keep contributing or to re-affirm their self-identity as a donor may also play a key role.[8] Alternatively, a want to mitigate feelings of loneliness and isolation reported by older adults during stay-at-home orders[12] may motivate some older donors to attend donation centers.

A second aim was to explore the impact of the advice on donor retention. As typically committed donors who contribute reliably to the blood supply, ongoing retention of donors aged 70+ is key. Temporary deferrals are positively associated with lapse,[13] however the association is weaker for more experienced donors.[13] To determine the longer-term impact of stay-at-home advice on donor retention, we sought to explore the retention of donors aged 70+ after the initial two-waves of the pandemic had passed, and blanket social restrictions employed in a zero-COVID suppression strategy had eased. Specifically, we were interested to see if adherence to the government and Lifeblood advice promoted lapse or whether the voluntary nature of adherence (rather than enforced deferral) and historical commitment of these donors to donating mitigated the often-observed negative effects of temporary deferral on donor retention.

2 | METHODS

To document the behavior of older donors when stay-at-home advice was given, two types of data were examined: survey data to understand factors associated with following the stay-at-home advice and panel data to determine older donors' immediate and longer-term behavioral responses to the stay-at-home advice.

2.1 | Survey participants and design

A survey was distributed on 9/15/20 to 5998 active donors aged 70+ (32.3% of the active donor panel in this

TABLE 1 Definitions

Label	Definition
Stay-at-home period	The 5-month period between 04/01/20 and 09/14/20.
Comparison period	Historical data from 04/01/19 to 9/14/19 to compare pre-pandemic behavior.
Survey period	The survey was in-field from 9/15/20 to 10/14/20.
Stay-at-home donor	Donated between 04/01/20 and 09/14/20
Stay-at-home non-donor	Did not donate between 04/01/20 and 09/14/20 but had donated prior to 04/01/20.

age group) representative of the 70+ donor population in regard to sex, blood type, donation type, donation frequency, and location. The survey was open until 10/14/20. Donors were considered active if they had attended a donor center in the 12 months prior to 3/1/20 and were aged 70+ on this date. Relevant time periods and donor classifications are defined in Table 1.

Two thousand four hundred and twenty five responses to the survey were recorded. Responses were included in analyses if the donor consented and completed more than 30% of the survey. After removing 85 duplicates, 84 non-consenting responses, and 178 responses that were less than 30% complete, 2078 responses were analyzed (final response rate of 34.6%). Respondent characteristics are described in Table 2.

2.2 | Measures

The survey included items assessing the demographic characteristics of participants (sex, education, and geographical location), self-reported physical health, and donation experience. Geographical location was included as measures to control the spread of COVID-19 varied in Australia by state. In addition, items assessing respondents' awareness of the stay-at-home advice were administered. Specifically, in relation to the advice for people aged 70+ to stay at home, respondents were asked to indicate "yes" or "no" to show their awareness of the government's advice and the advice from Lifeblood not to donate. Participants were then asked if they received advice from Lifeblood for those aged 70+ to cancel their

TABLE 2 Characteristics of survey participants and 70+ donor population

	Survey ($n = 2078$)		Panel ($n = 21,374$)	
Sex	***n***	**%**	***n***	**%**
Female	854	41.0%	8604	40.3%
Male	1224	59.0%	12,770	59.7%
Location				
Victoria	686	33.0%	5256	24.6%
New South Wales	623	30.0%	6288	29.4%
Queensland	303	14.6%	4196	19.6%
Western Australia	246	11.8%	1924	9.0%
South Australia	192	9.2%	2359	11.0%
Tasmania	19	0.9%	840	3.9%
Australian Capital Territory	9	0.4%	433	2.0%
Northern Territory	0	0.0%	78	0.4%
Age				
Age[a]	73.09		72.84	
Donation history				
Total donation count[b]	83.48		42.2	
Highest level of completed education				
≤Year 10	307	16.1%		
Year 11	132	6.9%		
Year 12	196	10.3%		
Certificate/ Diploma	636	33.4%		
≥Bachelor's degree	636	33.4%		
Self-reported physical health				
Fair	24	1.2%		
Good	234	11.3%		
Very good	1077	51.8%		
Excellent	743	35.8%		

[a]Average age in years.
[b]Average number of lifetime donations.

donation appointments (No; Yes, a SMS; Yes, a phone call) and not make any further appointments to donate until the coronavirus restrictions were lifted (No; Yes, an email; Yes, a phone call). Further, participants were asked to indicate their response to: "How much do you agree with government and Lifeblood advice to people aged 70 and over to stay at home and not donate during some stages of the coronavirus pandemic restrictions" and "If you were to donate today, how likely do you feel it is that you would be exposed to coronavirus in the donor center?" Responses were made on 1-extremely unlikely to 7-extremely likely scales.

The motivations of stay-at-home donors (those who donated contrary to the government and Lifeblood advice) were explored. Participants were given 15 motives for donating and asked to select all that influenced them to donate during the pandemic. Some items reflected general donation motivations (e.g., I may save someone's life) while some reflected the need to donate to maintain a routine (e.g., donating is part of my routine) or fulfill identity-related needs (e.g., blood donation is an important part of who I am). Other items reflected motivations related to the context of the pandemic[14] (e.g., It's something I could do to help) or needs that may have been particularly experienced by older adults during this time (e.g., "I wanted to meet up with others").

Follow-up data were extracted from the Lifeblood database for the 6 months following the close of the survey to determine who became *a returning donor* (see Figure 1). Ethics approval was received from the Lifeblood Human Research Ethics Committee.

2.3 | Panel data

To determine the overall impact of the stay-at-home advice on the contribution made by donors aged 70+ during and after the initial phase of the pandemic, donor panel data were extracted on donations made by donors aged 70+ (see Figure 1).

2.4 | Statistical analysis

Analyses were conducted using IBM SPSS Statistics 23 software. Overall change in donor behavior in 2020 compared with 2019 is reported in percentiles. Multiple logistic regression models were used to determine the influence of perceived health, awareness of the communication, perceived risk of donating, and agreement with the stay-at-home messaging on donation behavior from 4/1/20–9/14/20 and 9/15/20–3/15/21. The Hosmer-Lemeshow test was used to determine the goodness-of-fit of the models.

3 | RESULTS

3.1 | Stay-at-home donors and non-donors

Of the 2078 survey respondents, 41.6% did donate during the time period during which advice not to donate was issued to donors aged 70+. 58.4% of respondents did not donate during this period. Comparison with panel data shows that stay-at-home donors were over-represented among survey respondents, as of donors aged 70+ who were active in the 12 months prior to the pandemic, 34% donated in the first 6 months of the pandemic, while 66% did not.

3.2 | Predictors of being a stay-at-home donor

Table 3 shows that location, self-reported physical health, donation experience, and sex were associated with being a stay-at-home donor. While all Australian states entered some degree of lockdown in the first 6 months of the pandemic, at the time the survey was conducted the states of Victoria and New South Wales were under stricter lockdown conditions. Although blood donation

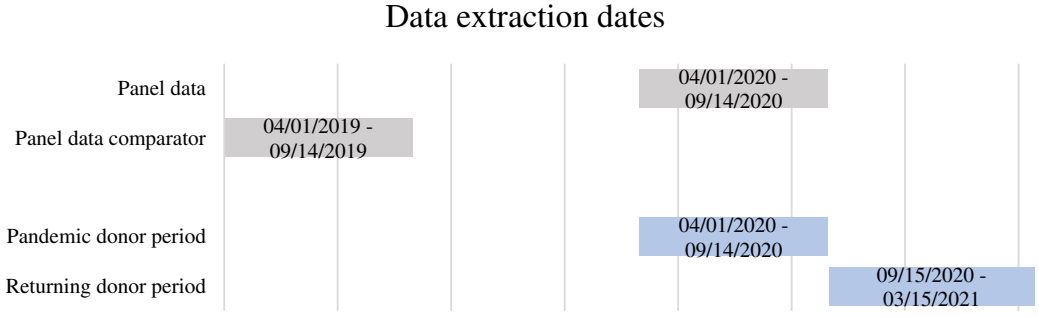

FIGURE 1 Study period dates [Color figure can be viewed at wileyonlinelibrary.com]

TABLE 3 Effect of donor characteristics on the odds of donating during the first 6 months of the pandemic ($n = 2078$)

Predictor		OR	95% CI	
State	VIC	Ref		
	NSW****	1.83	1.43	2.33
	QLD****	3.85	2.84	5.22
	WA****	2.82	2.05	3.89
	SA****	2.37	1.68	3.35
	TAS	2.24	0.84	5.95
	ACT	2.37	0.52	10.81
How is your physical health?	Excellent	Ref		
	Very good	0.87	0.71	1.07
	Good	0.77	0.56	1.06
	Fair*	0.26	0.09	0.80
Total Donation Count****		1.004	1.003	1.005
Sex	Female	Ref		
	Male***	1.40	1.15	1.71
Highest level of education completed	≥Bachelors	Ref		
	Diploma/cert	1.12	0.88	1.41
	Year 12	1.06	0.76	1.49
	Year 11	0.87	0.58	1.30
	≤Year 10	1.12	0.84	1.50
Constant		0.27		

Note: Non-significant Hosmer-Lemeshow test indicates model's good fit to the data ($p = 0.679$). *$p \leq 0.05$; ***$p \leq 0.001$; ****$p < 0.0001$.
Total donation count is a continuous variable.

consistently remained a legal reason to leave home, donors aged 70+ received messaging advising against doing so.

Compared to Victorian donors, donors in New South Wales, Queensland, Western Australia, and South Australia all had higher odds of donating. Those who rated themselves as having excellent health had higher odds of donating than those indicating fair health. Further, respondents were more likely to be stay-at-home donors the more prior donation experience they had, and male donors were more likely to be stay-at-home donors than female donors. Level of education was not associated with donation behavior.

Awareness of the government stay-at-home advice was high (95.7%) but not associated with donation behavior during the first 6 months of the pandemic. 66.4% of participants were aware of Lifeblood's stay-at-home advice and those who were unaware of this advice were more likely to donate during the pandemic, OR = 1.58, 95%CI 1.27, 1.96 (see Table 4).

Advice to cancel existing appointments and to avoid making future appointments was issued through multiple channels with varied effectiveness. Compared to participants who did not recall receiving Lifeblood communications, donors who recalled receiving a phone call advising them to cancel their appointments had reduced odds of being a stay-at-home donor, OR = 0.58, 95%CI 0.38, 0.91. Recalling receiving an SMS to cancel upcoming appointments was not associated with donation behavior. Further, those who recalled receiving a phone call, OR = 0.57, 95%CI 0.36, 0.91, or email, OR = 0.43, 95%CI 0.33, 0.56, with advice to avoid making any further appointments to donate had reduced odds of being a stay-at-home donor compared to those who did not recall receiving advice. The more a donor agreed with the stay-at-home advice and the higher they perceived the risk of being exposed to COVID-19 in donor cents, the lower their odds of being a stay-at-home donor, OR = 0.75, 95%CI 0.71, 0.79; and OR = 0.79, 95%CI 0.73, 0.87, respectively.

Of the stay-at-home donors, the majority stated that their motivations for donating reflected their need to maintain a donation routine (67.0%), that they might save someone's life (66.7%), that donating was something they can do to help during the pandemic (56.3%), or fulfilled their identity needs (48.1%). Other motivations such as minimizing social isolation (e.g., I wanted to meet up with others") were only endorsed by a small minority (0.2%; see Table 5).

TABLE 4 Effect of donor awareness of stay-at-home advice, attitudes toward this advice, and donor risk perceptions on the odds of donating during the first 6 months of the pandemic

	Predictor		OR	95% CI	
1	Were you aware of the government advice to people aged 70+ to stay at home as much as possible?	Yes	Ref		
		No	1.01	0.57	1.80
2	Were you aware of Lifeblood advice to donors aged 70+ to not donate during coronavirus restrictions?	Yes	Ref		
		No****	1.58	1.27	1.96
3	Did you receive advice from Lifeblood to people aged 70+ to cancel an appointment to donate during coronavirus pandemic restrictions?	No	Ref		
		Yes, an SMS	1.22	0.95	1.56
		Yes, a phone call*	0.58	0.38	0.91
4	Did you receive advice from Lifeblood to people aged 70+ to not make any further appointments to donate until coronavirus pandemic restrictions were lifted?	No	Ref		
		Yes, an email****	0.43	0.33	0.56
		Yes, a phone call*	0.57	0.36	0.91
5	How much do you agree with government and Lifeblood advice to people aged 70+ to stay home and not donate blood during some stages of coronavirus pandemic restrictions?	1–7 scale****	0.75	0.71	0.79
6	If you were to donate today, how likely do you feel it is that you would be exposed to coronavirus in the donor center?	1–7 scale****	0.79	0.73	0.87

Note: Each model is adjusted for state, self-reported health, education, sex, and total donation count. Hosmer-Lemeshow test indicates that each model's good fit to the data (all $p < 0.05$). *$p \leq 0.05$; ****$p \leq 0.0001$. In rows 5&6 for each 1 unit increase in rating on the Likert scale, the odds of donating during the study period decreased by 25% and 21%, respectively.
Cases included in each model: 1 = 1877;2 = 1788; 3 = 1861;4,5&6 = 1907.

TABLE 5 Stay-at-home donors' motivations for donating during the first 6 months of the pandemic ($n = 908$)

Ranking	Motivation for donating	Selected
1	*Donating is part of my routine*	67.0%
2	*I may save someone's life*	66.7%
3	*Donating is important to me*	63.4%
4	*I'll help prevent blood shortages*	60.0%
5	*It's something I could do to help*	56.3%
6	*Blood donation is an important part of who I am*	48.1%
7	*It was time for my regular appointment*	47.2%
8	*Donating makes me feel useful*	40.6%
9	*I would regret if I did not donate*	28.6%
10	*I had free time*	14.5%
11	*I'd feel guilty if I did not donate*	10.2%
12	*It's something to do*	2.4%
13	*I saw that other people were donating*	1.3%
14	*Someone suggested it*	0.3%
15	*I wanted to meet up with others*	0.2%

3.3 | Effect of donation behavior in first 6 months of the pandemic on donor return

Comparing total donations made by donors aged 70+ in the 2019 comparison period to the stay-at-home period showed that overall donations by donors aged 70+ decreased by 30% in this phase of the pandemic. Stay-at-home non-donors had significantly lower odds of returning to donate in the 6 month follow-up period compared to stay-at-home donors, OR = 0.19, 95%CI 0.15, 0.25. Overall 54% of donors aged 70+ who had been active in 12 months prior to the pandemic returned to donate in the 6 month follow-up period. In relation to behavior during the pandemic, 82% of stay-at-home donors returned post-pandemic to donate compared with 39% of stay-at-home non-donors (Table 6).

4 | DISCUSSION

Consistent with the advice given by the government and Lifeblood, most active donors aged 70+ did not donate during the first two waves of COVID-19 in Australia. However, a significant proportion of donors aged 70+ did not follow advice not to donate. While following advice was associated with awareness of the advice from Lifeblood (but not from government), recollection of advice to cancel appointments received via a phone call (but not SMS) and advice not to book future appointments until pandemic restrictions were lifted, other factors were also influential. Donors weighed up their perceived risk from donating, likely influenced by their state governments' actions, while also considering their own health.[15] Sex

TABLE 6 Effect of early pandemic donation behavior on the odds of returning to donate 6–12 months later ($n = 1907$)

Predictor		OR	95% CI	
Donation behavior 4/1/20–9/14/20	Stay-at-home donor (≥1 donation)	Ref		
	Stay-at-home non-donor (0 donations)****	0.19	0.15	0.25

Note: Model adjusts for state, self-reported health, education, sex, and total donation count. Non-significant Hosmer-Lemeshow test indicates model's good fit to the data ($p = 0.437$). ****$p \leq 0.0001$.

differences in attitudes and risk perceptions in relation to the pandemic were also evident. While perceiving risk in attending a donation center was associated with not donating,[16] those who perceived their own health as excellent rather than fair had greater odds of donating during the pandemic.

These results highlight the complexity involved in effectively communicating with donors (aged 70+) about temporarily stopping donation. While the need to consider the beliefs and perspectives of recipients of communication has been highlighted in reference to culturally and linguistically diverse communities,[17,18] the influence of donors' broader perceptions of their health and well-being on their response to advice from a BCA has not been routinely considered. Donors who are deferred can react with disbelief[19,20] and denial[21] as the deferral contrasts with their self-perception as healthy and capable.[22] Similarly, older donors who perceive themselves to be in excellent health may view advice issued on the association of age with vulnerability and fragility as simply irrelevant. How BCAs should address this is not immediately clear. In a context where only segments of the donor panel are targeted not to donate, while other segments are encouraged to, then use of fear appeals to emphasize the potential danger and harm that may result from even the healthy donating[23] may be counterproductive. Further, applying blanket temporary deferrals on the basis of age alone (as in the UK) may have longer term negative consequences for retention as healthy older donors feel unfairly excluded.[24,25]

In addition to the challenge of what to communicate to this cohort to promote adherence, the results of the current analysis also suggest that how to communicate requires attention. While SMS are cost-effective and frequently used to communicate with donors,[26,27,28] our results indicate that they may not be effective for all. This suggests that how different segments of the donor base interact with technology should be considered alongside cost when deciding how best to communicate with donors.

Consistent with the literature on temporary deferrals, those who followed the stay-at-home advice had a reduced odds of returning to donate 6–12 months into the pandemic than donors who did not follow the stay-at-home advice. This occurred despite the lifting of restrictions to allow return and the substantial average donation experience of participants which typically provides some protection against donor lapse following a temporary deferral.[13] While donors may have been unaware that they were welcome to return, the 6-month voluntary deferral may have "broken the habit" for these older donors, allowing other activities to fill the role once played by blood donation.[29] This suggests a need to implement additional strategies to minimize the risk of lapse. For example, BCAs could pursue an active strategy of remaining in contact with older donors while stay-at-home advice is active to maintain donors' connections to the BCA. Further, donors could be actively encouraged via both telephone and email to return to donate once stay-at-home advice is lifted.[30]

While this study provides initial insights into the longer-term impact of stay-at-home advice on the donation behavior of donors aged 70+, survey participants were not wholly representative of the active 70+ donor population. As volunteer respondents, they were more likely to have donated during the pandemic and, on average, had substantial donation experience. Despite this, the results have clear implications for BCAs. Despite deferral being advised and not mandated, the results show that the blanket age-based self-deferral advice issued by Lifeblood, consistent with the government messaging, had a mixed effect on donor behavior. Some donors continued to donate despite the advice and sustained their contribution over the first year of the pandemic. In contrast, many who followed the advice and self-deferred did not return once restrictions lifted. This analysis highlights the complexity of messaging to a heterogeneous group as well as the need to proactively manage donor contact to ensure the ongoing engagement of donors who are advised not to give.

ACKNOWLEDGMENTS

Australian governments fund the Australian Red Cross Lifeblood to provide blood, blood products, and services to the Australian community. The authors would like to acknowledge Marijke Welvaert for statistical advice, Perfecto Diaz and Glen Shuttleworth for data management and Lifeblood's donor research team for their

contributions to survey design and analysis. We would also like to thank the donors who participated in the study for their time. Open access publishing facilitated by The University of Melbourne, as part of the Wiley - The University of Melbourne agreement via the Council of Australian University Librarians.

FUNDING INFORMATION

This research was supported by Lifeblood. Australian governments fund Australian Red Cross Lifeblood to provide blood, blood products, and services to the Australian community.

CONFLICT OF INTEREST

The authors declare they have no conflicts of interest relevant to the manuscript submitted to TRANSFUSION.

ORCID

Rachel Thorpe https://orcid.org/0000-0003-4415-9438
Barbara Masser https://orcid.org/0000-0001-9385-6497

REFERENCES

1. Goldman M, Germain M, Grégoire Y, Vassallo RR, Kamel H, Bravo M, et al. Safety of blood donation by individuals over age 70 and their contribution to the blood supply in five developed countries: a BEST collaborative group study. Transfusion. 2019;59(4):1267–72.
2. Zeiler T, Lander-Kox J, Alt T. Blood donation by elderly repeat blood donors. Transfus Med Hemother. 2014;41(4):242–50.
3. Ownby HE, Kong F, Watanabe K, Tu Y, Nass CC, for the Retrovirus Epidemiology Donor Study. Analysis of donor return behavior. Transfusion. 1999;39(10):1128–35.
4. Masser BM, Hyde MK, Ferguson E. Exploring predictors of Australian community members' blood donation intentions and blood donation–related behavior during the COVID-19 pandemic. Transfusion. 2020;60(12):2907–17.
5. Thijsen A, Masser B. Vasovagal reactions in blood donors: risks, prevention and management. Transfus Med. 2019;29:13–22.
6. World Health Organization. Coronavirus disease 2019 (COVID-19) situation report–51. World Health Organization 2020;11.
7. Fung YL, Lee CK, Kwon SY, Soedarmono Y, Satake M, Alcantara R, et al. The contribution and potential of older blood donors in Asia Pacific regions. Transfus Med. 2022;32(1):71–6.
8. Thorpe R, Masser BM, Nguyen L, Davison TE. Still willing and able to contribute: donor perspectives on donating blood in later life. ISBT Sci Ser. 2021;16(2):139–46.
9. Vale MT, Stanley JT, Houston ML, Villalba AA, Turner JR. Ageism and behavior change during a health pandemic: a preregistered study. Front Psychol. 2020;3156. https://doi.org/10.3389/fpsyg.2020.587911
10. Ayalon L. There is nothing new under the sun: ageism and intergenerational tension in the age of the COVID-19 outbreak. Int Psychogeriatr. 2020;32(10):1221–4.
11. Lichtenstein B. From "Coffin Dodger" to "Boomer Remover": Outbreaks of ageism in three countries with divergent approaches to coronavirus control. J Gerontol: B. 2021;76(4):e206-12.
12. Gaeta L, Brydges CR. Coronavirus-related anxiety, social isolation, and loneliness in older adults in northern California during the stay-at-home order. J Aging Soc Policy. 2021;33(4–5):320–31.
13. Clement M, Shehu E, Chandler T. The impact of temporary deferrals on future blood donation behavior across the donor life cycle. Transfusion. 2021;61(6):1799–808.
14. Chandler T, Neumann-Böhme S, Sabat I, Barros PP, Brouwer W, Exel J, et al. Blood donation in times of crisis: early insight into the impact of COVID-19 on blood donors and their motivation to donate across European countries. Vox Sang. 2021;116(10):1031–41.
15. Galasso V, Pons V, Profeta P, Becher M, Brouard S, Foucault M. Gender differences in COVID-19 attitudes and behavior: panel evidence from eight countries. Proc Natl Acad Sci. 2020;117(44):27285–91.
16. Sachdev S, Kishore K, Singh L, Lamba DS, Hans R, Dhawan HK, et al. Exploration of COVID-19 related fears deterring from blood donation in India. ISBT Sci Ser. 2021;16(2):147–57.
17. Polonsky MJ, Renzaho AM, Brijnath B. Barriers to blood donation in African communities in Australia: the role of home and host country culture and experience. Transfusion. 2011;51(8):1809–19.
18. Telenta J, Jones SC, Francis KL, Polonsky MJ, Beard J, Renzaho AMN. Australian lessons for developing and testing a culturally inclusive health promotion campaign. Health Promot Int. 2020;35(2):217–31.
19. Whittaker S, Carter N, Arnold E, Shehata N, Webert KE, Distefano L, et al. Understanding the meaning of permanent deferral for blood donors. Transfusion. 2008;48(1):64–72.
20. Delage G, Myhal G, Grégoire Y, Simmons-Coley GM. Donors' psychological reactions to deferral following false-positive screening test results. Vox Sang. 2014;107(2):132–9.
21. Tiwari AK, Bhardwaj G, Dara RC, Arora D, Aggarwal G, Bhargava R, et al. Notification and counselling of hepatitis positive blood donors, their immediate emotional response, contact-testing and their follow-up: study from a tertiary care hospital! Transfus Apher Sci. 2018;57(3):391–7.
22. Hillgrove TL, Doherty KV, Moore VM. Understanding non-return after a temporary deferral from giving blood: a qualitative study. BMC Public Health. 2012;12(1):1.
23. Tannenbaum MB, Hepler J, Zimmerman RS, Saul L, Jacobs S, Wilson K, et al. Appealing to fear: a meta-analysis of fear appeal effectiveness and theories. Psychol Bull. 2015;141(6):1178–204.
24. Grace D, Gaspar M, Klassen B, Lessard D, Anand P, Brennan DJ, et al. Stepping stones or second class donors?: A qualitative analysis of gay, bisexual, and queer men's perspectives on plasma donation policy in Canada. BMC Public Health. 2021;21(1):1.
25. Garstka TA, Schmitt MT, Branscombe NR, Hummert ML. How young and older adults differ in their responses to perceived age discrimination. Psychol Aging. 2004;19(2):326–35.
26. Gemelli CN, Carver A, Garn A, Wright ST, Davison TE. Evaluation of the impact of a personalized postdonation short

messaging service on the retention of whole blood donors. Transfusion. 2018;58(3):701–9.
27. Gemelli CN, Thijsen A, Van Dyke N, et al. Notifying donors when their deferral is ending: an effective donor retention strategy. Transfusion. 2021;61(10):2930–40.
28. Ou-Yang J, Bei CH, Liang HQ, et al. Effective methods for reactivating inactive blood donors: a stratified randomised controlled study. BMC Public Health. 2020;20(1):1.
29. Thorpe R, Masser BM, Nguyen L, Davison TE. Understanding donation frequency: insights from current plasma donors. Vox Sang. 2020;115(2):174–81.
30. Germain M, Godin G. The relative efficacy of telephone and email reminders to elicit blood donation. Vox Sang. 2016; 110(3):278–81.

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Naing S, Thorpe R, Jensen K, Masser B, Guerin N. 'Stay at home and limit contact': The impact of stay-at-home advice on the behavior of Australian donors aged 70 and over in the first year of the pandemic. Transfusion. 2022;62(12):2568–76. https://doi.org/10.1111/trf.17120