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*Gone, but haven't forgotten: insights on  
plasmapheresis donation from lapsed donors*

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**Title:** Gone, but haven't forgotten: Insights on plasmapheresis donation from lapsed donors

**Running title:** Insights on plasma donation from lapsed donors

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## **Abstract**

**Background and Objectives:** Blood Collection Agencies in several countries have implemented strategies to increase the number of plasmapheresis collections. Despite this, a sizable minority of plasma donors lapse from donation each year, with little research conducted on this topic. An understanding of the plasma donation experience from the perspective of lapsed donors, insights into why they stopped donating, and their views on returning to donate may provide opportunities to intervene to increase the retention and reactivation of plasma donors.

**Materials and Methods:** A qualitative approach was used in this study, with 17 lapsed plasma donors (no plasma donation for at least 13 months) interviewed. A purposive recruitment strategy was used to obtain a sample with diversity in gender (47% men), age ( $M = 36.2$  years,  $SD = 13.6$ ), and donation experience ( $M = 9.2$  years,  $SD = 9.6$ ). Semi-structured, narrative interviews were conducted, with participants describing their plasma donation careers chronologically from first donation to most recent.

**Results:** The majority of participants described at least some aspect of the plasma donation procedure as unpleasant. However, adverse experiences were only attributed to lapsing in a minority of cases, with other participants reporting significant life events, perceived ineligibility, and concerns about the safety of the procedure as the reason why they lapsed.

**Conclusion:** It is common for lapsed plasma donors to intend to donate again in the future. Recommendations are given for strategies to address barriers to returning, noting the potential role of tailored education and support.

## **Keywords**

Plasmapheresis, donors, lapse, retention

## Introduction

Increasing the number of plasmapheresis donations is a priority for Blood Collection Agencies (BCA) committed to voluntary non-remunerated (VNR) donation. A declining need for red blood cells coupled with a strengthening demand for plasma for fractionation has led to a strong focus on moving whole blood donors to plasmapheresis and retaining donors within those panels. Retaining repeat donors is more cost effective than recruiting new donors. Further, repeat donors have fewer health risks than first-time donors and are less likely to be deferred from donating [1]. However, analyses show that the yearly attrition rate for the plasmapheresis panel in Australia is 40%, with approximately one-third lapsing back to whole blood and the remaining two-thirds lapsing from donating altogether [2]. Preventing accidental lapse from plasmapheresis and reactivating lapsed donors represents a timely, efficient, and cost-effective approach to increasing the supply of plasma derived products.

Most research on donor lapse is specific to whole-blood donation. Having a medical issue, a negative physical experience, inconvenience, and time constraints have been identified as reasons for either lapsing from, or stopping, whole-blood donation [3-6]. Increasingly, research findings suggest that deterrents to donation, and reasons for lapsing from whole-blood donation, differ by gender, life-stage, and country of donation [6-7]. Piersma and colleagues (2019) investigated the relationship between key life-course related events and donor lapse among whole-blood donors in the Netherlands and Denmark [7-8]. They reported that, among Danish donors, having a child and losing a job were associated with a greater risk of lapse, while in the Netherlands, starting a new job was associated with lapse. The authors also found that difficulty planning a donation, decreasing perceived health

status, and knowing fewer other donors partially explained why donors were more likely to lapse.

It remains unclear whether plasmapheresis donors lapse for similar reasons and at the same life stages. In a Canadian study, in comparison to whole-blood donors, current apheresis donors were more likely to nominate time constraints related to leisure activities and difficulties accessing a blood drive as deterrents to donation, while apheresis donors who had reduced their donation frequency were more likely to nominate reasons such as time constraints due to work or study, and difficulty accessing a blood drive [3]. These findings suggest that difficulties fitting donation into their lives are common deterrents to being an ongoing plasmapheresis donor. An earlier focus group study reported that deterrents to plasma donation differed between donors who had lapsed from donation altogether and those who had returned to donate whole blood. The former expressed lower levels of motivation and commitment to donation and were more likely to have experienced physical discomfort, such as difficulty finding a vein, during a donation [9]. Both those who lapsed altogether and those who lapsed to whole blood indicated that plasma donation was a costly behaviour in terms of the time and effort required.

More research is required to understand if there are factors specific to donating plasma, in the context of donors' careers and life events, that contribute to donor lapse. Research is also required to enable BCAs to assist donors in overcoming barriers to ongoing plasma donation and minimise common triggers to donor lapse. This research explored lapsed plasma donors' experiences of donating plasma, reasons for not having donated recently, and views about donating plasma again.

## **Materials and methods**

A lapsed plasma donor was defined as someone who had previously made at least one plasma donation but had not donated plasma for more than 12 months prior to participation in the study. They were further classified into short-term lapsed (no plasma donation in 13-24 months) and long-term lapsed (no plasma donation in >24 months), following the categories used by Australian Red Cross Lifeblood. Given that few studies have explored the perspectives of lapsed plasmapheresis donors on their donation experience, and in the context of their individual life events and donation careers, a qualitative approach was considered the most appropriate method to facilitate in-depth understanding from the donor perspective [10].

The conceptual framework for the interviews and coding was derived from known reasons for lapsing from the whole blood and plasma literature, as well as insights into the influence of life-course factors on reasons for lapsing from donation [3,7,8]. A critical realist, interpretive approach was used, combined with deductive and inductive coding [11].

## **Selection and recruitment**

This study was approved by the Australian Red Cross Lifeblood (formally known as the Blood Service) Ethics Committee. Donors aged 18-65 years who had last successfully donated plasma more than 12 months ago, who were not currently deferred from plasmapheresis, and had a valid email address and phone number, were eligible to participate. To obtain a

broad range of perspectives, we recruited participants with diversity in age, gender and donation experience (see Table 1.)

Insert table 1. about here

Contact details of eligible donors were extracted from Lifeblood's database, stratified on the basis of age group, sex, and duration of lapse. Up to two call attempts were made and a voice message was left if the donor could not be reached. Two hundred and six donors were called at least once, with 59 donors answering. Of these, 37 agreed to participate. In total, 17 donors completed an interview with the remainder not answering the phone at the time of their scheduled interview appointment. A comparison of those who completed interviews and those who agreed to participate but did not complete an interview showed that they did not differ on gender ( $\chi^2=.032$ ,  $p=0.56$ ), age, or length of donation career (all  $t > 1.39$ ,  $ps > .06$ ).

### **Interview procedure**

Interviews were semi-structured and narrative, with participants asked to discuss their plasma donation careers chronologically from when they started donating plasma until the present. The opening question was: "Can you tell me how you first started donating plasma?", with the interviewer also asking participants about their experience of donating plasma and the last time they donated plasma [12-13]. An interview schedule guided the interviews, to ensure that key questions were covered in each interview. Each interview lasted approximately 30 minutes with verbal consent obtained from each participant immediately prior to the interview. All interviews were recorded and transcribed verbatim and checked for inconsistencies. Thematic saturation was determined to have been achieved



after 10 interviews; seven additional interviews were conducted to ensure adequate data was obtained from all groups of interest.

## **Analysis**

Two researchers (RT and LN) independently coded the first three transcripts using pre-identified categories derived from the literature, such as known reasons why blood donors lapse, the research aims, and interview schedule [11]. New categories were also identified during this process. Double coding was conducted to ensure the identified categories made sense to both researchers, the categories were adequately defined, data were appropriately fitted into these categories, and to agree on a working coding framework [11]. The remaining transcripts were coded in NVivo 11 (QSR International) using this framework. Any new categories identified during this process were added to the coding framework [11].

## **Findings:**

### **Becoming a plasmapheresis donor**

Three participants had donated plasma as their first donation, while the remaining 14 had been converted to plasma donation from whole-blood. Of the latter, two were deferred from whole-blood donation, and another two were influenced by friends or family to donate plasma. The remainder had been informed by staff about the demand for plasma and the value of donating plasma or that plasmapheresis was the preferred donation for their blood type.

### **Donating plasma: donor reflections on the procedure**

When asked to reflect upon their prior plasma donations, fewer than half the participants (n=7) recalled the plasmapheresis procedure as positive or uneventful. Of the seven, those who had previously donated whole-blood indicated that, aside from taking longer, they didn't find donating plasma different from donating whole blood.

The remaining 10 participants indicated that they found one or more aspects of the plasmapheresis procedure physically unpleasant. These aspects were raised by participants during discussions about their experiences of donating plasma and were not directly mentioned as reasons for not donating plasma.

Several participants commented on the overall procedure being unpleasant; for example, the donor needing to actively monitor the progress of their donations on the apheresis machine and take steps to adjust their blood pressure in order to retain the flow. These donors indicated that they found this aspect of apheresis donation to be "a bit more physically intensive", or that they were not certain whether they understood "the readings on the machine" and were concerned about whether they would "prolong the actual donation" by not pumping at the correct time.

Other participants indicated that specific elements of the procedure were unpleasant or difficult. For example, two donors said that the return of red cells was slow and/or difficult, and sometimes interrupted, and as a result the donation took longer. These donors believed that the difficulties were related to them having small veins:

*Actually, I normally have a bad experience, because I have a very tiny vein, so I hardly get any blood out, so it was always really slow, and I always had to squeeze really hard to get a little bit out (P14, Female, 30-39 years).*

This participant refers to having a 'bad experience' while donating plasma as the norm for her, suggesting that she had experienced a difficult red-cell return on more than one donation.

Other aspects of plasmapheresis perceived by participants as unpleasant were: the return of red cells feeling uncomfortable, feeling cold during the donation, and having a citrate reaction. These donors indicated that even when the apheresis procedure works properly, being an ongoing plasma donor requires acceptance of some discomfort and a degree of adjustment to the procedure:

*I thoroughly enjoy giving plasma. How do I say that. That's not really exactly right. I certainly get the funny metallic taste in my mouth...Yes, you can feel the blood going back in when the cycle reverses, and you can feel the cells being literally pushed back in. It is cold, but it's actually understanding what plasma produces that actually makes me go back. Does that make sense? (P05, Male, 50-65 years)*

Interestingly, this donor explains that, despite finding plasmapheresis physically uncomfortable, he finds donating plasma to be a positive experience, and attributes this to understanding the uses of donated plasma. Other participants in this group said that they had continued to donate, despite finding the procedure uncomfortable, because of information given to them by staff about the uses of plasma, and having received adequate explanations from staff about the procedure before making their first plasma donation. These donors believed that knowing what to expect helped them tolerate the uncomfortable or unexpected aspects of apheresis and persist with donation:

*The nurse told me how it's processed outside of the body and then the red blood cells*

*are returned...– it was pretty uncomfortable the first few times, but as long as they're cluing people in to what they might experience, then people don't get shocked, because they think oh, it's just happening to me, is something wrong? (Participant 3, male, 20-29 years)*

### **Lapsing from plasma donation**

When discussing their status as donors, most participants considered themselves to be current plasma donors despite not having donated for at least 13 months. Nevertheless, all mentioned one or more events or circumstances that contributed to them not having donated plasma recently. These were: a change in circumstances or a significant life-event (n=10), change in eligibility to donate plasma (n=5), having a negative donation experience (n=5), concerns about the safety of the apheresis procedure (n=2), institutional reasons, such as staff implying that the demand for plasma is low and asking donors to donate whole blood (n=2), and concerns about their health (n=1). These will be discussed in detail in the following sections.

### **Change in circumstances or life-event**

The majority of participants (n=10) noted that a changed circumstance, including moving house, starting a new job, getting married, raising children, changing work hours, and studying full-time had contributed to donation becoming inconvenient. For example, some donors had moved away from their usual donor centre and hadn't had time to establish where their closest centre was or simply couldn't find a convenient location to donate. For one woman this move was associated with retiring to a regional area further away from a donor centre. Others found that donating had become more difficult to fit into their lives due to changed work or study hours. The reasons given by these donors for not having

donated recently were not directly related to plasmapheresis, and may also have disrupted a whole-blood donation routine. However, it was notable that four of these 10 participants had also raised negative aspects of plasmapheresis donation.

*I moved back to Melbourne, with two kids and new work, and things happening, that [donating] just hadn't occurred to me yet... (Participant 13, male, 30-39 years)*

Two participants who had been converted to donate plasma from whole blood indicated they had chosen to continue donating whole blood instead of plasma because of the convenience of donating at a mobile unit that visited their current workplaces regularly, which only allows for whole blood donation. While they could also donate plasma at a fixed donation centre in between whole blood donations, they were concerned that this practice would disrupt their whole-blood donation routines:

*...Apparently if you donate the plasma outside of the schedule of the whole blood, it can shift your whole blood forward. I enjoy not having to go out of my way all that much to donate whole blood, because the bus comes to work, it's convenient. So I try and manage it around the whole blood. (Participant 10, male, 20-29 years)*

These examples suggest that donating may become less convenient for donors at particular stages of their lives, and that changes in donation behaviour are not necessarily related to changes in motivation.

### **Perceived ineligibility**

While all participants were eligible to donate at the time of the interviews, five indicated that a previous change in their eligibility to donate plasma resulted in an interruption to

their donation routine. Specifically, they mentioned being deferred for a tattoo, being pregnant, having an adverse event, being concerned about their health, and being asked to obtain clearance from a medical practitioner prior to donating again. Some of these donors were uncertain when or if they were eligible to return to donate. One participant had self-deferred because of a concern of the impact of donating upon her health and was waiting for medical test results before deciding whether to return to donate.

### **Having a negative donation experience**

When asked to discuss why they had not donated plasma recently, five participants reported physical side-effects experienced during or after their last plasma donations. These participants recalled experiencing extreme tiredness post-donation, haematoma, citrate reactions, vasovagal reactions (VVR), and delayed bleeding. Of these donors, one was a first-time plasma donor. The donor who experienced the VVR said that he had been advised to donate whole-blood for his next couple of donations before donating plasma again, while the donor who experienced the citrate response indicated that staff had advised her not to donate plasma again. Neither donor was officially deferred from donating plasma at time of interview. The donor who experienced delayed bleeding remained unaware of the cause, and while she expressed willingness to return to donate, she remained concerned that a re-occurrence of these symptoms would interfere with her work or caring for her children.

*During it and the whole process was fine, afterwards not so much which is why it's made it very tricky to go back. Because afterwards my arm wouldn't stop bleeding*  
*(P16, Female, 40-49 years)*

### **Concerns about the safety of the procedure**

Two participants expressed concerns about the safety of the plasmapheresis procedure, and indicated that these concerns were an ongoing deterrent to returning to donate plasma.

Both indicated that they were unsure about the safety of having blood returned to them, and one also questioned the impact of frequent plasma donation on their general wellbeing.

This donor commented that he would like to see evidence for the safety of the two-weekly minimum inter-donation period. Similarly, one of the donors who expressed concerns about the safety of the return of red cells recalled being given information about plasma by centre staff but felt that this was not enough for her to be sure about the safety. As a result, she preferred to donate whole blood:

*When you donate your plasma, your blood goes through a machine and coming back to your body. I'm not sure that the machine is single use. The part that my blood going inside and coming out, is that just for me? (Participant 4, female, 30-39)*

This donor explained that she had donated plasma twice and had not considered the safety aspect until after the donation when she was at home. For that reason, she had not discussed her safety concerns with staff while at the donor centre.

### **Institutional reasons**

Two donors (both O-positive) explained that they did not actively decide to stop donating plasma; however, staff had suggested that the demand for plasma was low at that time and indicated a preference for them to give whole blood at their subsequent donations:

*Last time I went in...they told me that they needed more whole blood...At the moment, they said there's no major demand for plasma, so if I could just keep giving*

*whole blood every three months, they're happy enough for that...that's why I haven't returned to it [plasmapheresis], on the grounds that they didn't want it. (Participant 1, male, 30-39)*

### **Returning to donate plasma**

The majority of participants expressed a desire to return to donate plasma, and four noted that receiving a phone call from the researchers acted as a prompt for them to return to donate. Those who wanted to return indicated that their original reasons for donating were still relevant. Of the 59 donors who were invited to participate in the study but declined, 18 booked appointments to donate either plasma or whole-blood after receiving the phone call. Other participants acknowledged that while they would like to return to donate, the circumstances contributing to them lapsing were still relevant. For example, the donors who lapsed because of changes in circumstances noted that time and availability remained barriers to returning:

*I know where the centre is, but I haven't had the time to do anything yet. I just have to work out a time. I feel like I want to go back, but haven't got the time, because I think I want to be more settled. (Participant 14, female, 30-39).*

In contrast, those who had lapsed through being asked to donate whole-blood or because of safety concerns indicated they were unlikely to return to donate plasma unless they received information from the BCA that either allayed their concerns about safety or explained that plasma was needed and why.

Similarly, those who had stopped donating plasma because of physical side-effects at their last donation or health concerns indicated that these events remained either temporary or



permanent barriers to returning to donate plasma. Some were considering changing their donation practice in response to their perception that their previous donation schedule was too taxing; for example, returning to whole-blood donation or donating plasma less frequently. Two participants indicated that they wanted to improve their physical condition before returning to donate plasma. While neither was unwell or ineligible to donate, they expressed a belief that they needed to improve their health or fitness because donating plasma was physically taxing and they wanted to be able to donate plasma successfully:

*I'll try to wait till I'm tip-top and got some spare time (Participant 8, male, 20-29 years)*

## **Discussion**

This paper presented the findings of interviews with 17 plasmapheresis donors in Australia who had not made a plasma donation for at least 13 months. Our interviews with these lapsed plasma donors explored their past experiences of donating plasma, the influences on their lapse, and their views on returning to donate plasma. This approach provides insights into how lapsed donors view their relationship with donating and can help inform when and how to intervene to prevent lapse or to reactive lapsed donors.

Participants tended to view themselves as current plasma donors despite not having donated plasma for over a year. As such, it seems that self-identity as a donor is not tied to recency of donation and this may be important for BCAs to recognise when designing communication strategies for use with this cohort of donors. This finding also suggests that lengthy donation breaks may not always be related to changes in motivation. Rather, and consistent with previous research [5,7-8], as donors transition through different life stages, particularly moving house, changing jobs, or having children, routines may be disrupted and

donating plasma may become inconvenient and difficult to prioritise. Perceived

(in)convenience is a recognised barrier to retention [6] and these data suggest that this can also impact the decision of which product to donate, particularly given the additional time requirements of plasmapheresis. The attachment of donors whose motivation remains but whose behaviour has been disrupted by life events is perhaps 'stickier' than other donors who lapse from plasmapheresis. As such, this group may be relatively easier to reactivate in the longer term if the BCA acts to maintain their connections with these donors.

As has been reported for whole-blood donors, temporary health concerns and perceived ineligibility due to previous deferrals disrupted donation practices [1,14-16]. Concerns about the ongoing safety of the process had similar effects. For these donors, events associated with their plasmapheresis experience had impacted their fundamental motivation to donate. Identifying the reason for lapse, therefore, may be critical for BCAs to target their approach to reactivation. As shown in the current study, some donors simply need an additional reminder (such as an invitation to participate in a study) in order to return. Others will require more from the BCA in terms of assurances. Additional research is required to determine whether and under which circumstances lapsed donors return.

It is possible that some participants did not intend to return to donate plasma, despite indicating to the interviewer that they did. For example, a number of participants noted that plasmapheresis is not always pleasant, and these perceptions may have deterred them from returning even if they didn't report this when asked for their reasons for not donating. In other studies, lapsed plasma donors cited negative physical experiences while donating as deterrents to donating plasma [9,17-18]. Research with lapsed donors has found that they are less likely to return if they perceive the costs to be too high [12]. Perhaps the

combination of discomfort and inconvenience led some donors in the current study to appraise plasma donation as too costly at present [12].

Our findings indicate that when donors understand the apheresis procedure, know what to expect, and understand the uses of plasma, they are less likely to be concerned or anxious about any physical sensations that do occur. Other studies have noted the importance of donor centre staff providing reassurance and explanation to first-time plasma donors, or those considering plasma donation [4,9,12,19-20]. In our study, concerns about the procedure were raised by experienced as well as first-time donors, indicating BCAs should provide ongoing opportunities for donors to access information and ask questions to allay concerns and normalise any adverse experiences [21]. Such support may facilitate continued donation.

Our study supports recommendations for BCAs to communicate clearly with donors about their preferred donation type when the organisation collects both whole-blood and plasma [18]. Donors converted from whole blood to plasma with the explanation that plasma is more in demand are unlikely to return to donate whole blood if they cannot or no longer wish to donate plasma, unless this request is accompanied by an explanation from staff about the need for both products [21]. Similarly, plasma donors asked to donate whole-blood on occasion need to be told that their preferred donation type on the day may change depending upon inventory needs, to reduce the risk of them lapsing from the plasma panel.

Our findings are limited by the small sample size and low response-rate (27%), which may be expected in a study of people no longer actively engaged in donation; however, we did reach thematic saturation. Our sample is not representative and there is a possibility that

those who chose to participate in this study were more positively disposed towards future plasma donation than those who did not agree to be interviewed. Despite this concern, the findings from this study challenge the traditional view of the 'lapsed' donor, and indicate that there are opportunities to retain plasma donors, through improved communication, education and support, and to reactivate many of these donors when they haven't presented for a period of time.

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**Table 1 Donor characteristics by donor status**

		Lapsed: plasma	Lapsed: whole blood and
	All donors	only	plasma
Characteristic	(n = 17)	(n = 7; 41.2%)	(n = 10; 58.8%)
Age	36.2 ( $\pm$ 13.6)	33.3 ( $\pm$ 11.3)	38.2 ( $\pm$ 15.3)
Sex			
Male	8 (47.0%)	5 (29.4)	3 (17.6%)
Female	9 (53.0%)	2 (11.8)	7 (41.2%)
Years as a donor	9.2 ( $\pm$ 9.6)	9.0 ( $\pm$ 5.0)	9.0 ( $\pm$ 12.1)
Lapsed from plasma 13- 24			
months	15 (88.2%)	7 (41.2%)	8 (47.0%)
Lapsed from plasma >24			
months	2 (11.8%)	0 (0%)	2 (11.8%)