Easy come, easy go. Retention of blood donors

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SUMMARY
Retention of blood donors has benefits over recruitment of new blood donors. Retention is defined as preventing donors from lapsing and eventually becoming inactive. This review paper discusses literature on the importance of efforts to retain donors, specifically new donors, since lapsing is most common before the fifth donation. Studies have found that intention to donate, attitudes towards blood donation and self-efficacy (does one feel capable of donating blood) are predictors of blood donation. Feelings of ‘warm glow’ predict donation behaviour better than altruism. The existing literature further suggests that first time donors can be retained by paying extra attention to adverse events (vasovagal reactions and fatigue). These events could be reduced by drinking water and muscle tension exercises. Feelings of anxiety (in regular donors) and stress can further prevent donors from returning. Planning donations amongst busy lives can help retention, and suggestions are given on which interventions might be helpful.

Key words: donor, recruitment, retention.

RECRUITMENT VERSUS RETENTION
Most blood collection establishments spend more money and effort on recruitment of new donors than on retention of current donors. Unjustifiably so, because retention has several benefits over recruitment. First, studies show that the risk of transfusion-transmitted viral infections (e.g. HIV, Hepatitis B and C) in donor blood is higher in new donors than it is in current donors (Glynn et al., 2000). This is because first-time donors have had longer periods to acquire infections than repeat donors, and they have not been previously screened. In addition, donors on average have a healthier lifestyle than non-donors, and therefore tend to avoid infections (Atsma et al., 2011). Second, the mandatory medical screening every new blood donor goes through in order to test eligibility for blood donation is, for some blood collection establishments, both more costly and more time consuming than the regular medical donor screening. In the Netherlands for example, the estimated costs for recruiting a new donor range from 22 euro’s (ambassador recruitment) to 58 euro’s (‘cold’ recruitment), whilst retaining a donor costs a mere 7 euro’s per year (Sanquin, unpublished data).

DONOR RETENTION: DEFINITIONS AND NUMBERS
DOMAINE is a European Union funded project that aims to create a safe and sufficient blood supply, by comparing and recommending good donor management practice. A total of 18 European blood establishments collaborated in the project. One of the aims was to agree on a common ‘language’, i.e. common definitions, for blood donor management. Donor retention was defined as ‘preventing blood donors from lapsing and eventually becoming inactive’. Lapsing donors were defined as ‘those who donated at least once within the last 24 months, but not in the last 12 months’. Inactive donors were defined as ‘not having donated in the last 24 months’ (Veldhuizen et al., 2013). The aim of donor retention programmes is to motivate donors to maintain their donating behaviour regularly, provided they are medically eligible. The DOMAINE project has indicated two performance indicators for successful donor retention. The first is the percentage of regular donors, compared to the percentage of first
time donors. A higher percentage of regular donors is preferable to a higher percentage of first-time donors. The second is the percentage of inactive or lapsed donors in the database (Folléa et al., 2010). In the DOMAINE survey, approximately 50% of the respondents were able to provide data on the composition of the donor population. This composition in terms of donor types varied considerably between countries (Table 1). Many establishments got most of their donations from donors who made a small number of donations (1–5) in their lifetime (Veldhuizen & Wagenmans, 2010). The difference between the countries in proportion of first-time/regular and regular/inactive donors may be due to whether the blood service focusses on recruitment only, or also has a programme for retention of donors.

**DETERMINANTS OF RETENTION**

Studies on retention of blood donors have found several factors that are associated with continuation of donation behaviour.

**Demographics**

Western countries show similar demographic characteristics associated with blood donation. In the Netherlands, lapsed donors were more often female, younger than 24 years, had a lower social economic status (as indicated by the fact that they live in areas with a low mean real estate value and a low mean taxable income), and lived in more urbanised areas (Veldhuizen et al., 2009). In England and North Wales, those living in the capital (London) returned significantly less often to donate blood than those living in other urban areas or rural residents. In addition, return rate increased with increasing age group, men were more likely to return than women, and whites were more likely to return compared with other ethnic groups (Lattimore et al., 2015).

**Altruism or benevolence?**

Altruism and pro-social values are often named as motivators for donating blood (Bednall & Bove, 2011). However, many researchers have questioned whether altruism is an actual motivator for behaviour, or a rationalisation of more selfish motives [e.g. donating blood makes donors feel good about themselves (Piliavin, 1990)]. Studies investigating this hypothesis have provided evidence towards more 'egoistic' motives, as beliefs in personal rather than societal benefit predict actual future donation (Ferguson et al., 2008). Other studies found that donating blood was associated with feelings of 'warm glow' (donating blood because it makes one feel good about themselves), and found no evidence that they were motivated by empathic concerns (Ferguson et al., 2012a,b). Therefore, retention campaigns should focus on warm glow rather than on purely altruistic messages.

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**Table 1. Percentage of regular, first time and inactive donors in 10 countries**

<table>
<thead>
<tr>
<th>Country</th>
<th>Regular donors (%)</th>
<th>First time donors (%)</th>
<th>Inactive donors (%)</th>
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The theory of planned behaviour

Especially in the beginning of the donor career, before donating blood becomes a ‘habit’, donation is mostly under volitional control. This means that donors make a conscious decision to donate or not to donate. Therefore, blood donation research from a behavioural science point of view has often used the theory of planned behaviour (TPB) (Ajzen, 1991) to explain blood donation behaviour. The TPB proposes that behaviour is mostly influenced by the strength of a person's intention to perform that behaviour. Intention in turn is predicted by attitudes, subjective norm and self-efficacy. Attitudes refer to a person’s overall evaluation of the behaviour, for example, are the outcomes of the target behaviour (e.g. blood donation) likely to be good or bad (cognitive attitude), pleasant or unpleasant (affective attitude). Subjective norm refers to a person’s beliefs concerning significant others’ approval or disapproval of the behaviour. Finally, self-efficacy refers to a person’s confidence and perceived ability to perform a behaviour successfully. The intention to donate blood has indeed been found to be a consistent predictor of blood donation (Ferguson & Bibby, 2002; Ferguson et al., 2007; Godin et al., 2007; Masser et al., 2008; Van Dongen et al., 2014). Veldhuizen et al. (2011) found that during all stages of the donor career self-efficacy was the main predictor of intention to donate. Self-efficacy in itself also predicts donation behaviour (Armitage & Conner, 2001; Giles et al., 2004). Wevers et al. (2013) found that affective attitude (whether the donor feels giving blood is pleasant or unpleasant, annoying or enjoyable and unappealing or appealing) was positively associated with higher return behaviour. Anticipated negative emotions, also labelled as anticipated regret (as measured by ‘If during the next 6 months I did NOT give blood again … ’ ‘ … I would regret it,’ ‘ … It would bother me,’ ‘ … I would be disappointed’) have also been shown to predict donation behaviour (Godin et al., 2007; Conner et al., 2013), especially in experienced donors.

Persuasive techniques such as modelling and planning coping responses can be effectively used to increase attitudes, self-efficacy and intentions towards blood donation, (France et al., 2010a; France et al., 2011).

Deferral

Temporary deferral for medical reasons, such as a low haemoglobin level, can also cause donors to lapse (Custer et al., 2007). This effect is especially strong in first-time donors (Custer et al., 2011). However, why temporary deferral has such an impact on donor motivation, and how we can frame deferral messages to decrease lapsing after temporary deferral, has not been studied yet.

Adverse events

Research has shown that a physical reaction during or after donating blood strongly decreases subsequent donations. Most studies on these adverse events measured vasovagal reactions. Vasovagal reactions are symptoms such as dizziness and nausea, which are caused by a combination of tension, a drop in blood pressure and the insertion of a needle in the vein. France et al. (2004) found that for every 1 point increase on the Blood Donation Reaction Inventory (Meade et al., 1996), the likelihood of return for a subsequent donation decreased by 4%. In 2005, France et al. (2005) found that of those donors who did not experience a vasovagal reaction, 64% returned for a next donation within 1 year, whilst amongst donors who experienced light vasovagal reactions, only 40% returned for a next donation. Similarly, Newman et al. (2006) found that experiencing a vasovagal reaction decreased return rates by 34%.

Reactions other than vasovagal reactions have not been studied as extensively, but many donors do report feelings of being tired following donation or experiencing needle reactions such as bruising or sore arm. Investigating the effect of specific adverse reactions on return rates, Newman et al. (2006) found that bruising had no effect, but fatigue decreased return rates by 20%. Similarly, Van Dongen et al. (2013) found that in first-time blood donors, fatigue after blood donation had a negative impact on retention, but needle reactions did not influence retention.

Anxiety and stress

One of the most commonly named barriers, even for regular donors, is anxiety or fear of donating blood (Masser et al., 2008; Bednall & Bove, 2011). Fear can take many forms, such as fear of needles, general nervousness, fear of reduced health after donating, or fear of fainting. Studies have indeed shown that pre-donation anxiety is related to vasovagal reactions (Meade et al., 1996; Ditto & France, 2006; Viar et al., 2010). This could be explained by the fact that anxiety increases needle pain, and needle pain subsequently increases vasovagal reactions (France et al., 2013). In addition, anxiety is a correlate of attitudes towards donation (Clowes & Masser, 2012). Attitude and vasovagal reactions predict donation behaviour, therefore, anxiety can have an indirect effect on retention.

To study the direct effects of fear and anxiety on continuing blood donation, Van Dongen et al. (2013) measured fear (of needles) and anxiety (general nervousness, anxiety about feeling faint) in new blood donors who had just signed up. Donors were asked to what extent they were afraid of needles, to what extent they felt nervous and/or tense about blood donation, and to what extent they were afraid of feeling faint or fainting at the blood donation. The same questions were asked after their first donation (1–2 months later). Anxiety increased after the first donation, however, neither the level of increase nor the anxiety scores themselves were associated with subsequent donation (Van Dongen et al., 2013). In a second study, Van Dongen et al. (2014) looked at the effect of fear and anxiety on retention in regular donors. Donors who made their first donation 1 year previous were asked the same questions as in the 2012 study. In this group, the scores on fear and anxiety were related to subsequent donations. This is in line with a study by France et al.
(2013) who found no effect of anxiety on donation in first time donors, but did find an effect of anxiety on donation in regular donors.

The stress that is related to adverse events deceased retention in first time donors (Van Dongen et al., 2013). Regardless of the severity of the physical reaction, the level of subjective distress experienced by the donor influenced subsequent donations. This indicates that personal coping is important when it comes to dealing with stressful events related to blood donation.

Planning

Failure of planning donations, the time it takes to donate blood, and lack of reminders have all been named as barriers for retention (Masser et al., 2008; Bednall & Bove, 2011). Donors in a study by Schreiber et al. (2006) named ‘inconvenience’ as the major barrier to donation. Similarly, Nilsson Sojka & Sojka (2003) reported that laziness was the most self-reported obstacle to donating blood regularly.

In a longitudinal study, Van Dongen et al. (2014) found that planning failure in donors [as measured by the items ‘I have forgotten invitations to donate blood in the past’; ‘In general, it is difficult for me to make the time to donate blood’; and ‘After receiving an invitation, I have postponed my visit once or twice’) acts as a long term determinant of donation behaviour, by not only negatively affecting the first consecutive donation but also the second and third donations.

INTERVENTIONS TO IMPROVE RETENTION

In a systematic review of interventions, Godin et al. (2012) point out that in over 40 years of research in blood donation behaviour remarkably few studies have focussed on intervention studies. The studies that have been published generally suffer from publication bias, lack of robustness and insufficient reporting of methodology (Godin et al., 2012).

In the following section, interventions to influence changeable determinants mentioned in the previous section are summarised. A lot of these interventions have only been tested once, and often in only one country or in one blood collection establishment. Many have either not made a distinction between donor stages [first-time donors, novice donors (2–4 donations) and experienced donors], or the study group only consisted of donors in one of these stages. Therefore, these results should be interpreted with care.

Adverse events

Contrary to other blood donation determinants, detailed interventions to prevent vasovagal reactions have been developed to reduce or prevent adverse events. Applied muscle tension and water loading are interventions that can prevent vasovagal reactions (i.e. Ditto & France, 2006; Ditto et al., 2007; France et al., 2010b; Wieling et al., 2011). An intervention combining findings from behavioural science and social science that could help prevent vasovagal reactions, and thus increase retention, is combining applied muscle tension with implementation intentions to maintain these exercises at every blood donation (Ferguson et al., 2007). Implementation intentions are if-then plans (‘If situation X arises, then I will initiate the goal-directed response y’), aimed at translating intentions into behaviour (Gollwitzer, 1999). Instructing donors to repeat the proposition ‘If I am in the donation chair, then I will immediately start using applied muscle tension techniques’ can help them to translate their intended vasovagal reaction prevention techniques into behaviour.

Anxiety and stress

Stress reduction techniques could yield positive results. Hanson & France (2009) found that, compared with standard donation controls, donors receiving social support during blood donation reported fewer pre-faint reactions and greater likelihood of donating again within the next year. Social support does not necessarily have to be provided by a person known to the donor, as this experiment used research assistants providing encouragement, and distraction in the form of small talk. Another study found that phlebotomists’ social skills reduce donor reactions (Stewart et al., 2006). These interventions may be most effective when targeted on those donors that experience high subjective distress. Coping strategies could also incorporate passive distraction, for example getting the donor to read a book or magazine, or making tablets available. Another strategy could be to get the donor to reappraise their negative emotion (anxiety, stress), by emphasising that the negative event has a positive outcome (Webb et al., 2012). This could be combined with the studies by Ferguson et al. on ‘warm glow’ (e.g. donating blood because it makes one feel good). If donors can be motivated to reappraise their feelings of fear, anxiety and distress by emphasizing that they may feel a bit bad now, but they are actually saving a life and therefore should feel proud and good about themselves, less donors may be lost to negative emotions associated with blood donation. Such strategies would require further study and/or controlled trials to ensure that the outcome for the donors and their continued donation in these circumstances is indeed beneficial.

Planning

Ferguson et al. (2007) and Masser et al. (2008) suggest interventions that make blood donation a completely planned action sequence, including inviting the donor to make an appointment, sending them reminders and contacting them if they fail to keep a donation appointment. In a systematic review of the literature on interventions promoting blood donation, Godin et al. (2012) found a small-to-medium effect size of reminders (d = 0.36 across seven studies) on blood donation retention. In addition, action planning interventions such as the aforementioned implementation intentions could also be
used to overcome barriers related to planning, or perceived inconvenience. Implementation intentions have proven to be effective in other areas besides blood donation (for an overview, see Gollwitzer & Sheeran, 2006). Wevers et al. (2015) tested the use of implementation intentions on retention in new blood donors. Every newly registered donor received an information sheet with the following propositions: ‘If I receive the invitation card, then I will schedule a date and time in my agenda to donate blood on (opening hours of the blood bank)’ and ‘If I’m not able to donate blood within two weeks, then I will cancel my donation in the following way (answer options: e-mail, telephone call or via the blood bank website)’. Donors were asked to fill out these propositions. In addition, donors were asked to sign the following commitment statement: ‘I have understood the above information and I have the intention to give blood. I realize that the blood bank is counting on me when I am invited to donate blood’. Donors who filled out both the implementation intention propositions and the commitment statement had an 11.5% higher return rate than donors in the control condition. Such interventions can easily be translated to a blood collection setting without reading it. The plans were: ‘I will schedule a date and time in my agenda to donate blood on (opening hours of the blood bank)’ could be overcome. Participants were instructed to read the copying plans three times, and to tick a box when they were able to say the entire statement to themselves without reading it. The plans were: ‘If the blood bank phones me about a nearby blood drive, then (1) I will write down the time, day and location of the blood drive in my diary or calendar; (2) I will think creatively about how I will fit giving blood into my schedule, and (3) I will _______ [please write in your plan about how you will travel to the blood donation center].’ Temporarily deferred donors who formed the implementation intentions had a 19% greater chance of returning to give blood again compared with the control condition.

The same technique worked for temporarily deferred new donors in a study by Godin et al. (2013). These donors completed if – then plans that specified how three potential obstacles to donating blood (forgetting to attend, fitting the opportunity to give blood into one’s schedule, and organizing transportation to the donation venue) could be overcome. Participants were instructed to read the copying plans three times, and to tick a box when they were able to say the entire statement to themselves without reading it. The plans were: ‘If the blood bank phones me about a nearby blood drive, then (1) I will write down the time, day and location of the blood drive in my diary or calendar; (2) I will think creatively about how I will fit giving blood into my schedule, and (3) I will _______ [please write in your plan about how you will travel to the blood donation center].’ Temporarily deferred donors who formed the implementation intentions had a 19% greater chance of returning to give blood again compared with the control condition.

However, because blood donation is essentially a volunteer activity, planning interventions should be designed with caution. Previous research has implicated that too much perceived ‘pressure to donate’ (as measured by the items ‘I prefer to be invited by the blood bank less often for a blood donation’ and ‘The blood bank makes an appeal on me more often than I would like to’) can have counteractive effects on retention (Wevers et al., 2013). Removing perceived pressure to donate by adding a text such as ‘We understand that it is not always easy to make time for donating blood. That’s why we really appreciate it if you make the effort to donate.’ has shown to increase show rate to invitations in a preliminary study (Boeschen Hoppers et al., 2013).

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**BOX 1: What is known about retention?**

Extra effort is needed to retain new donors
First time donors can be retained by reducing adverse events and fatigue
Feelings of stress and anxiety can decrease retention
Donors can be retained by helping them plan their donation and act on their plans

**BOX 2: What are the areas for future research?**

How can planning techniques be tailored to different settings and to different donor groups?
How can we refine and improve existing retention techniques?
Which other factors determine donor retention?
How can we reduce stress and anxiety in donors?
How do we motivate temporarily deferred donors to return?

**CONCLUSION AND FUTURE RESEARCH**

To summarize, research has found several indications for good donor retention strategies. First, retention of new donors should start from recruitment onwards, because lapsing mostly occurs in first time donors, and habit formation only starts around the fourth donation. Donors most at-risk for lapsing are younger, female and live in urban areas. Donors claim they are motivated by altruism, but studies show that the feeling of warm glow is a better predictor of actual behaviour. Encouraging them to drink water and apply muscle tension, and make anxiety and stress-reducing techniques available, will help decreasing vasovagal reactions. Finally, helping donors to plan their donation by making appointments and sending reminders could have long term effects to increase donor retention (Box 2).

Future studies could contribute to reduced lapsing of blood donors by focusing on the design and evaluation of methods of helping motivated donors prioritise donation amid busy daily lives. The key factor in these interventions should be helping people to act on their donation intentions. Several behaviour change techniques are available to promote action planning and decrease planning failures (Abraham & Michie, 2008; Sniehotta, 2015).
2009; Abraham, 2012). Studies on commitment and consistency could add to these techniques (e.g. Cialdini, 2009). Existing literature on action planning and coping planning can help set up experiments to unravel which technique would work best for blood donors. Because a personality trait like conscientiousness could be associated with planning failure (Conner & Abraham, 2001; Ferguson, 2004), future interventions might be tailored to donors with low conscientiousness.

Another line of research could be designing interventions to reduce stress and anxiety, by helping donors cope better with the donation experience and potential adverse events. Because fatigue as a donor reaction, as opposed to vasovagal reactions, has not been studied yet, studies into the cause and prevention of, and coping with, fatigue are warranted. Future studies on temporary deferral could focus on why temporary deferral has such an impact on donor motivation, and how we can frame deferral messages to decrease lapsing after temporary deferral. Intervention Mapping (Bartholomew et al., 2011), a planning process for the systematic theory- and evidence-based development of interventions can be very useful in developing and tailoring such retention materials.

CONFLICT OF INTEREST

The author has no competing interests.

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REFERENCES


