



# Determinants of the intention to participate in a programme of plasma donation for fractionation among men who have sex with men

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## Vox Sanguinis

**Background and objectives** Several approaches are currently under study to contribute to efforts to allow men who have sex with men (MSM) to donate blood. One of these approaches involves implementing a programme of plasma donation for fractionation, with a quarantine period. The goal of this article is to identify the determinants of intention to participate in the plasma donation programme among MSM in Montreal, Canada.

**Materials and methods** Based on the theory of planned behaviour, a questionnaire was developed to measure MSM's intention to donate plasma and identify influencing factors. A multiple linear regression analysis was conducted to identify the determinants of intention to donate plasma.

**Results** Respondents' (N = 933) intention to donate plasma in the next six months was moderate. The multiple linear regression model explained 55% ( $P < 0.001$ ) of the variation of intention. Intention was predicted by attitudes ( $\beta = 0.34$ ,  $P < 0.001$ ), perceived behavioural control ( $\beta = 0.28$ ,  $P < 0.001$ ), aged under 35 years ( $\beta = 0.26$ ,  $P < 0.001$ ), history of blood donation ( $\beta = 0.24$ ,  $P < 0.001$ ), subjective norm ( $\beta = 0.21$ ,  $P < 0.001$ ), income above \$40,000 ( $\beta = 0.20$ ,  $P < 0.001$ ), moral norm ( $\beta = 0.18$ ,  $P < 0.001$ ) and higher level of involvement in various issues LGBTQ+ communities are fighting for ( $\beta = 0.09$ ,  $P < 0.001$ ).

**Conclusion** Our analyses show that intention to donate plasma within the proposed programme is associated with personal, social and structural factors, but more strongly predicted by factors related to the theory of planned behaviour. Our results also highlight the importance of involving MSM; community acceptability of the plasma donation programme would probably be higher if MSM felt respected and party to the decisions.

**Key words:** plasma fractionation, apheresis donation, donors, donor motivation.

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## Introduction

In response to the human immunodeficiency virus (HIV) epidemic, Canada introduced in 1986 an eligibility criteria that established a lifetime ban on blood donation for men who had at least one sexual relation with another man

since 1977. This criterion has always been controversial because of its discriminatory nature, as perceived by LGBTQ+ communities (Lesbian, Gay, Bisexual, Trans, Queer or Questioning, and other identities) [1]. In 2013, the deferral period was changed to 5 years from last men who have sex with men (MSM) contact, then to 12 months in 2016 and finally to 3 months in 2019. Currently in Canada, several studies are underway to produce evidence-based data to support reviewing this criterion or to develop other approaches to facilitate MSM's access to donation of whole blood or other blood products. One option considered is plasma donation for fractionation, a process that greatly reduces the risks of donations being contaminated with HIV or other infections. Having the plasma donation put under quarantine could be an additional measure to ensure the safety of the donation. The window period for HIV can be up to three months (maximum period between the time of infection and when it can be detected by a screening test). Therefore, this approach proposes to quarantine the donation during that period and then test the donor and release the donation when the result is negative.

Drawing inspiration from a model of plasma donation with quarantine recently implemented in France for MSM [2], Héma-Québec (agency that manages the blood donation supply in Québec, Canada) is seeking to explore this avenue. The programme being considered by Héma-Québec would be available exclusively to HIV-negative MSM who have never had hepatitis B or C. Other eligibility criteria could apply, like PrEP use. Each plasmapheresis donation would be quarantined for a period of two to four months, after which the donor would return to get tested for blood-borne infections (e.g. HIV, hepatitis B or C, syphilis) and ideally make another donation. If the test results are negative, the initial donation would be sent for fractionation.

A number of studies have explored motivations and barriers to blood donation in the general population, with the goal of better targeting and recruiting donors [3–8]. However, studies on plasma donation are rarer. Asked about their motivations or the perceived benefits, plasma donors reported that donating is useful [9] as they recognize there is a strong need for this type of blood product [9–11]. A sense of pride [9, 10] and personal satisfaction at the idea of doing a good deed [11], as well as the feeling of being able to save lives [10], are also reported. Some plasma donors had chosen to donate plasma rather than whole blood following an explicit request from staff at a donation centre [9–11]. Others did so because they had more time, since the plasma donation procedure is longer [9, 11]. Although the longer time required also enables donors to socialize with other people [9], it is sometimes considered as a deterrent to plasma donation

compared with blood donation [9, 11, 12]. Other concerns mentioned include fear of contamination and unease with the idea that the blood returns to the donor [12]. Disadvantages to plasma donation were also reported, such as discomfort in the arm and fatigue due to the time required for the donation [9]. Some donors were also discouraged by the many forms to fill out [12] and having to be very knowledgeable of their state of health (e.g. medications) to answer questions on eligibility [9]. Lack of knowledge about plasma donation and the process used was additional reported barriers [12]. Charbonneau [10] compared the sociodemographic characteristics of blood donors ( $n = 795$ ) to those of plasma donors ( $n = 473$ ) in their sample from the province of Québec (Canada). Proportionately more plasma donors were men, were married and had a university degree.

Theories such as Ajzen's theory of planned behaviour [13] have often been used to study determinants of donation intention and behaviour. In a Canadian study of blood donors asked to make a first plasma donation, intention to donate plasma and being aged 50 years or over were identified as determinants of plasma donation [14]. Other studies using planned behaviour theories to identify determinants of intention in a population of donors have shown that the main predictors of intention – attitudes [14, 15], moral norm [16] and perceived behavioural control [14] – were associated with a higher intention to donate plasma. Other variables from these theoretical models, such as self-efficacy [15, 16], anticipated regrets [16], behavioural beliefs, normative beliefs and control beliefs [17], were also associated with a higher intention to donate plasma. Studies that used multiple linear regression models demonstrate that the variables from those theories explain 28%–77% of the variation in intention to donate plasma [14, 15, 17].

In the first qualitative phase of the present study, seven focus groups were conducted in 2018 in Montréal; 47 MSM participated, and their average age was 33 years (standard deviation [SD] = 8.8) [18]. The goal was to understand the attitudes, norms and control beliefs related to their intention to participate in Héma-Québec's proposed plasma donation programme. Participants' attitudes towards the programme were mixed. Some participants perceived the programme as discriminatory and stigmatizing towards MSM. By opting for a programme of plasma donation for fractionation, the perception was that MSM's blood is impure, and the quarantine period reinforced the prejudice that MSM take more risks. Despite these inconveniences, the programme was considered as a step forward and that it could enhance social recognition of MSM's contribution to other people's well-being. The programme could also be an opportunity for MSM to help people in need and save lives. As for norms,

most participants asserted that plasma donation is in keeping with their values of altruism, but for some, the programme is at odds with their values of equality and social justice. A majority of participants stated that most people they know would be in favour of their participating in the programme. However, some said that members of and activists in LGBTQ+ communities could be against the programme and even boycott it. As for control beliefs, obstacles to participation included fear of being judged, treated differently or outed without their consent and having to go through a long, restrictive process. Factors that would facilitate their participation in the programme include accessibility of the donation site, possibility of accessing other medical services and being treated with respect and the same as other non-MSM donors.

To our knowledge, the only study that looks at the determinants of intention to donate plasma among MSM is by Levy [19]. In this study, conducted in Israel, the authors explored the feasibility and acceptability of plasma donation for transfusion, with quarantine of donations. Two variables were associated with intention to donate plasma: younger age and low income.

Since demand for products derived from plasma has increased over the past 10 years [20] and the plasma donation process is different than for whole blood, it is important to produce evidence-based data for this type of donation. In addition, almost all of the studies on this topic have involved the general population. It is essential to have a good understanding of MSM's intention to participate in such programmes. Data specific to MSM are needed if Canada is to move forward with changing its donation policy, including for plasma donation programmes accessible to this population. Therefore, the goal of this article is to identify determinants of MSM's intention to participate in Héma-Québec's proposed plasma donation programme.

## Methods

### *Theoretical model*

Determinants of intention were studied using a model proposed by Godin [21], which integrates Ajzen's theory of planned behaviour [13] as well as other constructs emanating from theories of prediction of behaviour applied to the field of health, such as Triandis's theory of interpersonal behaviour [22]. This integrative model was used in a study on intention to donate plasma among whole blood donors [14]. According to this model, the main predictors of intention are attitudes, subjective norm and perceived behavioural control. Attitudes refer to an individual's overall cognitive and affective evaluation, whether favourable or unfavourable, when thinking about adopting a behaviour, in this case participating in a

plasma donation programme. Subjective norm indicates an individual's perception of whether or not close people in his social circle approve or disapprove of their adopting this behaviour. It is also measured using a moral norm, which corresponds to the individual's perception of the behaviour as being in line with his personal values and principles. Perceived behavioural control is the individual's perception of his capacity to adopt a behaviour. External factors such as individual characteristics (gender, age, education) and environmental characteristics (social or physical) can also influence the relationship between intention and behaviour, as do past behaviours such as experiences or habits linked to the behaviour.

### *Study population and data collection*

A questionnaire was accessible online from June 2018 to February 2019. To participate in the study, respondents had to meet the following criteria: be a man (cisgender or trans), have had a sexual relation with men, be 18 years old or over, be HIV-negative or of unknown HIV status, and be able to read French or English. Participants were recruited through various means: posters in LGBTQ+ premises, sponsored Facebook posts, email invitations, ads on dating app for men, etc. The questionnaire took about 20–30 min to complete and was available in French and English (Appendix 1). A video explaining Héma-Québec's proposed plasma donation programme was shown at the start of the questionnaire. Programme characteristics were presented to participants (apheresis donation, donation quarantine, fractionation process, etc.). All questions on intention were explicitly linked to participation in the programme. Five \$100 gift certificates were drawn among participants, as financial compensation. The study was approved by the institutional ethics committee on research involving human beings at Université du Québec à Montréal.

### *Dependent variable*

Intention to donate plasma in the next six months was measured using three items (I would intend to give plasma/I would attempt to donate plasma/I would donate plasma), using a bipolar scale ranging from -2 (strongly disagree) to +2 (strongly agree). A composite score of intention to donate plasma was created with the average of the three items ( $\alpha = 0.90$  [Cronbach's coefficients of reliability]). A higher score corresponds to a high level of intention to donate plasma in the next 6 months.

### *Measures of determinants*

The measures chosen to identify the determinants of intention to donate plasma in the next six months were

based on the integrative theoretical model [21] and inspired by accounts collected during focus groups in the first phase of the study [18]. Variables were selected based on their applicability to plasma donation behaviour, and direct measures of intention were favoured. Most scales were bipolar, varying from  $-2$  to  $+2$ , except connectedness to LGBTQ+ communities, which was a Likert scale varying from 1 to 5.

#### *Attitudes*

Six items were used to measure attitudes, where respondents had to rate eventual plasma donation on a semantic differential scale (e.g. donating plasma in the next 6 months would be... 'a useless experience – a useful experience'/'an experience of exclusion – an experience of inclusion'/'a frustrating experience – a gratifying experience'/'a shameful experience – an experience of pride'/'a disgusting experience – an appealing experience'/'a worrisome experience – a reassuring experience';  $\alpha = 0.92$ ).

#### *Subjective norm*

A single item was used to measure subjective norm ('people important to me'... would agree or disagree with my plasma donation).

#### *Moral norm*

Moral norm was measured using three items (e.g. if I gave plasma during the next 6 months it would... 'be acting according to my values of equality and social justice'/'be acting according to my values of altruism'/'be in accordance with my principles';  $\alpha = 0.80$ ).

#### *Perceived behavioural control*

Perceived behavioural control was also measured using three items (donating plasma in the next six months would be... 'difficult – easy'/'complicated – simple'/'not feasible – feasible';  $\alpha = 0.89$ ).

#### *Level of involvement in various issues LGBTQ+ communities are fighting for (as environmental characteristics [external factor])*

This variable was measured using one item, that is asking respondents to rate their level of involvement in various issues LGBTQ+ communities are fighting for, varying from 'very low' to 'very high'.

#### *Connectedness to LGBTQ+ communities (as environmental characteristics [external factor])*

This Likert-type scale enabled measurement of a respondent's sense of connectedness to LGBTQ+ communities using four items, varying from 'I am not at all like this' to 'I am exactly like this' (e.g. 'I consider myself to be

part of the LGBTQ+ community'/'Participating in LGBTQ+ community activities is a positive thing for me'/'I feel a sense of connection with the LGBTQ+ community'/'Being part of the LGBTQ+ community is an important aspect of who I am';  $\alpha = 0.92$ ).

#### *Proportion of friends who are gay, bisexual or queer (as environmental characteristics [external factor])*

This variable was measured using one item, where respondents were asked to quantify the proportion of their friends who are gay, bisexual or queer. The variable was dichotomized as a minority or less vs. a majority or all.

#### *Lifetime blood donation and having ever received blood products (as past behaviour)*

History of blood donation and having received blood products in the past were both measured using a dichotomous answer choice (No/Yes).

#### *Data analysis*

Missing data for our variables of interest (intention and determinants) were processed using a multiple imputation model. Models were based on scale and item level for cross-sectional questionnaire data using an expectation-maximization algorithm and the Markov Chain Monte Carlo method. The proportion of missing data varied between 25% and 37% depending on the variable, mostly due to the questionnaire not being fully completed. To identify determinants of intention, a stepwise multivariate linear regression was conducted, reassigning from one block to another significant variables with  $P$ -values  $< 0.001$  in the preceding block. While considering multiple factors that influence the variability of intention towards plasma donation, this method produces a final parsimonious model which allow to greatly reduce measurement error, overfit and model noise and to provide a greater generalization performance across various conditions and population [23]. Attitudes, subjective norm and perceived behavioural control were the main predictors (step 1); moral norm was added in step 2; level of involvement in LGBTQ+ issues, connectedness to LGBTQ+ communities and proportion of friends who are gay, bisexual or queer were added in step 3; lifetime blood donation and having received blood products were added in step 4; and age, education, income, place of birth, language spoken at home and marital status were added in step 5. Step 5 variables correspond to individual characteristics in the theoretical model; here, the forced entry method was used since these variables also acted as control variables. The Statistical Package for the Social Sciences software (SPSS, IBM SPSS Statistics, Release 26, SPSS Inc.) was used for the regression analysis.

## Results

### Sample description

A total of 933 respondents participated in the online survey (Table 1), 63% of whom fully completed the questionnaire. Comparative analyses (Pearson chi-square and independent samples *t*-test) of the main sociodemographic variables showed a single statistically significant difference between respondents who had completed the questionnaire and those who had not. A significantly higher number of the latter spoke a language other than French at home. The average age of respondents was 34.5 years (SD = 11.9), ranging from 18 to 76 years. About half had a university degree (56%) and a personal income of \$40 000 or over (49%). Most were born in Canada (81%), and French was their main language spoken at home (83%). A majority identified as men (95%) and homosexual (87%). Almost half were in a relationship (47%).

### Intention to donate plasma and its determinants

On a descriptive level (Table 2), regarding intention to donate plasma in the next 6 months as part of Héma-Québec's proposed programme for MSM, respondents' intention to do so was moderate (mean [M] = 0.6, SD = 1.1). Their attitudes towards plasma donation were rather positive (M = 0.8, SD = 1.0), and they perceived themselves as being relatively able to adopt this behaviour (perceived behavioural control: M = 0.4, SD = 1.0). Respondents' perception that people important to them would approve their donating plasma was relatively high, with an average score of 1.2 for subjective norm (SD = 0.8). They also considered that donating plasma was rather in line with their personal values (moral norm: M = 0.7, SD = 0.9). Respondents' level of involvement in various LGBTQ+ issues was not very high, with an average of -0.3 (SD = 1.1). Their sense of connectedness to LGBTQ+ communities was moderately high (M = 3.3, SD = 1.1). A third (34%) had given blood, and 7% had received a blood product in the past.

The parsimonious multivariate linear regression model explained 55.4% ( $P < 0.001$ ) of the variation of intention (Table 3). Intention to donate plasma as part of Héma-Québec's programme for MSM was predicted, in order of importance, by attitudes ( $\beta = 0.34$ ,  $P < 0.001$ ), perceived behavioural control ( $\beta = 0.28$ ,  $P < 0.001$ ), aged under 35 years ( $\beta = 0.26$ ,  $P < 0.001$ ), history of blood donation ( $\beta = 0.24$ ,  $P < 0.001$ ), subjective norm ( $\beta = 0.21$ ,  $P < 0.001$ ), income above \$40,000 ( $\beta = 0.20$ ,  $P < 0.001$ ), moral norm ( $\beta = 0.18$ ,  $P < 0.001$ ) and, to a lesser degree, higher level of involvement in LGBTQ+ issues ( $\beta = 0.09$ ,  $P < 0.001$ ). The other variables included in the model

were not statistically significant ( $P > 0.001$ ) (connectedness to LGBTQ+ communities:  $\beta = 0.07$ ,  $P = 0.016$ ; proportion of friends who are gay, bisexual or queer:  $\beta = 0.03$ ,  $P = 0.209$ ; having ever received blood products:  $\beta = -0.02$ ,  $P = 0.365$ ).

## Discussion

A number of studies have explored motivations and barriers to blood donation, with a goal of better targeting and recruiting donors. Some studies have looked at determinants of intention to donate blood or determinants of donation, but few have documented the factors associated with intention to donate plasma by apheresis, let alone in the MSM population. To our knowledge, our study is among the first to explore MSM's intention regarding donation of plasma by apheresis. In a context where Canada and several other countries are considering opening blood and plasma donation to MSM, our study provides evidence-based data on this population's intention to participate.

Results show that MSM in our sample have a moderate intention to participate in the plasma donation programme proposed by Héma-Québec. It should be noted that in Canada, there is currently no plasma donation programme for MSM, and that the goal here is to understand participants' intention to adopt this innovation. Although the proposed programme is explained in the questionnaire, it could be difficult for participants to project themselves into such a situation, unfamiliar to them. Should a plasma donation programme for MSM be implemented, it would be important to first target those men for whom intention is strong (early adopters) and to take note of the determinants of intention identified in the current study to increase the probability that these early adopters embrace this innovation [24].

Our analyses indicate that intention to donate plasma as part of Héma-Québec's proposed programme is associated with personal, social and structural factors. Variables in the regression model explain the 55% variation in intention, a fairly good position when compared with the studies reviewed (between 28% and 77%) [14, 15, 17]. Our results are similar to other studies carried out in the general population [14–17], where intention is mostly predicted by determinants of theory of planned behaviour. In our analyses, attitudes towards the plasma donation programme are the preponderant factor ( $\beta = 0.34$ ). Therefore, it is important, when implementing such a programme to better understand the behavioural beliefs underlying those attitudes and highlight the many advantages of participating in the programme, while also minimizing the disadvantages. Perceived behavioural control, the second factor associated with intention to donate

**Table 1** Sample description (N = 933).

Variables	Number ( <i>n</i> )	Proportion (%)
Education		
None, High school diploma or Vocational diploma	182	19.5%
College or Technical	218	23.4%
University	523	56.2%
Other (mixed)	8	0.9%
Annual income, before taxes		
No income	18	1.9%
Under \$39 999	420	45.0%
\$40 000 or more	459	49.2%
Rather not answer	36	3.9%
Place of birth		
Canada	746	81.1%
Other (mixed)	174	18.9%
Language spoken at home		
French	767	82.5%
English	134	14.4%
Spanish	12	1.3%
Other (mixed)	17	1.8%
Gender identity (Not mutually exclusive)		
Man	887	95.4%
Trans	28	3.0%
Non-binary	29	3.1%
Other (queer, genderfluid, two-spirit, agender)	13	1.4%
Sexual orientation		
Homosexual or gay	812	87.0%
Bisexual	60	6.4%
Heterosexual or straight	7	0.8%
Queer, pansexual, fluctuating	40	4.3%
Other (mixed)	11	1.2%
Rather not answer	3	0.3%
Marital status		
Single	490	52.6%
Dating/in a relationship	442	47.4%
HIV status		
Unknown	79	8.5%
Negative	854	91.5%
PrEP use in the past 3 months		
No	500	83.9%
Yes	96	16.1%

plasma ( $\beta = 0.28$ ), emphasizes the importance of expanding this perception by addressing the personal and environmental barriers (control beliefs) that could affect it. Just as important is putting facilitating conditions in place, such as flexible hours and easy access to the donation centre. The third factor associated with intention is age under 35 years ( $\beta = 0.26$ ). This finding suggests that younger MSM should be targeted for participation in the plasma donation programme. Only Levy's study [19],

conducted with MSM in Israel, also identifies younger age as being associated with intention to donate plasma. However, this link still needs to be validated in other studies of this population. Intention to donate plasma is also predicted by history of blood donation ( $\beta = 0.24$ ). In our sample, 34% of MSM had donated blood in the past. Although we did not ask participants about this issue, we can assume that they were able to donate blood because they were eligible (in accordance with the deferral period

**Table 2** Descriptive data on intention to donate plasma in the next 6 months and its determinants.

Variables	Mean $\pm$ standard deviation/n (%)
Intention	
Varies from -2 to +2	0.6 $\pm$ 1.1
Attitudes	
Varies from -2 to +2	0.8 $\pm$ 1.0
Subjective norm	
Varies from -2 to +2	1.2 $\pm$ 0.8
Perceived behavioural control	
Varies from -2 to +2	0.4 $\pm$ 1.0
Moral norm	
Varies from -2 to +2	0.7 $\pm$ 0.9
Involvement in LGBTQ+ issues	
Varies from -2 to +2	-0.3 $\pm$ 1.1
Connectedness to LGBTQ+ communities	
Varies from 1 to 5	3.3 $\pm$ 1.1
Proportion of friends who are gay, bisexual or queer (majority or more)	227 (24.3%)
Blood donation (lifetime)	315 (33.8%)
Having received blood products (lifetime)	69 (7.4%)

**Table 3** Multiple linear regression on determinants of plasma donation.

Variables	$\beta$	Standard error	95% CI
Step 1			
Attitudes	0.34	0.03	0.27 to 0.40 <sup>a</sup>
Subjective norm	0.21	0.04	0.13 to 0.29 <sup>a</sup>
Perceived behavioural control	0.28	0.03	0.22 to 0.33 <sup>a</sup>
Step 2			
Moral norm	0.18	0.04	0.10 to 0.26 <sup>a</sup>
Step 3			
Involvement in LGBTQ+ issues	0.09	0.02	0.05 to 0.14 <sup>a</sup>
Step 4			
Blood donation (lifetime)	0.24	0.05	0.14 to 0.34 <sup>a</sup>
Step 5 (control variables)			
Age (34 years or less)	0.26	0.05	0.16 to 0.36 <sup>a</sup>
Education (university degree)	-0.04	0.05	-0.13 to 0.06
Income (\$40 000 or more)	0.20	0.05	0.09 to 0.30 <sup>a</sup>
Place of birth (other than Canada)	0.10	0.06	-0.03 to 0.22
Language spoken at home (other than French)	0.06	0.06	-0.06 to 0.19
Marital status (in a relationship)	-0.03	0.05	-0.12 to 0.06

$R^2$ : 0.554.

$P < 0.001$ .

<sup>a</sup>Significant association.

based on time of donation), or because they omitted information, for instance, feeling that they did not present behavioural risks (e.g. monogamous/sexually exclusive). For a population who has long been banned from donating, this proportion is high and suggests a pool of potential donors. Theoretically, past behaviour is a

predictor of intention; a study of the general population determined that having given blood in the past is a predictor of a second donation [25]. Subjective norm, the fifth factor associated with intention ( $\beta = 0.21$ ), is less often reported as a predictor of intention. Given the issues surrounding MSM and blood donation, MSM

donors must feel they have the approval of significant individuals, including members of LGBTQ+ communities. As stated by focus group participants during the first stage of this study [18], some community activists could boycott the plasma donation programme if it is seen to be discriminatory, for example, if donations are quarantined. The programme to be implemented must be considered acceptable to LGBTQ+ communities. A second sociodemographic variable is also associated with intention: income above \$40 000 ( $\beta = 0.20$ ). This variable was not identified in the studies reviewed, except by Lévy [19], who indicates the reverse, that is lower income. As is the case for age, other studies of MSM are needed to confirm a link between income and intention to donate plasma. Moral norm ( $\beta = 0.18$ ) is associated with intention to donate plasma, but to a lesser degree. Agreement between behaviour and personal values affects MSM's motivation to participate in a plasma donation programme. Because the association between moral norm and intention is weaker, it does not appear to be central to such decision making. To a lesser degree, intention to donate plasma is also predicted by higher level of involvement in various issues LGBTQ+ communities are fighting for ( $\beta = 0.09$ ). Although our sample's level of involvement in those issues is not very high ( $m = -0.3$ ;  $SD = 1.1$ ), higher level is associated with stronger intention to participate in the plasma donation programme. As focus group participants noted [18], the plasma donation programme marks a step in the right direction. Consequently, it seems essential to involve MSM in the process to change practices and review eligibility criteria so they can feel respected and be party to the decisions. Community acceptability would probably be higher if the communities were first consulted about the characteristics of the plasma donation programme targeting them.

### *Study limits and impacts of the findings*

It is possible that the measurement of intention to donate plasma is underestimated in our study, given that it is measured in the context of the programme for MSM proposed by Héma-Québec, which included constraints such as apheresis donation, donation quarantine and plasma fractionation. Therefore, results for intention cannot be generalized to plasma donation in different contexts. The issue that resulted in the most resistance in focus groups during phase one of the study [18] is that donations would be quarantined; this characteristic of the programme is perceived as discriminatory since it does not apply to the general population of donors. Another limitation is related

to participant recruitment, which was mostly done through LGBTQ+ communities. The sample may have been biased due to an overrepresentation of MSM with a strong sense of belonging to their communities. However, while analyses were controlled for this variable, there was no statistically significant association with intention to donate plasma. The presence of missing data in our sample may have caused a bias in our analyses of prediction of intention. Comparative analyses of participants who had completed the questionnaire and those who had not showed a difference only for language spoken at home. However, this variable is not associated with our variable of interest – intention to donate plasma. Moreover, missing data imputation performed for the linear regression model allowed to reduce this bias and ensure better statistical power.

In conclusion, this study provides a novel understanding of the issue of plasma donation in MSM. It can also be used to support subsequent decisions and steps towards changing policies concerning plasma donation among MSM. Future studies should explore intention to donate plasma in the absence of the characteristics of the plasma donation programme considered in the current study. Finally, if pilot projects are implemented, an evaluation of programme implementation would generate evidence-based data on planned behaviour (donating plasma) and not only on intention.

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### **Conflict of interest**

The authors have no conflict of interest.

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## Supporting Information

Additional Supporting Information may be found in the online version of this article:  
Appendix Online survey.