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The Effect of Plasma Donation Frequency on Donor Health

Results from a Randomized Controlled Trial

EDQM STAKEHOLDER EVENT - PLASMA SUPPLY CONTINUITY
Increasing and improving plasma collection in Europe
26-27 March 2025, Council of Europe, Strasbourg

Morten Haugen, MD, PhD student

Disclosures

- No conflict of interest to declare.

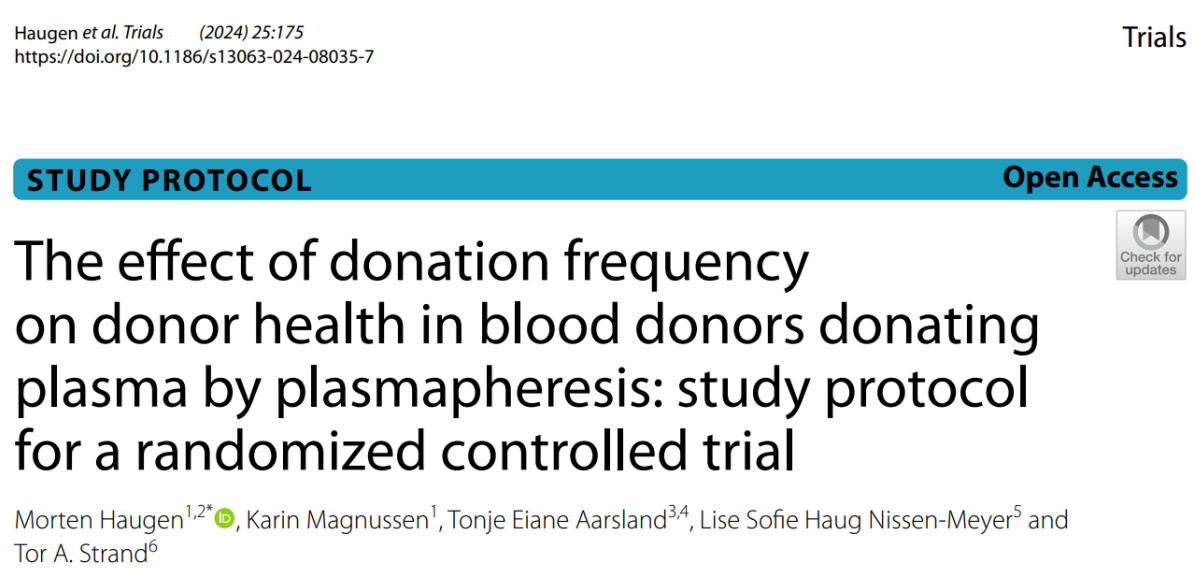
The Norwegian Plasmapheresis Study

Study Design: Randomized controlled trial (RCT)

Study Period: Jan 2022 - July 2024

Study Protocol: Published (Haugen et al., *Trials* 2024)

Manuscripts: In preparation, not yet published



Haugen *et al. Trials* (2024) 25:175
https://doi.org/10.1186/s13063-024-08035-7

Trials

STUDY PROTOCOL Open Access

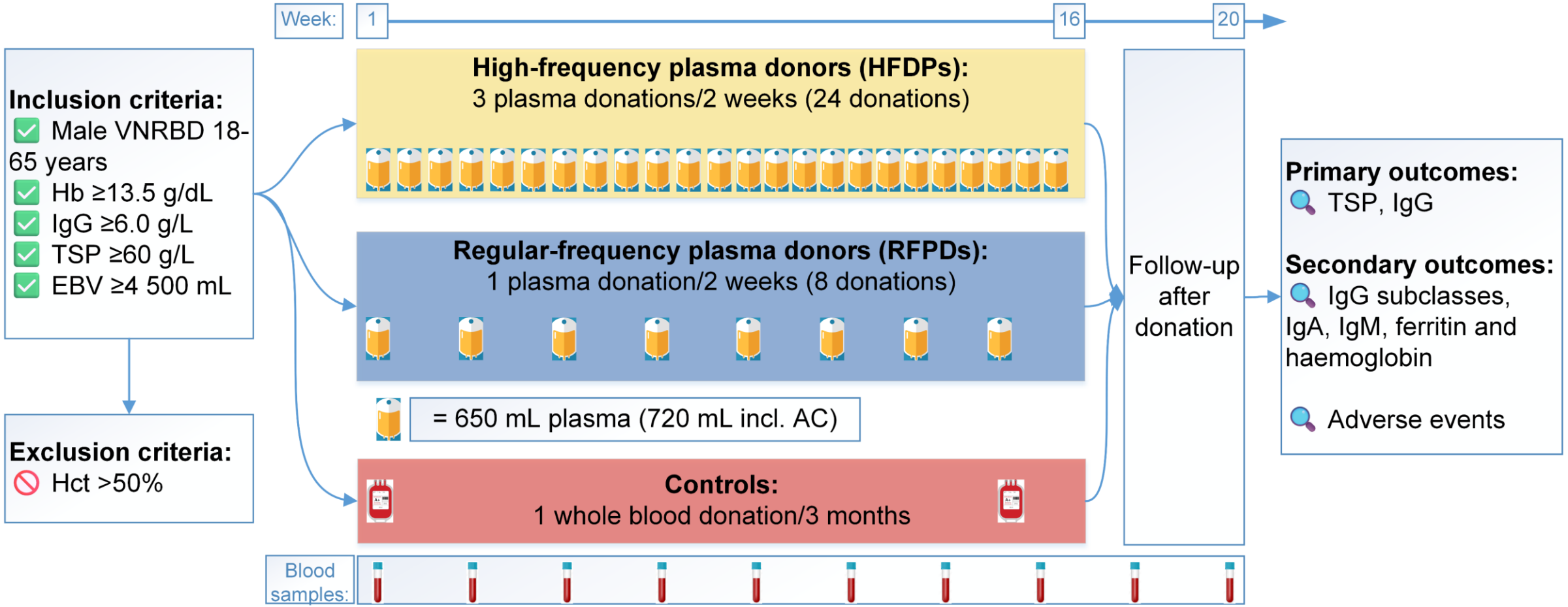
The effect of donation frequency on donor health in blood donors donating plasma by plasmapheresis: study protocol for a randomized controlled trial

Morten Haugen[1,2*], Karin Magnussen[1], Tonje Eiane Aarsland[3,4], Lise Sofie Haug Nissen-Meyer[5] and Tor A. Strand[6]

Aim

- 🔍 Investigate the effect of plasma donation frequency on donor health
  - 📌 Changes in plasma protein composition
  - 📌 Achieve sustainable and safe plasma collection that focuses on donor health
  - 📌 Provide evidence-based data to support guidelines on donation frequency

Methods



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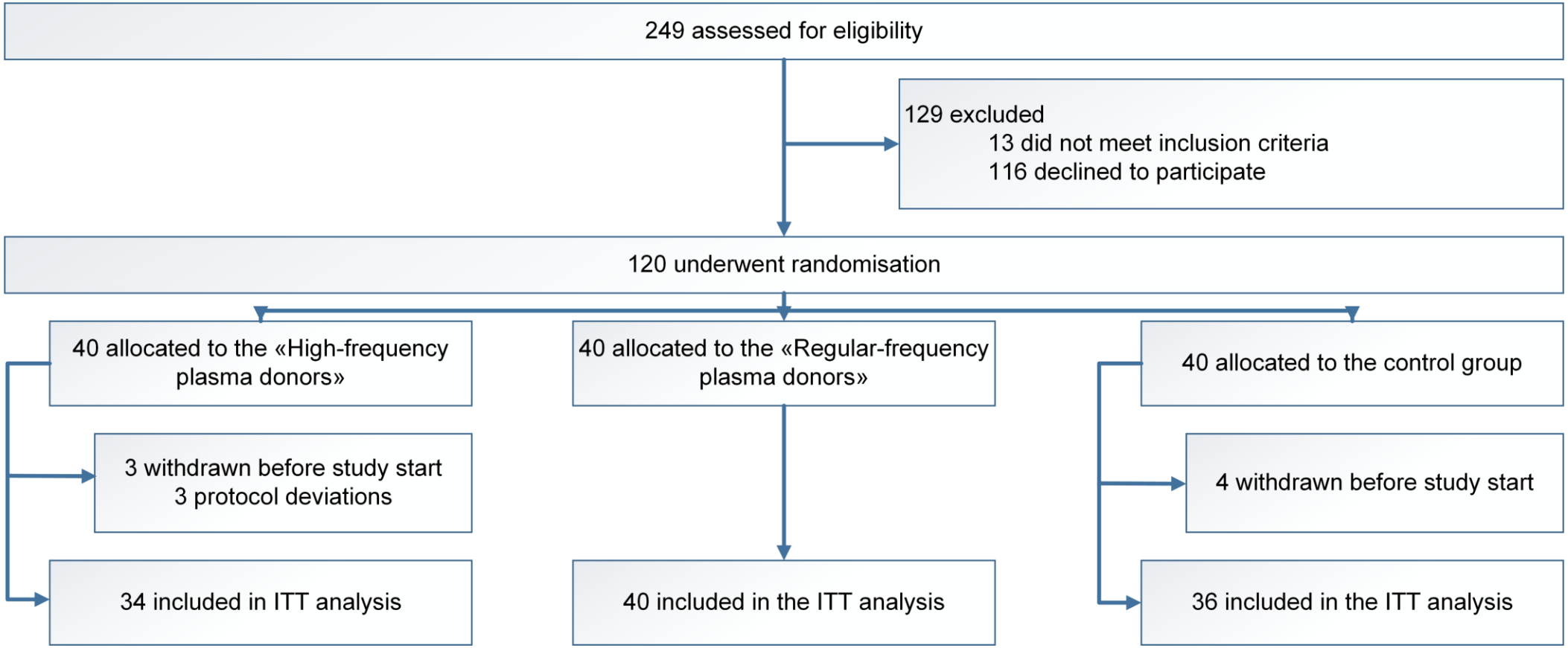
VNRBD Voluntary non-remunerated blood donors, **Hb** Haemoglobin, **IgG** Immunoglobulin G, **TSP** Total serum protein, **EBV** Estimated blood volume, **Hct** haematocrit, **AC** anticoagulant

Flowchart participants



ITT Intention-to-treat

Baseline characteristics

	High-frequency plasma donors, n=34	Regular-frequency plasma donors, n=40	Controls, n=36
Age (years)	46.0 (11.6)	46.9 (9.7)	46.3 (12.0)
Height (cm)	183.1 (6.2)	182.4 (8.1)	182.5 (6.9)
Weight (kg)	91.5 (13.3)	93.3 (16.9)	91.4 (9.5)
TSP (g/L)	71.7 (4.3)	70.8 (4.2)	71.6 (4.2)
IgG (g/L)	10.9 (2.1)	10.1 (1.9)	10.5 (1.6)
Hb (g/dL)	15.0 (0.7)	15.0 (0.8)	15.5 (0.8)
Ferritin (µg/L)	69.6 (48.1)	57.7 (24.2)	69.3 (31.9)
EBV	5,722.0 (504.1)	5,752.0 (663.0)	5,706.5 (356.7)

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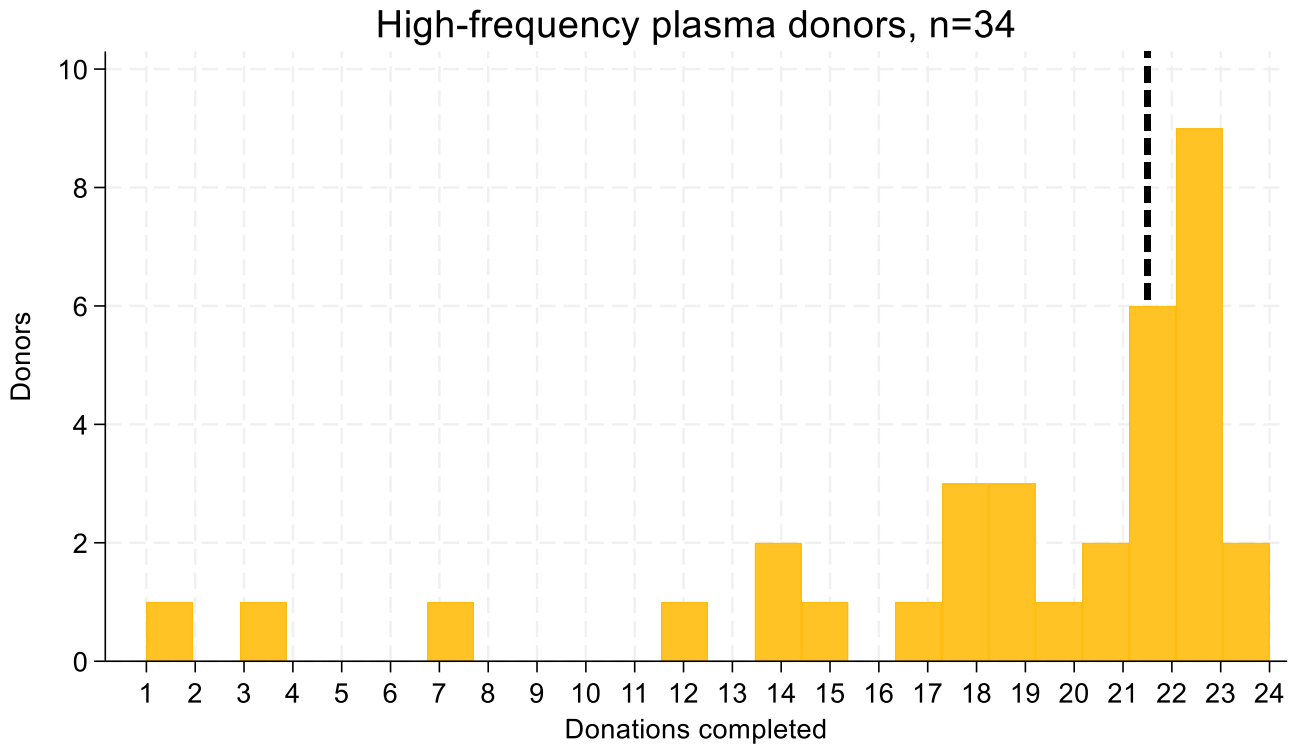
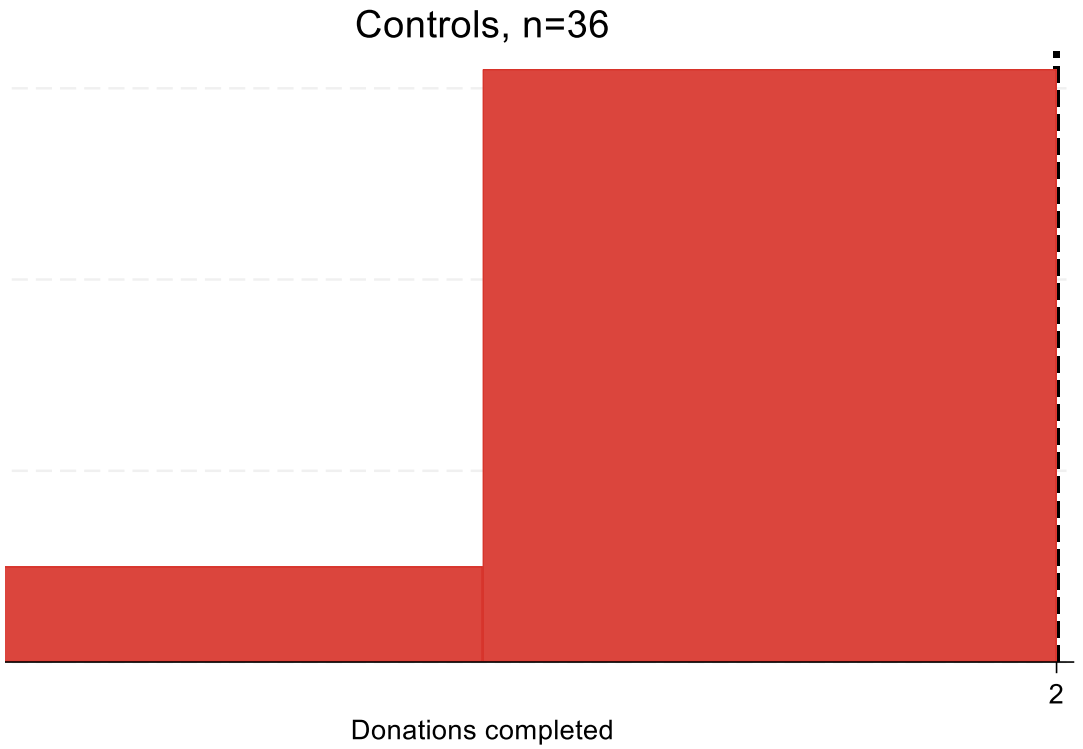
Data are mean (SD). **TSP** Total serum protein, **IgG** Immunoglobulin G, **Hb** Haemoglobin, **EBV** Estimated blood volume.

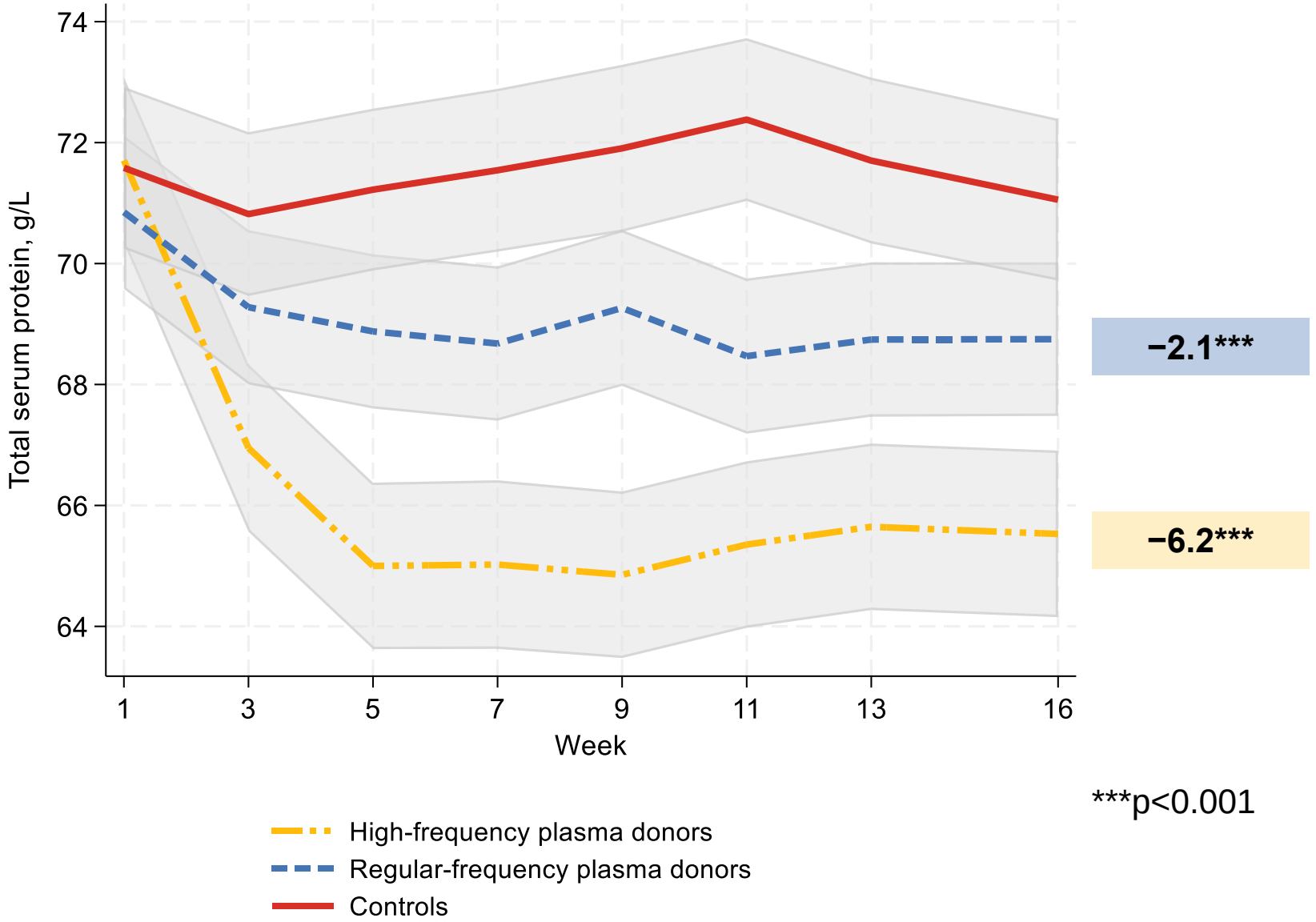
Donations completed in 16 weeks

	High-frequency plasma donors, n=34	Regular-frequency plasma donors, n=40	Controls, n=36
Plasma	21.5 (1-24) of 24 planned	8 (1-8) of 8 planned	
Whole blood			2 (1-2) of 2 planned

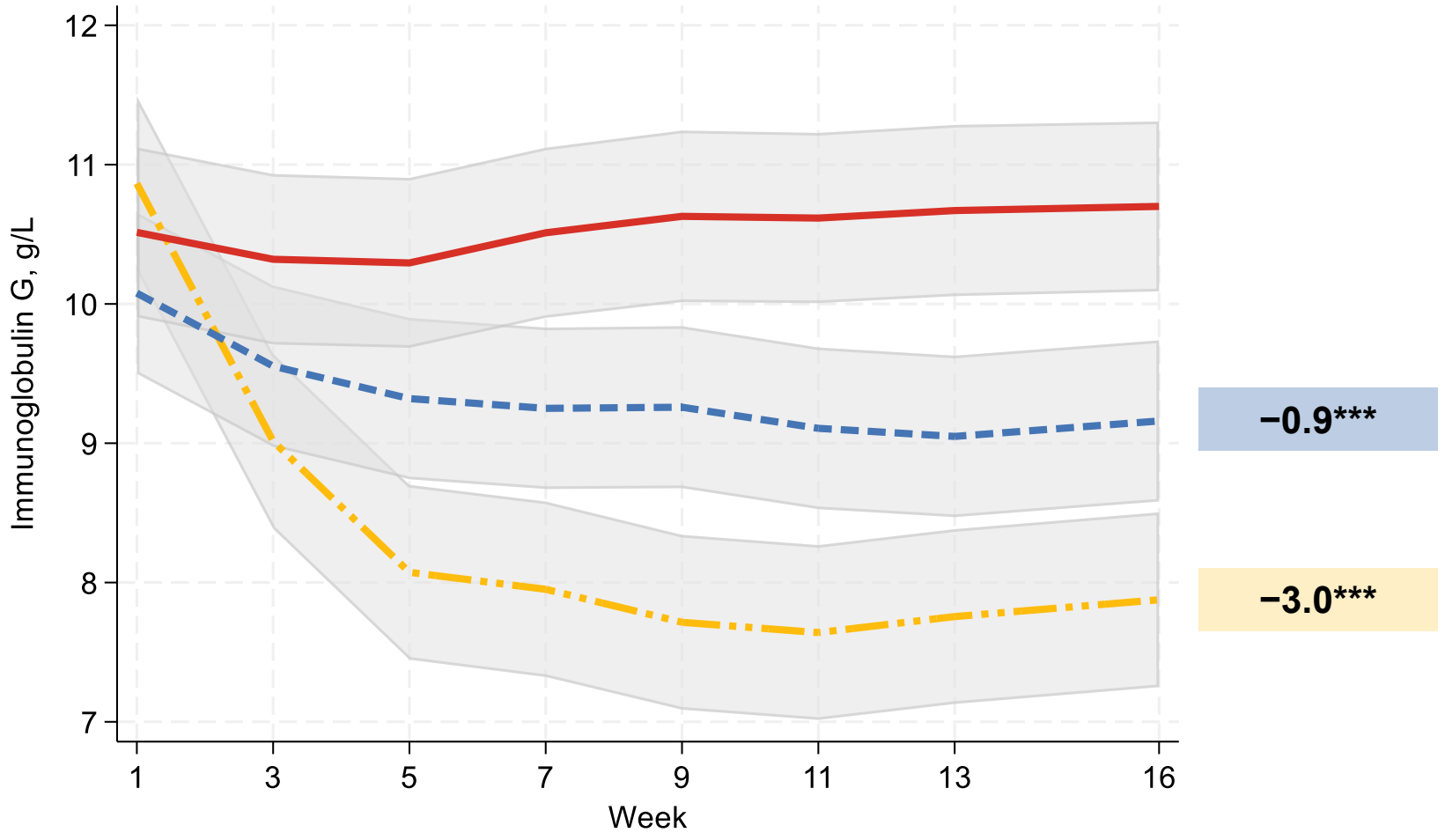




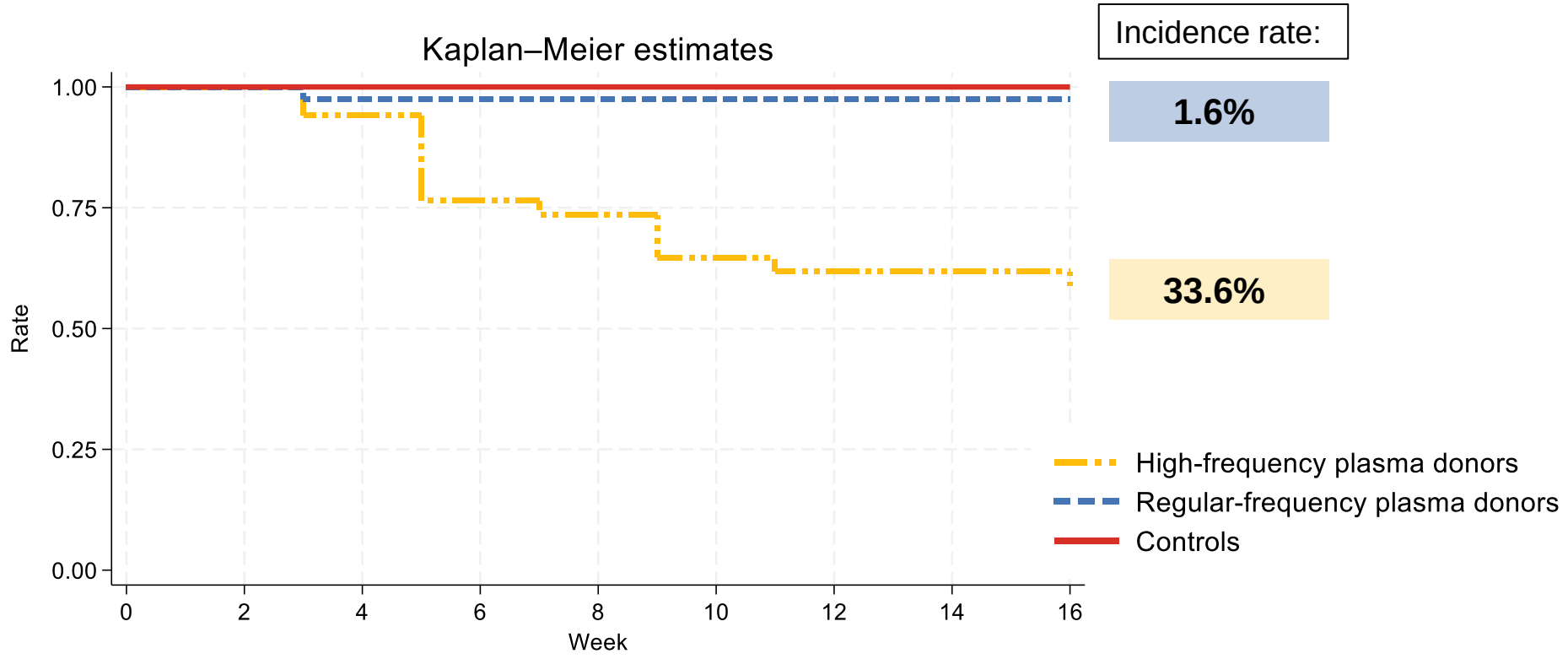
Total serum protein, g/L



Immunoglobulin G, g/L

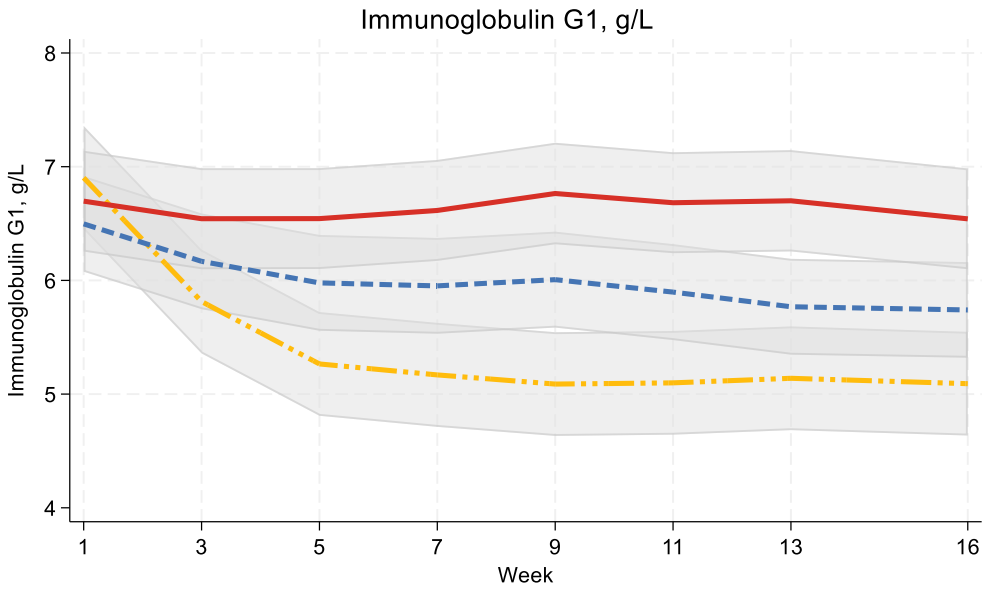


Donors with IgG<6.0 and/or TSP<60 g/L



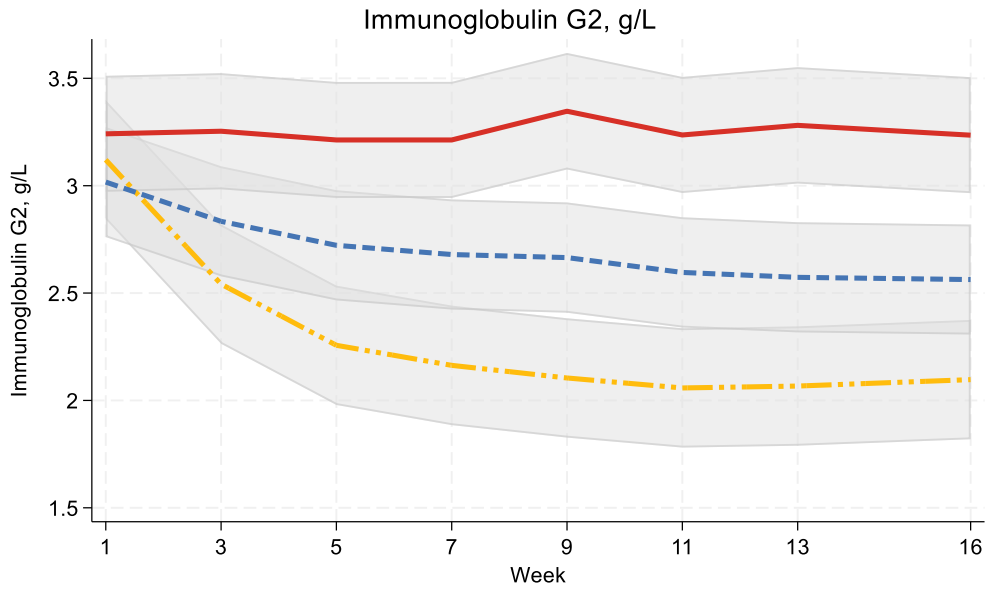
	High-frequency plasma donors, n=34	Regular-frequency plasma donors, n=40	Controls, n=36
TSP<60 g/L	6 (18%)	1 (2.5%)	0
IgG<6.0 g/L	9 (26%)	1 (2.5%)	0

Immunoglobulin G subclasses 1-4, g/L



−0.8***

−1.8***

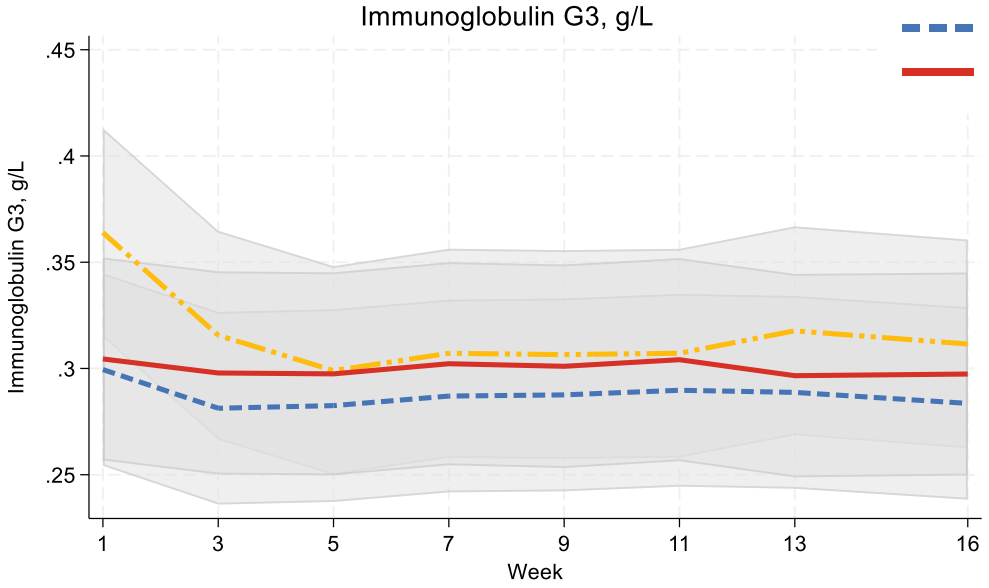


−0.5***

−1.0***

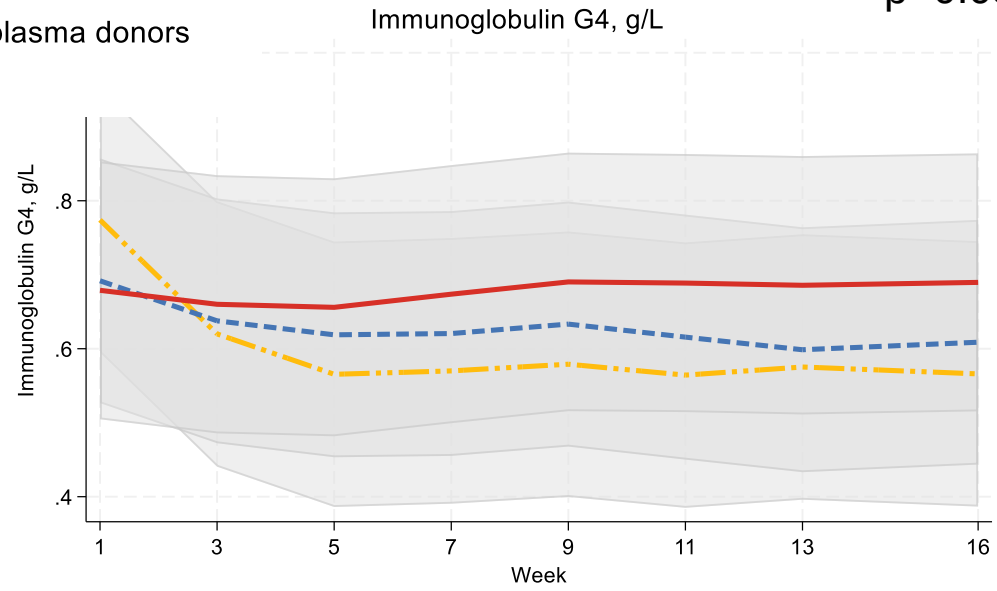
High-frequency plasma donors
Regular-frequency plasma donors
Controls

*p<0.05, ***p<0.001



−0.05***

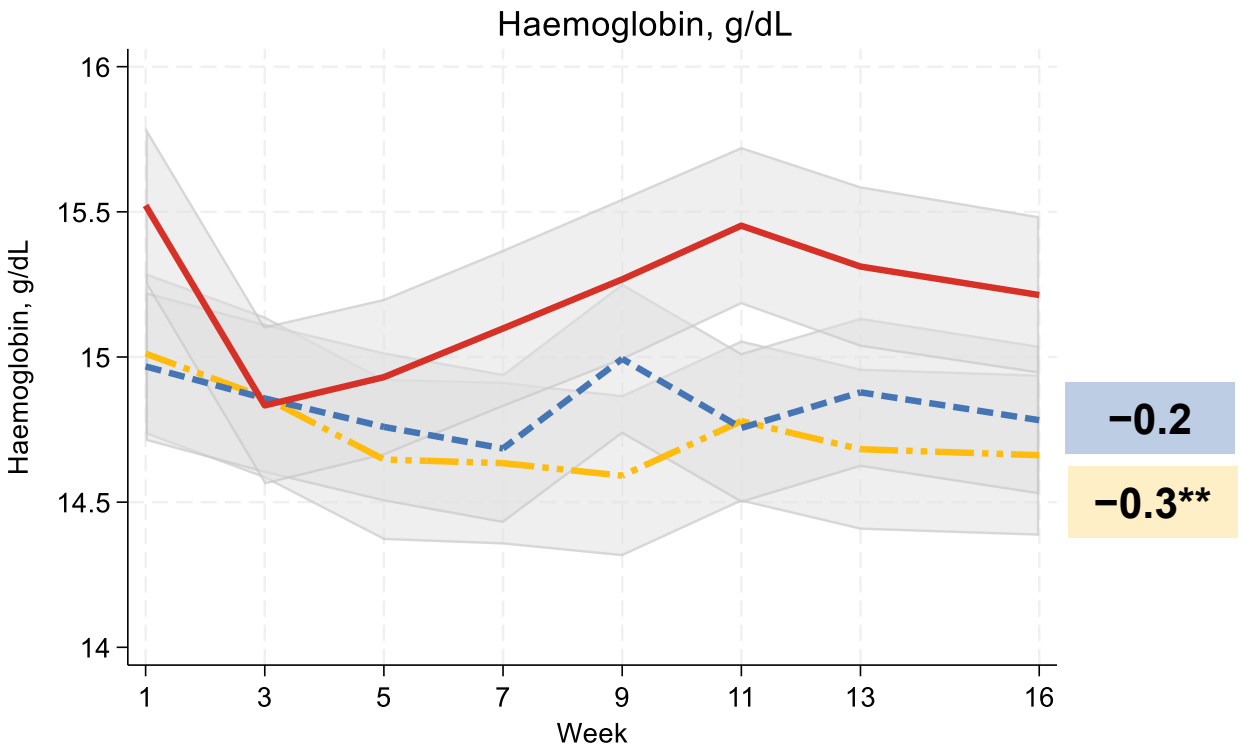
−0.02*

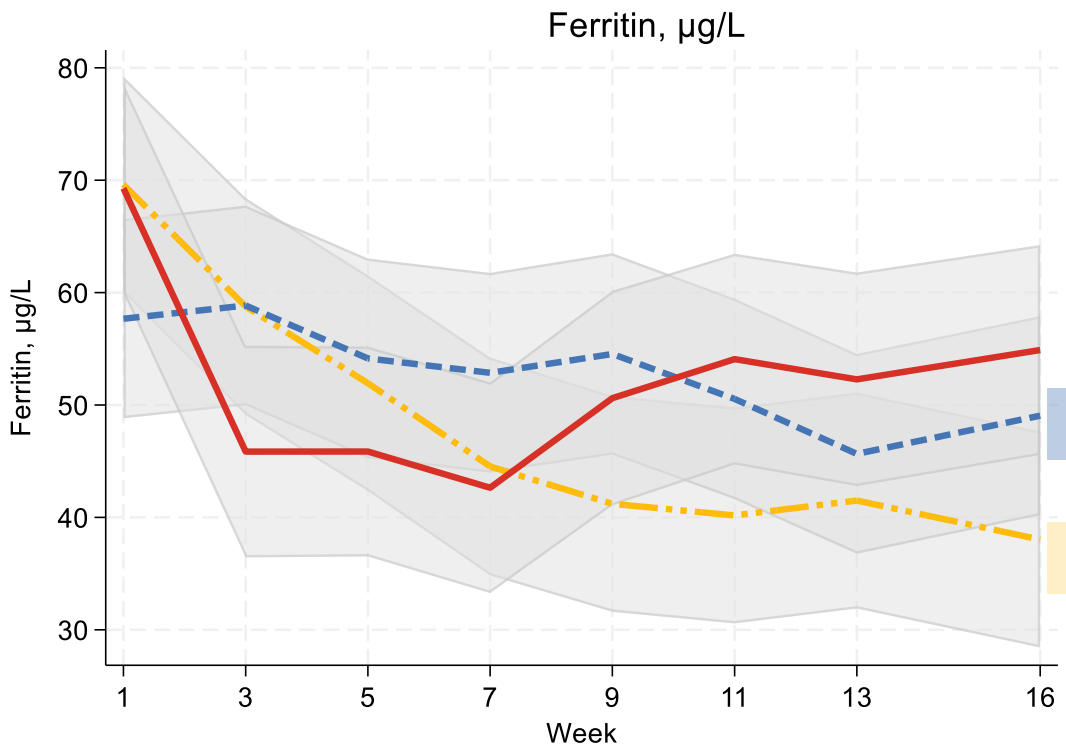


−0.08*

−0.2***

Haemoglobin and ferritin





−0.2

−0.3**

−8.6*

−31.6***

High-frequency plasma donors
Regular-frequency plasma donors
Controls

*p<0.05, **p<0.01, ***p<0.001

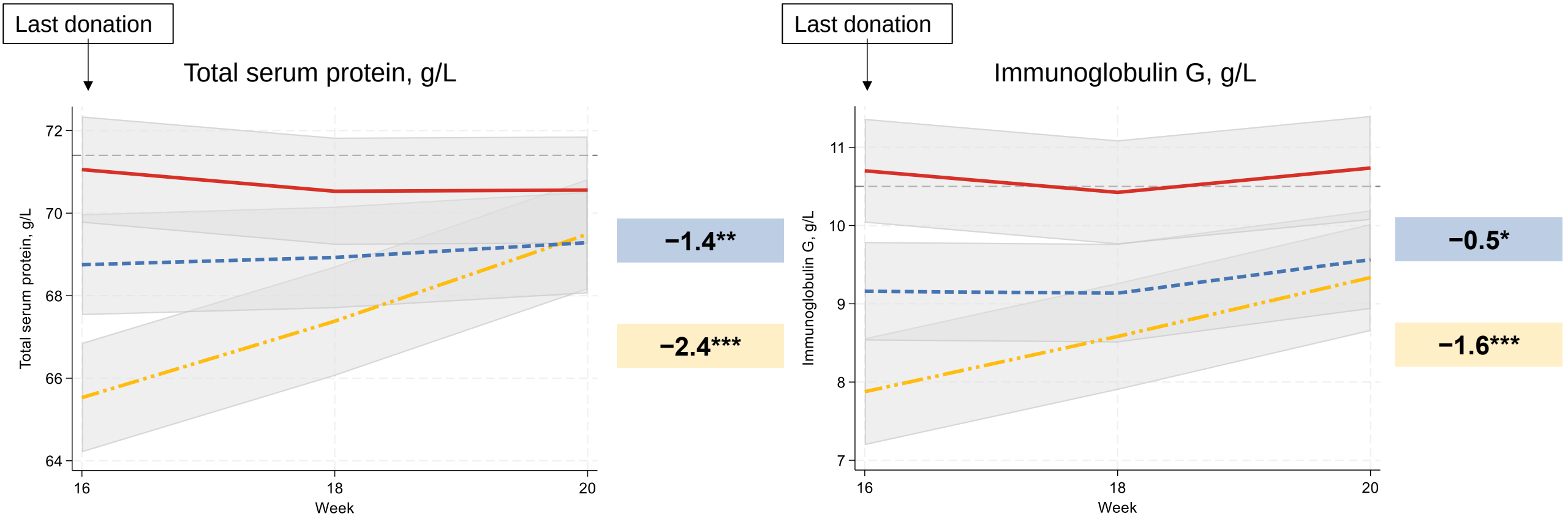
Plasma proteins at last donation vs. baseline

	High-frequency plasma donors, n=34	Regular-frequency plasma donors, n=40
TSP, g/L	**−6.2*****	**−2.1*****
IgG, g/L	**−3.0*****	**−0.9*****
IgG1, g/L	**−1.8*****	**−0.8*****
IgG2, g/L	**−1.0*****	**−0.5*****
IgG3, g/L	**−0.05*****	**−0.02***
IgG4, g/L	**−0.2*****	**−0.08****
IgM, g/L	**−0.2*****	**−0.09*****
IgA, g/L	**−0.3*****	−0.03
Ferritin, µg/L	**−31.6*****	**−8.6***
Hb, g/dL	**−0.3****	−0.2
Albumin,g/L	**−1.8*****	−0.2
Transferrin,g/L	**0.2*****	0.02
CRP, mg/L	−0.06	0.3

CRP C-reactive protein.

*p<0.05, **p<0.01, ***p<0.001

Recovery of TSP and IgG 4 weeks after donations



*p<0.05, **p<0.01, ***p<0.001

High-frequency plasma donors
Regular-frequency plasma donors
Controls

Recovery of plasma proteins 4 weeks after donations vs. baseline

	High-frequency plasma donors, n=34	Regular-frequency plasma donors, n=40
TSP, g/L	**−2.4*** **	**−1.4** **
IgG, g/L	**−1.6*** **	**−0.5***
IgG1, g/L	**−1.0*** **	**−0.6*** **
IgG2, g/L	**−0.6*** **	**−0.2*** **
IgG3, g/L	−0.008	**−0.01***
IgG4, g/L	**−0.1*** **	−0.04
IgM, g/L	**−0.07*** **	**−0.04***
IgA, g/L	**−0.08***	−0.04
Ferritin, µg/L	**−33.1*** **	**−10.9***
Hb, g/dL	−0.06	−0.09
Albumin, g/L	0.5	0.1
Transferrin, g/L	**0.2*** **	0.06
CRP, mg/L	0.1	1.1

*p<0.05, **p<0.01, ***p<0.001

Adverse events

Donors (%) Rate per 50 donations	**High-frequency plasma donors (n=34)** (673 donations)	**Regular-frequency plasma donors (n=40)** (295 donations)	**Controls (n=36)** (69 donations)
Haematoma and/or failed return of red cells	**19 (55.9%)** 2.23	**11 (27.5%)** 2.03	0
Vasovagal reactions, no loss of consciousness	**2 (5.9%)** 0.14	**3 (7.5%)** 0.68	0
Citrate reactions	**2 (5.9 %)** 0.30	**3 (7.5%)** 0.85	0
Anaemia (Hb<13.5 g/dL)	**7 (20.6%)** 0.52	**7 (17.5%)** 1.18	**2 (5.6%)** 1.45

Summary and conclusions

✅ **Key findings:**

- After 16 weeks of donations, concentrations of **various plasma proteins were significantly reduced** among plasma donors donating 3 times and once every 2 weeks.
- **Higher donation frequency** → **Greater reduction** in plasma proteins.
- **Recovery time > 4 weeks**, especially for high-frequency donors.

⚠️ **Implications:**

- Frequent plasma donation may impact donor health.
- Further research is needed to understand long-term health effects.

Thank you!

🎓 **Research group:**

- Lise Sofie Haug Nissen-Meyer (Oslo University Hospital, University of Oslo)
- Karin Magnussen (Innlandet Hospital Trust)
- Tor A. Strand (Innlandet Hospital Trust)

🩸 **The blood donors**

🏥 **The donation sites at Innlandet Hospital Trust**

📥 **Contact:** Morten.Haugen@sykehuset-innlandet.no

PPTA Donor Health and Safety Studies

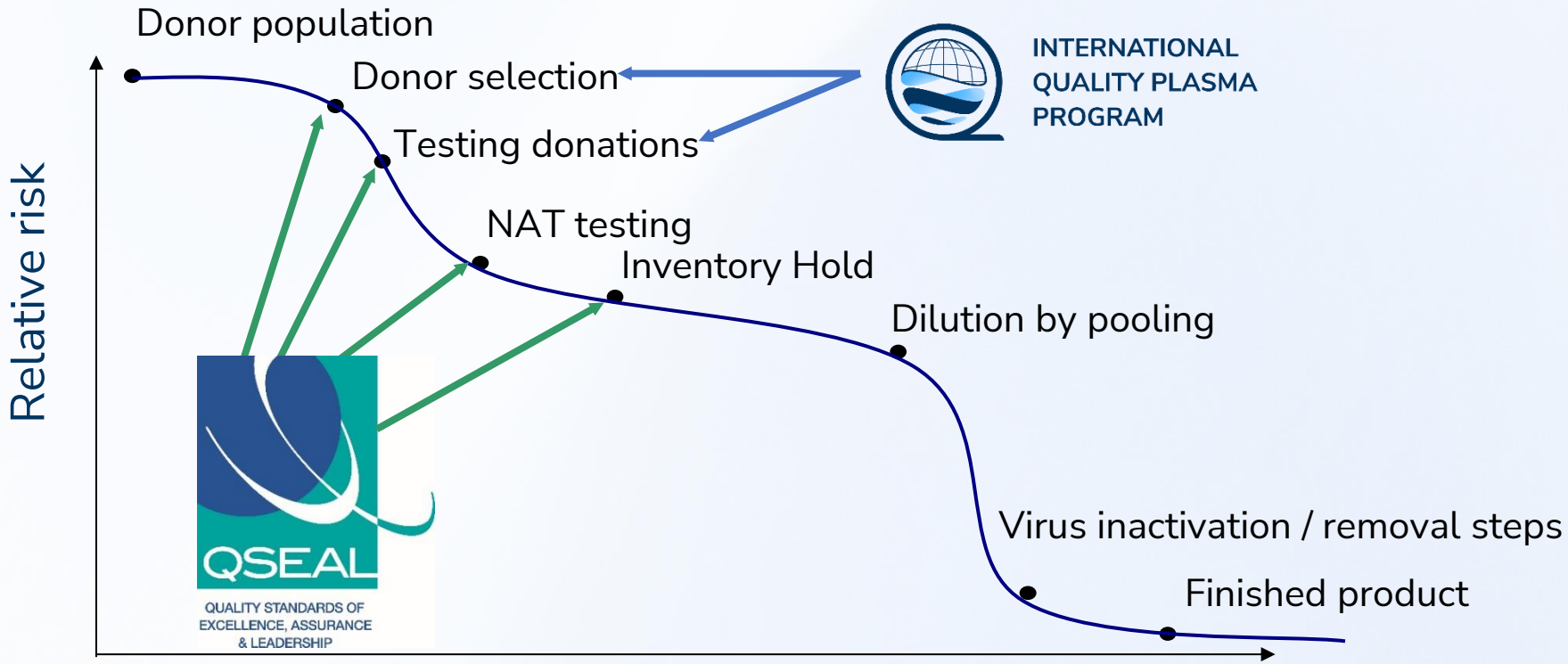
James Knowles, PhD, PPTA, Senior Director, Global Regulatory Policy

PLASMA PROTEIN
THERAPEUTICS ASSOCIATION

March 26, 2025
EDQM Plasma Stakeholder Meeting

PPTA

Standards Drive Donor and Patient Safety



From a global population to patients around the world

General Donor Eligibility Federal Requirements

To determine eligibility, a donor must have a pre-donation screening consisting of:

- Completing the Donor History Questionnaire
- Proof of identity and postal address
- Providing Informed Consent
- Having a physical exam performed by Physician Substitute

General Donor Eligibility Requirements

To determine eligibility, a donor must have a pre-donation screening consisting of:

Routine exam includes

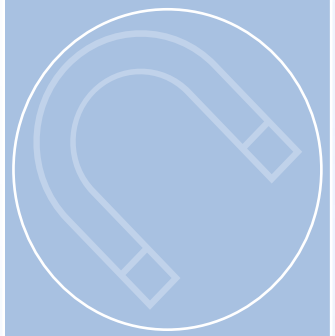
- General health
- Phlebotomy site free from infection, inflammation and lesions
- Arms free of punctures and scars indicative of injected drug abuse
- Infectious disease risks

General Donor Eligibility Requirements

Temperature (<37.5°C)

Systolic Blood Pressure (90-180 mmHg)

Diastolic Blood Pressure (50-100 mmHg)



Hematocrit (≥38% females; ≥39% males)

Pulse (regular rhythm, 50-100 bpm)

Weight (≥50 kg)

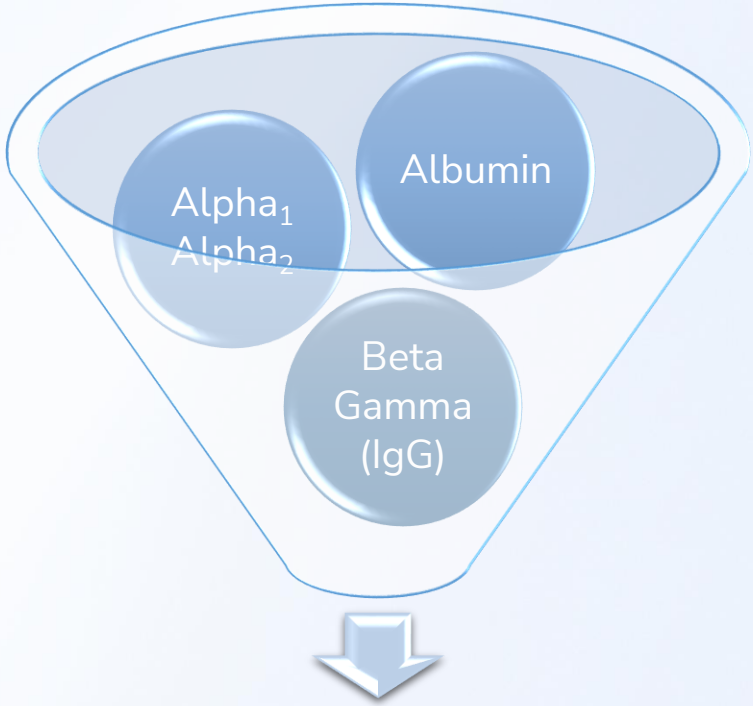
Total Protein (6.0-9.0 g/dL)

Performed at each donation

General Donor Eligibility Requirements

Tested at initial donation for Total Protein (TP) test and at least every four months for total protein and composition of each component

Total Plasma Protein by Refractometry



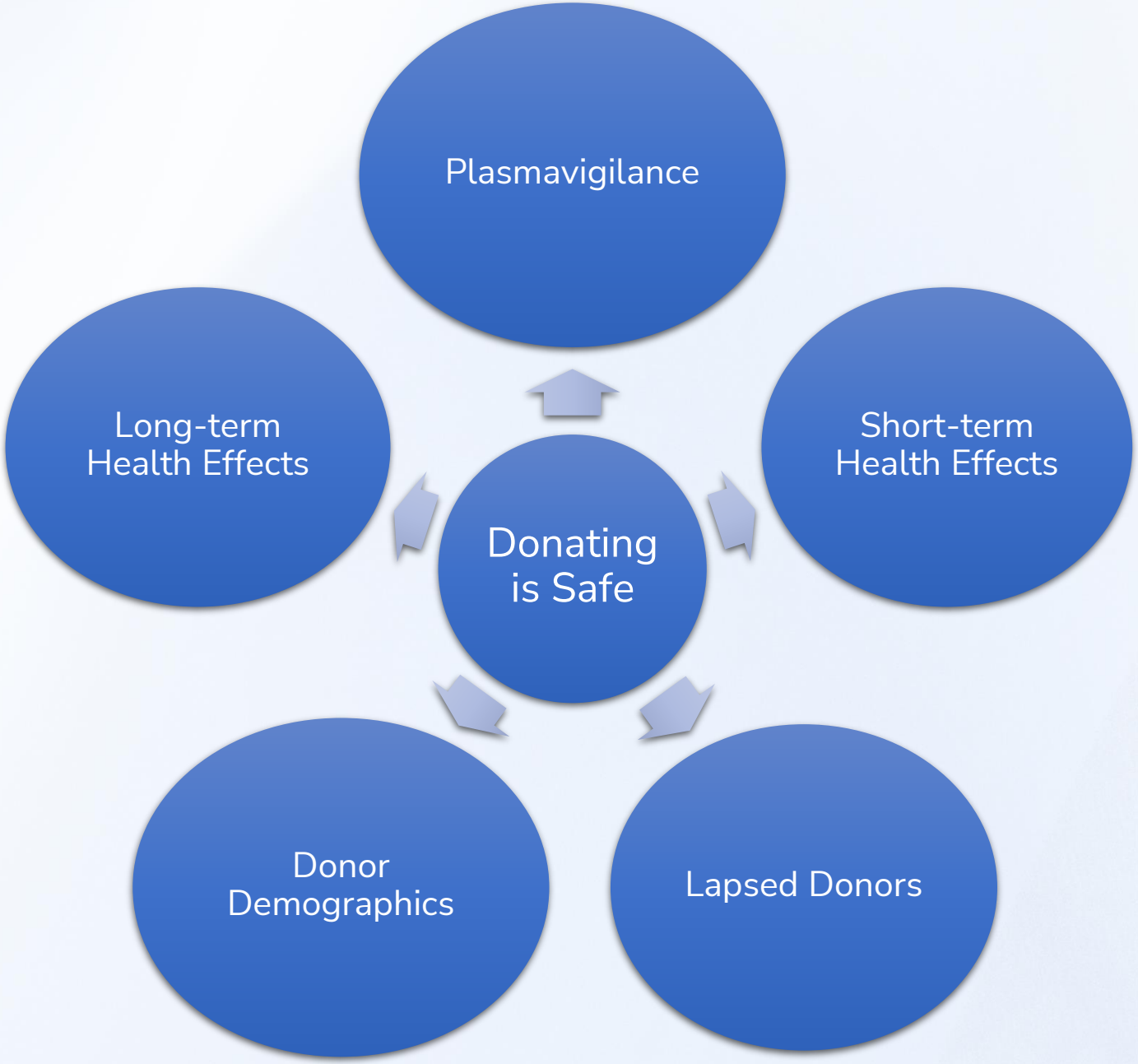
Serum Protein Electrophoresis (SPE)

Not every individual that is interested in donating is eligible

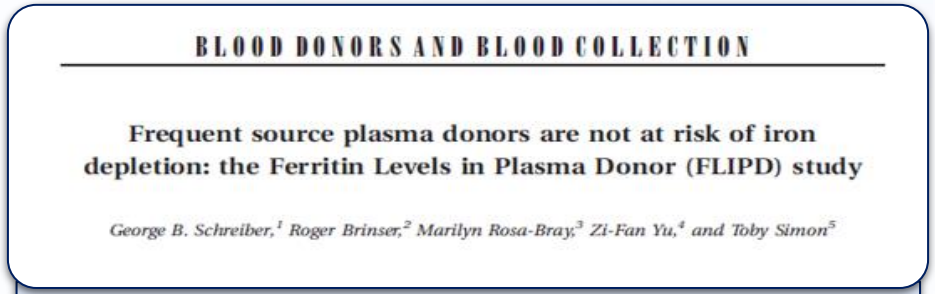
For US plasma donors, FDA regulations state: "... collection shall not occur less than 2 days apart or more frequently than twice in a 7-day period"

PPTA Roadmap of Donor Health Studies

Since 2018



Published PPTA Donor Health Studies

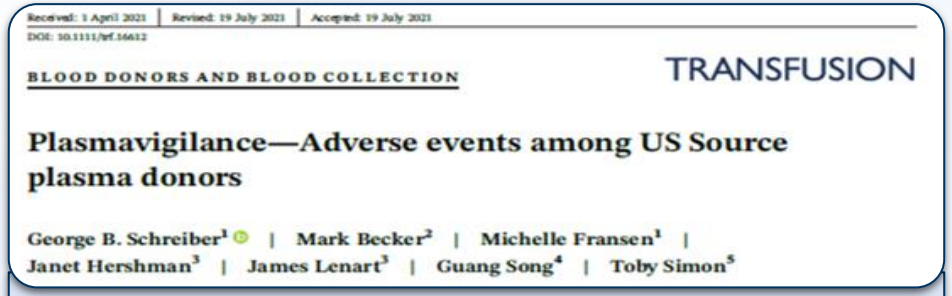


BLOOD DONORS AND BLOOD COLLECTION

Frequent source plasma donors are not at risk of iron depletion: the Ferritin Levels in Plasma Donor (FLIPD) study

George B. Schreiber,[1] Roger Brinser,[2] Marilyn Rosa-Bray,[3] Zi-Fan Yu,[4] and Toby Simon[5]

Both **ferritin and hematocrit levels were not impacted by frequency**.



Received: 1 April 2021 | Revised: 19 July 2021 | Accepted: 19 July 2021
DOI: 10.1111/trf.16612

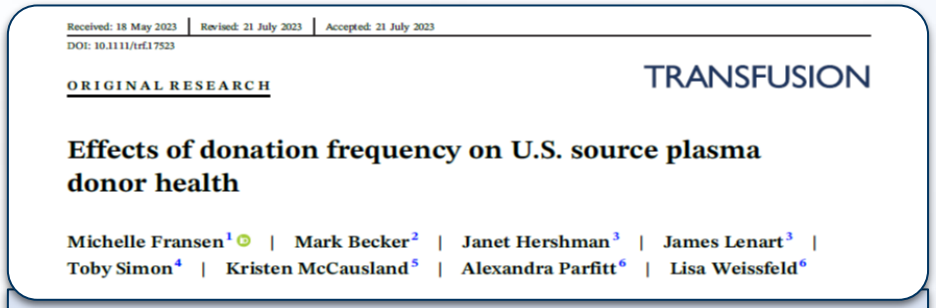
BLOOD DONORS AND BLOOD COLLECTION

TRANSFUSION

Plasmavigilance—Adverse events among US Source plasma donors

George B. Schreiber[1] | Mark Becker[2] | Michelle Fransen[1] | Janet Hershman[3] | James Lenart[3] | Guang Song[4] | Toby Simon[5]

Adverse events comparable to what has been reported by **blood centers**.



Received: 18 May 2023 | Revised: 21 July 2023 | Accepted: 21 July 2023
DOI: 10.1111/trf.17523

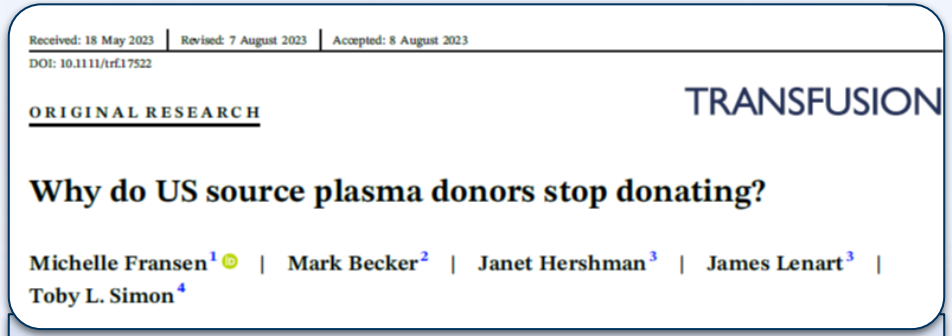
ORIGINAL RESEARCH

TRANSFUSION

Effects of donation frequency on U.S. source plasma donor health

Michelle Fransen[1] | Mark Becker[2] | Janet Hershman[3] | James Lenart[3] | Toby Simon[4] | Kristen McCausland[5] | Alexandra Parfitt[6] | Lisa Weissfeld[6]

Cough, cold, occasional fatigue, and sore throat were the most reported health conditions or symptoms, but there was **no clear difference among sex or frequency** groups.



Received: 18 May 2023 | Revised: 7 August 2023 | Accepted: 8 August 2023
DOI: 10.1111/trf.17522

ORIGINAL RESEARCH

TRANSFUSION

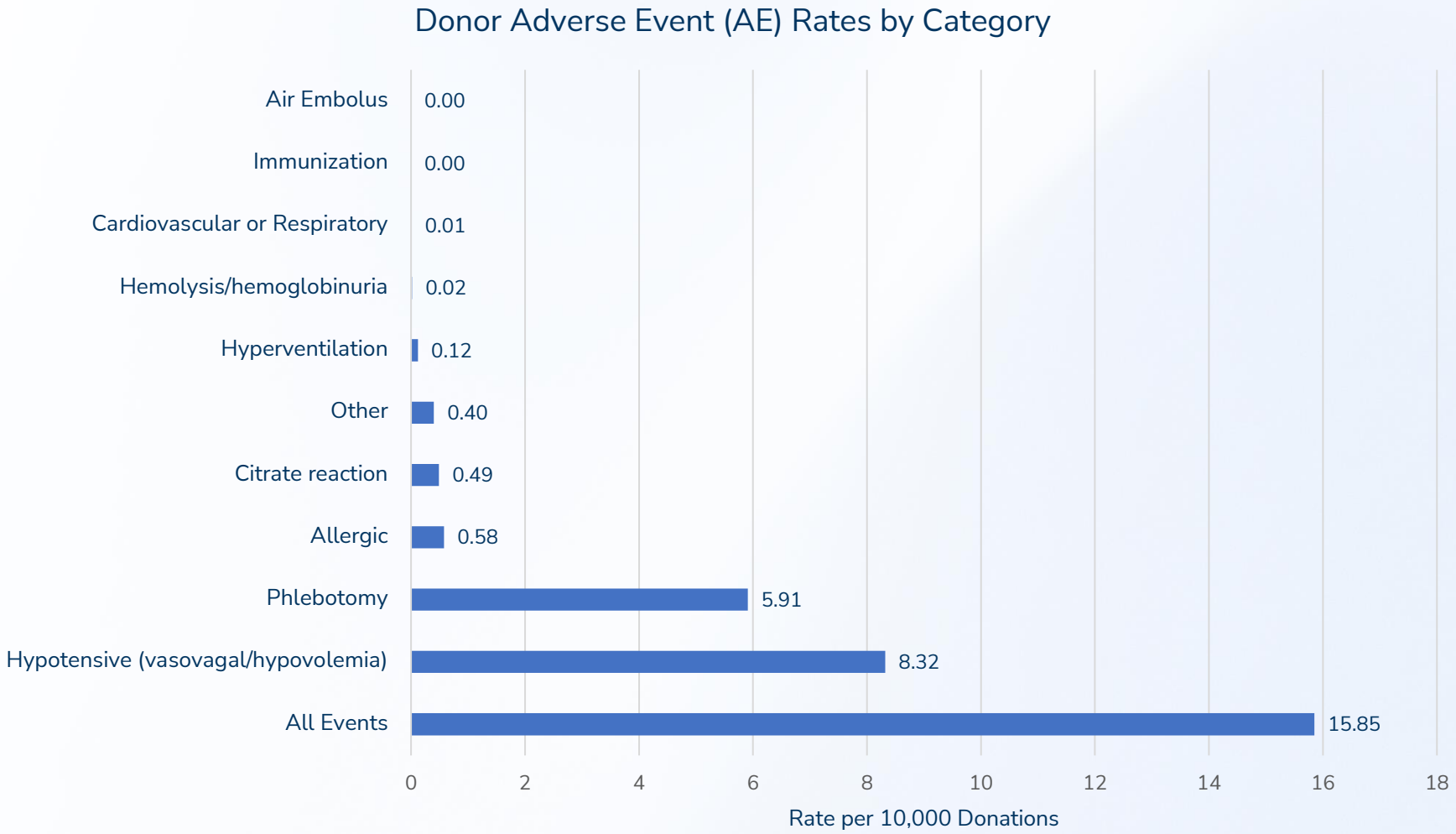
Why do US source plasma donors stop donating?

Michelle Fransen[1] | Mark Becker[2] | Janet Hershman[3] | James Lenart[3] | Toby L. Simon[4]

Donors reported a va**riety of reasons for lapsing from donation;** major reason was **convenience** and were **not directly related** to a **perceived negative impact** on their **health**.

Schreiber GB, Brinser, R, Rosa-Bray M, Yu, ZF et al. Frequent source plasma donors are not at risk of iron depletion: the Ferritin Levels in Plasma Donor (FLIPD) study. Transfusion 2018; 58: 951-9
Schreiber GB, Becker M, Fransen M, Hershman, et al. Plasmavigilance – Adverse events among US Source plasma donors. Transfusion 2021; 61:2941-57
Fransen M, Becker M, Hershman J, Lenart J, Simon T, McCausland K, Parfitt A, Weissfeld L. Effects of donation frequency on U.S. source plasma donor health. Transfusion. 2023 Oct;63(10):1885-1903.
Fransen M, Becker M, Hershman J, Lenart J, Simon TL. Why do US source plasma donors stop donating? Transfusion. 2023 Oct;63(10):1904-1915

Donor Adverse Events are Rare



Female AE Rates

Hypotensive – 16.18
per 10,000 donations

Phlebotomy – 7.09
per 10,000 donations

Male AE Rates

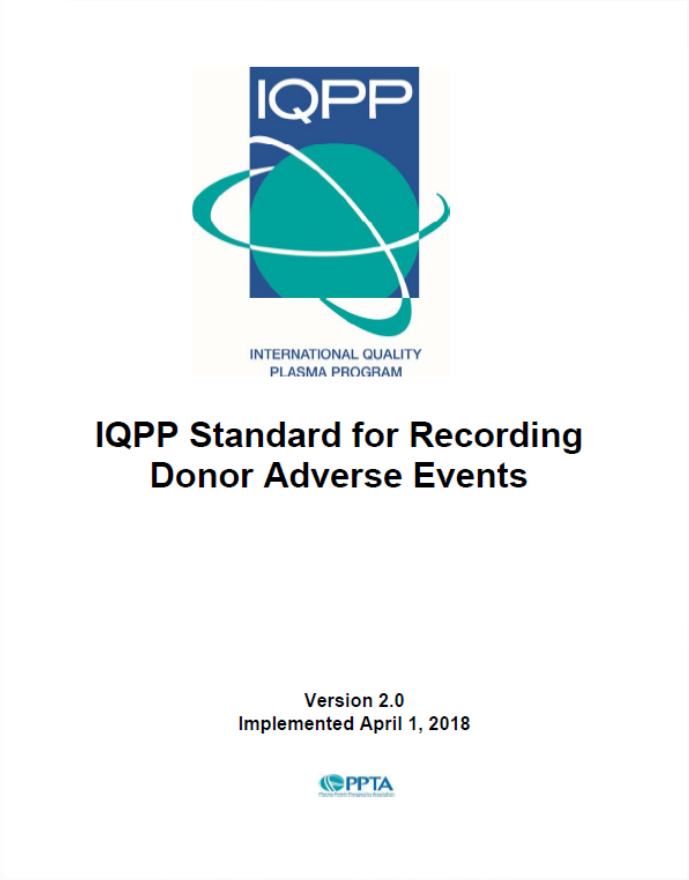
Hypotensive – 3.56
per 10,000 donations

Phlebotomy – 5.20
per 10,000 donations

Only 0.16% of ALL donations resulted in an Adverse Event

Schreiber GB, Becker M, Fransen M, Hershman, et al. Plasmavigilance – Adverse events among US Source plasma donors. Transfusion 2021; 61:2941-57

IQPP Donor Adverse Event Standard



The Standard for Recording Donor Adverse Events provides a common language for the SP industry to classify AEs with easy to use, objective definitions based on simple and common signs and symptoms.

INTERNATIONAL QUALITY PLASMA PROGRAM

DAE Standard

In Progress PPTA Donor Health Studies

Donor Demographics

- Create an updated profile of donor demographics
- Examine the current donor profile using age, sex, weight, BMI, donation frequency, volume donated, etc.

Plasmavigilance

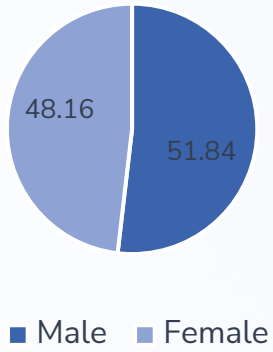
- Analyzing 12 months worth of donation data, approximately 40 million donations
- Evaluate rare adverse events (AEs) and those AEs occurring in smaller donation groups

Long-Term Health Effects (and Short-Term Health Effects)

- Examine whether the frequency of plasmapheresis is associated with declines in a variety of health outcomes over a two-year period
- Build upon cross-sectional design of prior donor health study and lapsed donor study

PPTA Who is the US source plasma donor? (Preliminary 2022 Data)

Figure 1. Donors by Sex (in %)



1.9 million donors; 28 million donations
5 PPTA Member Companies represented

Figure 2. Donations (n and %) by Age Group and Sex

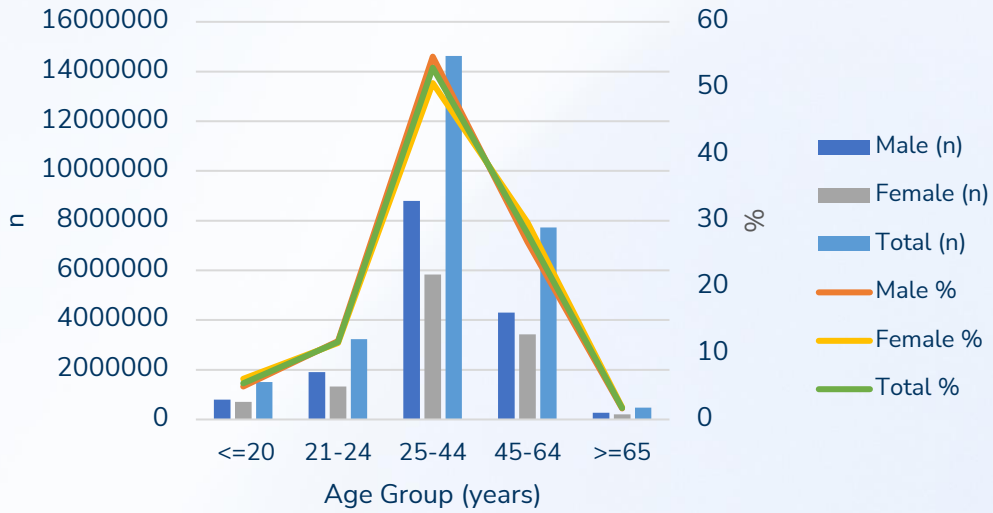


Figure 3. Donor Status (in %)

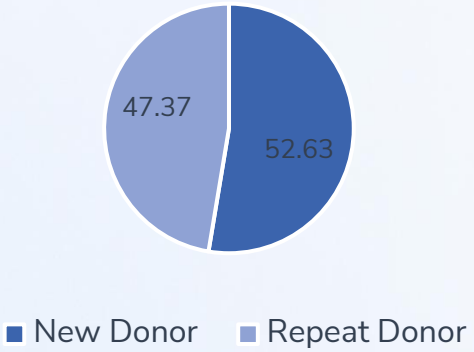


Figure 4. Donation Interval by Days (in n and %)

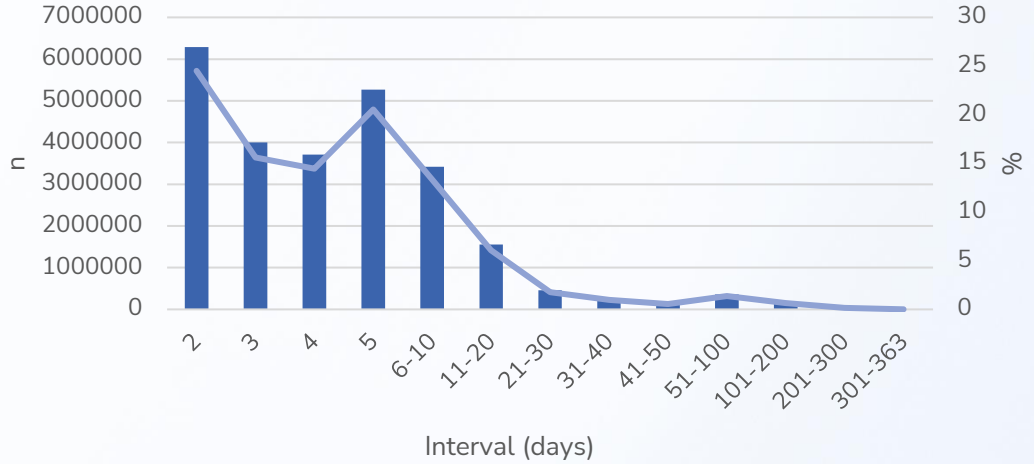
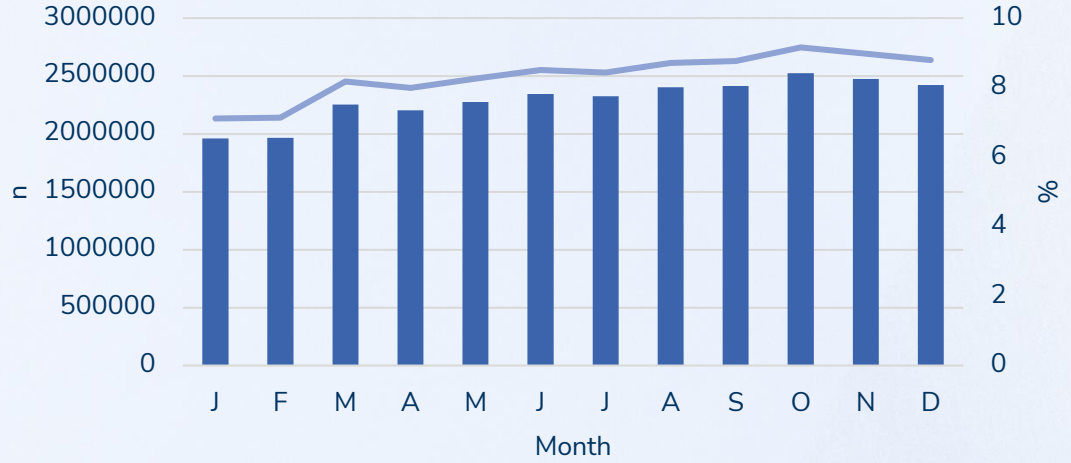


Figure 5. Month of Donation (in n and %)



SP data – 2022 prepublication data – to be presented at 2025 ASFA Annual Meeting, Montreal, Canada, April 2025, and 2025 ISBT Meeting, Milan, Italy, June 2025

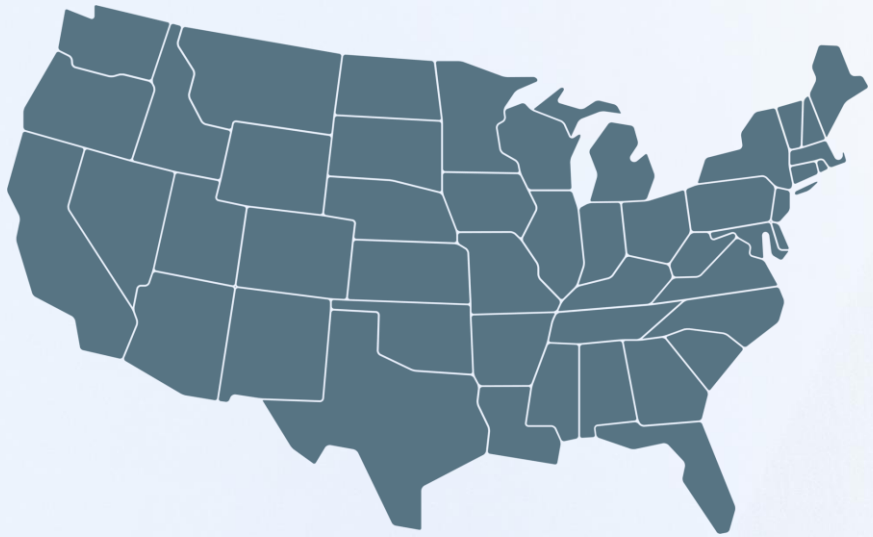
Longitudinal Study Objectives

The primary aim of this study is to assess the associations between plasmapheresis, biochemical markers, and health outcomes at different donor frequency levels:

- Investigate post-donation symptoms and functional impairments which may be associated with plasmapheresis
- Assess short -, medium-, and long-term health impacts, including fatigue, self-rated health, and acute illnesses
- Evaluate changes in biomarkers (e.g., IgG, ferritin, and CRP) as mediators of health outcomes
- Identify predictors of lapses and discontinuation in plasma donations

Longitudinal Study Location Rationale

- Globally, North America donors provide more than 70% of plasma for fractionation
- Approximately 345,420,000* people under a singular regulatory framework with the US FDA, with over 40 million paid US SP donors per year
- Large variation in donation frequencies and volumes, with an upper limit that facilitates this variation
- It is anticipated that these results will:
  - Continue to show there are no major health-related issues with this donor population[1]
  - Demonstrate that plasmapheresis is generally well tolerated[2]
  - Be generalizable to suggest that countries with more restrictive frequencies and volumes could have similar results



*approximate US population in 2024

[1]Purohit M, Berger M, Malhotra R, Simon T. Review and assessment of the donor safety among plasma donors. Transfusion. 2023;63:1230–40.
[2]Hoad VC, Castrén J, Norda R, Pink J. A donor safety evidence literature review of the short- and long- term effects of plasmapheresis. Vox Sang. 2024;119:94–101.

Study Research Questions

- Is the frequency, recency, and volume of plasmapheresis associated with increases in **fatigue**, within 48-72 hours after a donation or over time during monthly/yearly follow-up surveys?

- Is the frequency, recency, and volume of plasmapheresis associated with an increased risk of **acute illness** and subsequent medical care or missed work or school, within 48-72 hours after a donation or over time during monthly/yearly follow-up surveys?

- Is the frequency, recency, and volume of plasmapheresis associated with declines in overall **self-rated health** status over time during monthly/yearly follow-up surveys?

- Is the frequency, recency, and volume of plasmapheresis associated with any observed or potential declines in donor health that subsequently increase the likelihood of **delays or lapses** in plasma donation?

Longitudinal Cohort Study – Key Elements

Phased Study Design: Initial plasma donation visit and 2 year follow up

Stratified sampling design; sex, age, geographic distribution, [mostly] new and [some] repeat donors

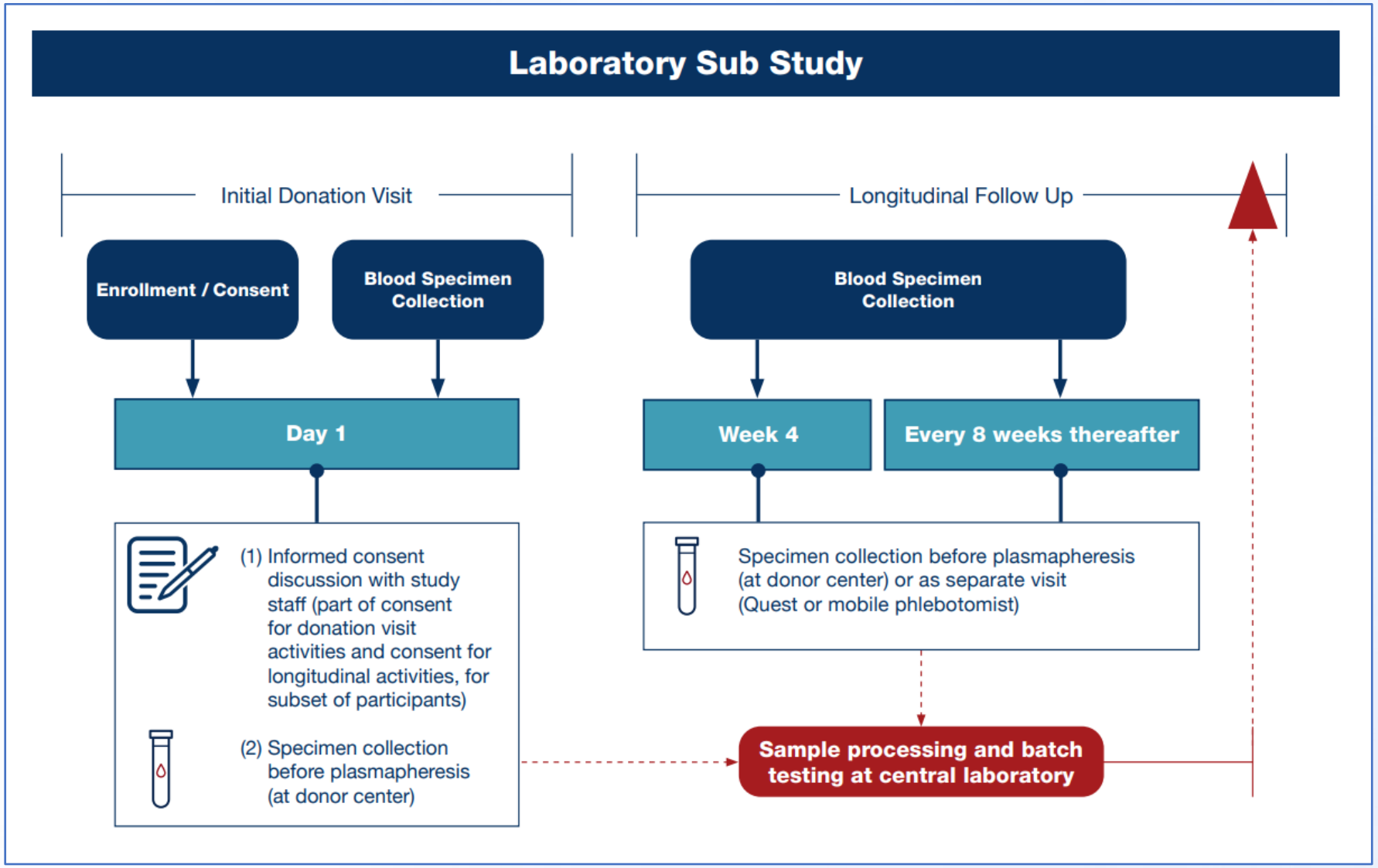
Electronic data from plasma centers' BECS and periodic self-report surveys, assessment of assess short -, medium-, and long-term health impacts, including fatigue, self-rated health, and acute illnesses, laboratory sub study with biochemical and hematological markers

Retention Reminders via customized e-tools, personal connection with study coordinators, and fair remuneration

Mixed-effects and Cox proportional hazards models, advanced statistical approaches using sliding window analysis and clustering. Exploring temporal pattern and heterogeneity in health outcomes

Identify predictors of lapses and discontinuation in donating plasma

Laboratory Sub study



10mL whole blood specimen to test for IgG, Ferritin and CRP

Timeline


SAC protocol review meeting
13 March
Protocol feedback incorporated; revisions made
Early April
Identify pilot study centers
April
Submit IRB package for pilot study
April
End of Phase one (Protocol Development)
30 April
Phase two (Protocol Finalization and Pilot) begins and extends through 31 January 2026
1 May
Conduct site visits and semi-structured interviews at each pilot center
June
Launch pilot study (after IRB approval)
July

Senior Advisory Committee (SAC)


MHRA


AIFA
AGENZIA ITALIANA DEL FARMACO


EUROPEAN
PLASMA
ALLIANCE


IPOPI


BADAN POM
Badan Pengawas Obat dan Makanan


SÚKL


agencia española de
medicamentos y
productos sanitarios


European Commission


FIODS
NEITHER RACE NOR RELIGION OR BORDERS


EPODIN
European Patients Organization for
Dysimmune & Inflammatory Neuropathies


eba
EUROPEAN
BLOOD
ALLIANCE


EFS
ÉTABLISSEMENT FRANÇAIS DU SANG
Du donneur
aux patients


FDA


edqm


CENTRO
NAZIONALE
SANGUE


ORSZÁGOS
VÉRELLÁTÓ
SZOLGÁLAT


ecdc
EUROPEAN CENTRE FOR


Sanquin


Paul-Ehrlich-Institut


ICH
harmonisation for better health


PLASMA PROTEIN
THERAPEUTICS
ASSOCIATION


AGES


PIC/S
PHARMACEUTICAL INSPECTION
CO-OPERATION SCHEME


Finnish Red Cross
Blood Service


World Health
Organization


EUROPEAN MEDICINES AGENCY
SCIENCE MEDICINES HEALTH


Australian Government
Department of Health
Therapeutic Goods Administration


IPFA
international plasma and
fractionation association


NHS
Blood and Transplant


NATIONAL MEDICAL PRODUCTS ADMINISTRATION
国家药品监督管理局


swissmedic


Deutsches
Rotes
Kreuz

Any Questions?

Michelle Fransen, MPH, MPS:
mfransen@pptaglobal.org
Director, Study Management

James Knowles, PhD:
jknowles@pptaglobal.com
Senior Director, Global Regulatory Policy

PLASMA PROTEIN
THERAPEUTICS
ASSOCIATION

Rationale for a Large Randomised Controlled Trial on the Health Effects of Plasma Donation Frequency

Christian Erikstrup, Katja van den Hurk, Peter O'Leary, Pierre Tiberghien

EDQM STAKEHOLDER EVENT - PLASMA SUPPLY CONTINUITY, 26-03-2025

AARHUS UNIVERSITY HOSPITAL

AARHUS UNIVERSITY

EUROPEAN BLOOD ALLIANCE

Workpackage 5: Plasma donor protection best practices

ABOUT US

What is SUPPLY?

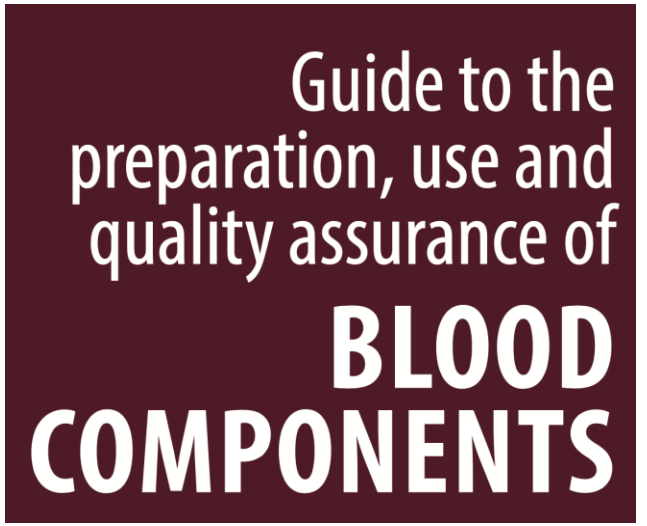
SUPPLY is a project co-funded by the European Union's EU4Health Programme that aims to increase and strengthen the resilience of plasma collection in the EU to enable a stable and adequate supply of Plasma-derived medicinal products (PDMPs). The entire plasma chain is being assessed – from plasma donor recruitment, retention, and health, through plasma collection and processing, to demand and use of PDMPs.

SUPPLY

Plasma donation frequency according to the EDQM "Blood Guide"

2.4.2.6. The maximum number of plasma donations allowed is 33 per year *(Evidence level C)*.

Donation frequency in SUPPLY survey:
Annual donation limits vary from 12 donations per year (Luxembourg) to 26 (the Netherlands) to 33 (e.g. Denmark) to 60 (Germany)



Why is there a lack of evidence?
Why should we be critical of evidence from observational studies?

Healthy Donor Effect

A selection bias where donors tend to be healthier than the general population since they must meet strict eligibility criteria

It may mask deleterious effects of donation

340,000 respondents to national health survey

14% blood donors

Received: 4 February 2022 | Revised: 29 September 2022 | Accepted: 29 September 2022

DOI: 10.1111/trf.17190

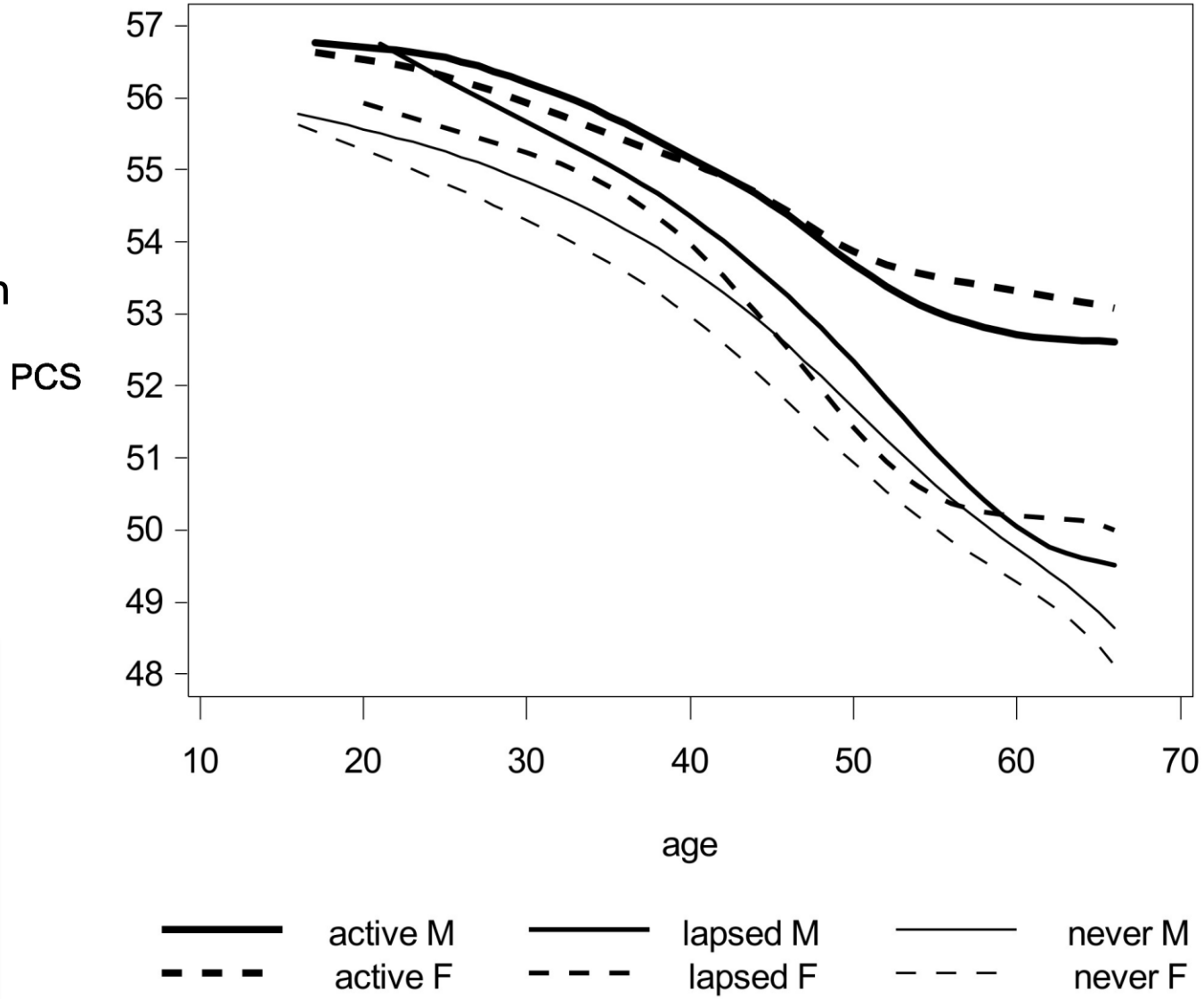
BLOOD DONORS AND BLOOD COLLECTION

TRANSFUSION

The healthy donor effect and survey participation, becoming a donor and donor career

Thorsten Brodersen[1,2] | Klaus Rostgaard[3,4] | Cathrine Juel Lau[5] | Knud Juel[6] | Christian Erikstrup[7] | Kasper Rene Nielsen[8] | Sisse Rye Ostrowski[9,10] | Kjell Titlestad[11] | Susanne G. Sækmose[1] | Ole B. V. Pedersen[1] | Henrik Hjalgrim[3,4,10,12]

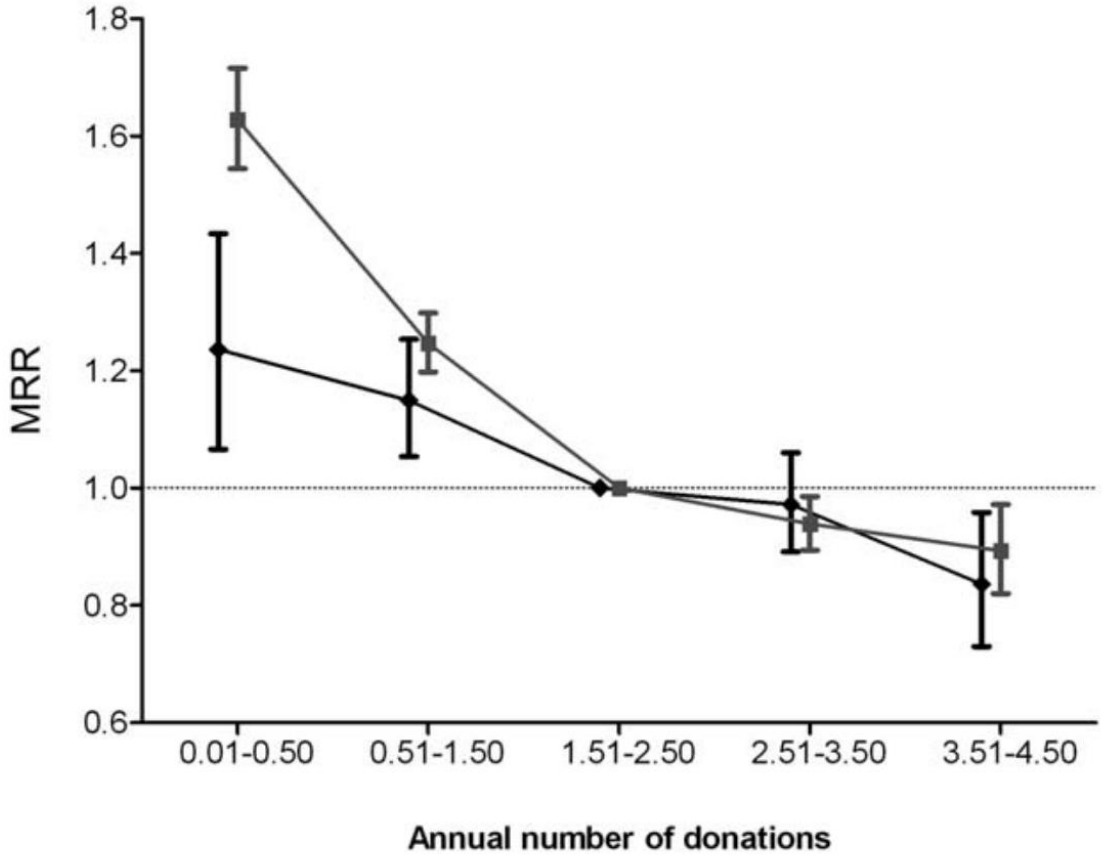
Self-reported physical health



The Healthy Donor Effect

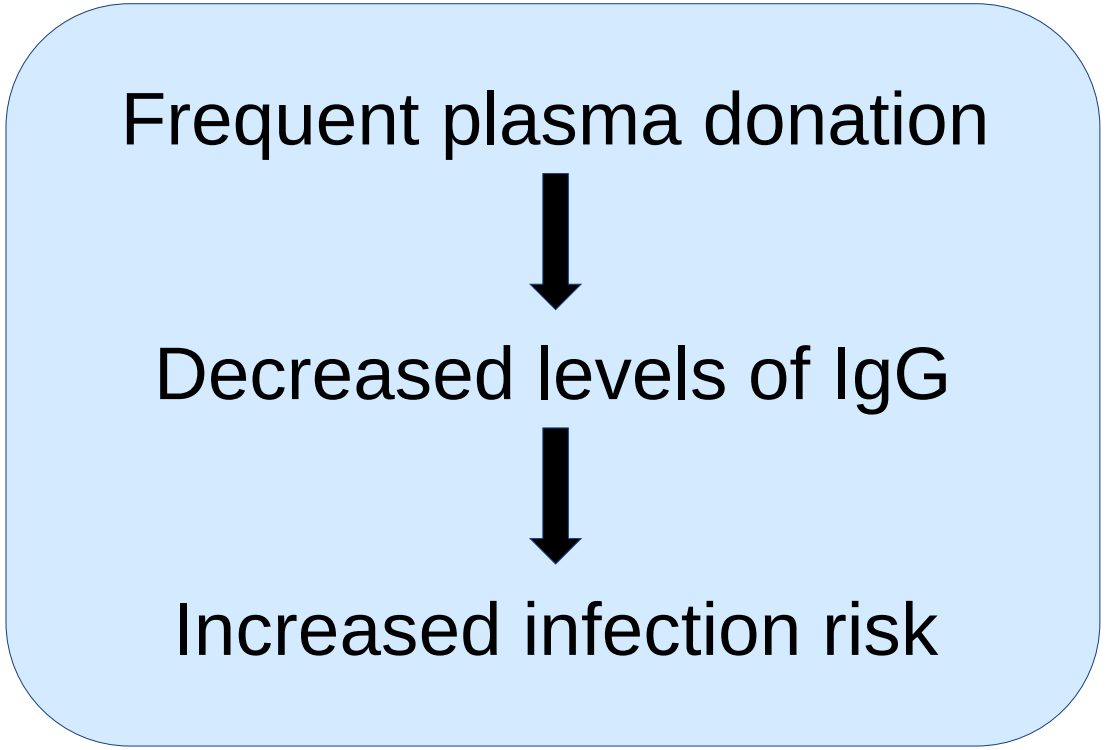
Mortality is 30% lower among whole blood donors compared to the background population

Internal Healthy Donor Effect:
Lower mortality with more donations



Ullum et al, Transfusion 2015

Observational study:
Do plasma donations cause higher infection risk?

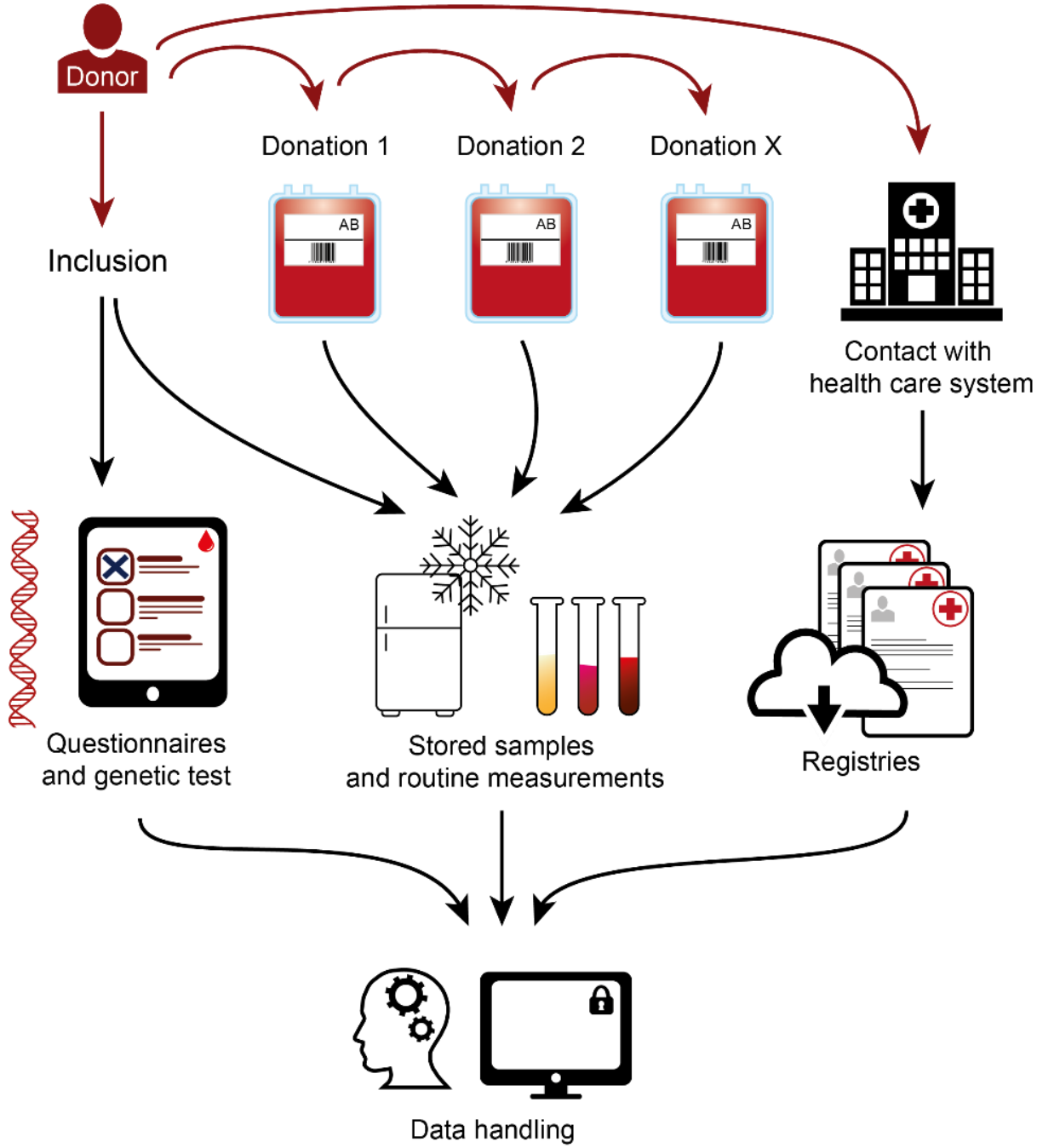


Danish Blood Donor Study

All donors and donations registered

Complete registry coverage

170,000 consented participants



STUDY DESIGN

Cohort study with time-varying exposures

28,080 first-time unpaid plasma donors

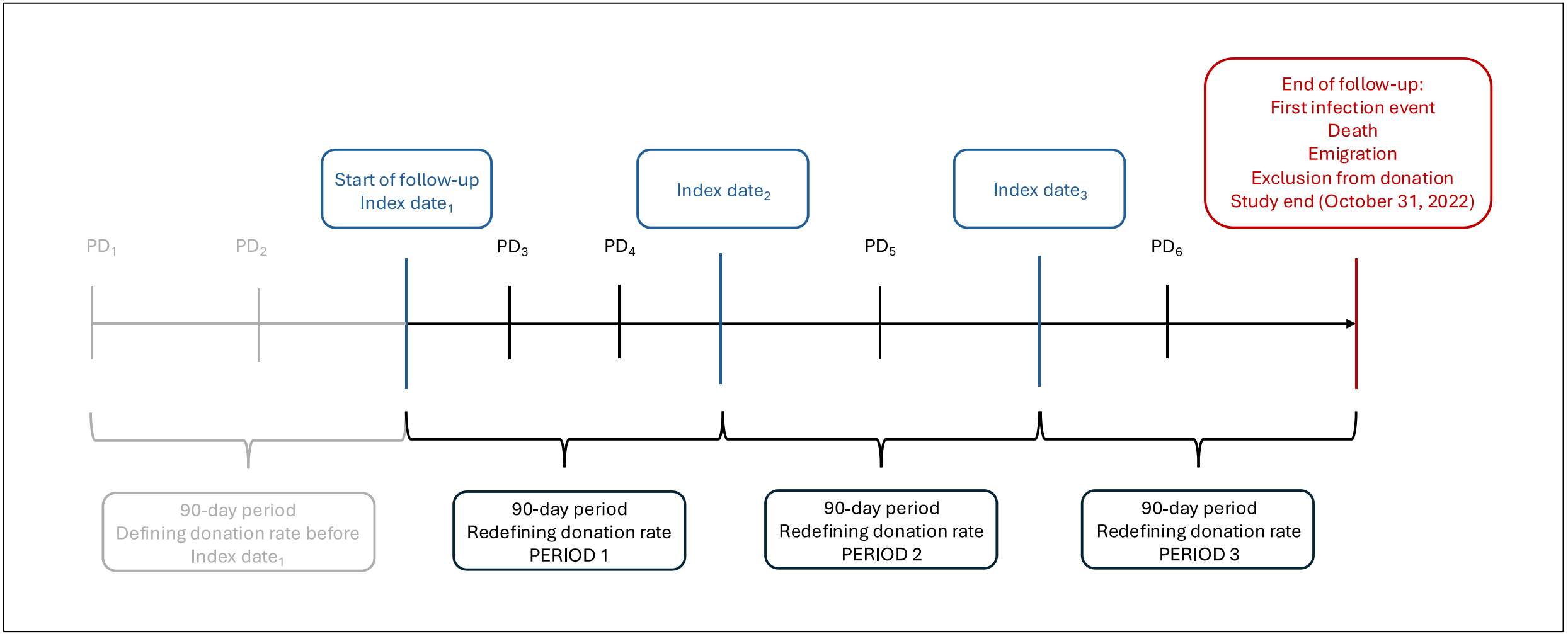
EXPOSURE

Plasma donations over time

OUTCOME

Diagnosis codes of infections
Antibiotic prescriptions

8,973 events



Conclusion

3 different study designs

Several confounder models

Strong internal healthy donor effect

Problem: the Healthy Donor Effect may mask deleterious effects of donations

SIPLA

3,783 donors switched from moderate to an intensive plasmapheresis regimen: up to 60 donations per year for 3 years

No control group

16% of donors with low IgG, total serum protein, or Hb levels

Conclusion: intensive donation is safe when donors are monitored

”The incidence in severe cardiovascular diseases was lower in donors than in the general population”.

Vox Sanguinis (2006) **91**, 162–173

DOI: 10.1111/j.1423-0410.2006.00794.x

ORIGINAL PAPER

A prospective multicentre study on the safety of long-term intensive plasmapheresis in donors (SIPLA)

T. Schulzki,[1] K. Seidel,[2] H. Storch,[3] H. Karges,[2] S. Kiessig,[3] S. Schneider,[4] U. Taborski,[5] K. Wolter,[3] D. Steppat,[2] E. Behm,[3] M. Zeisner[3] & P. Hellstern[6] for the SIPLA study group

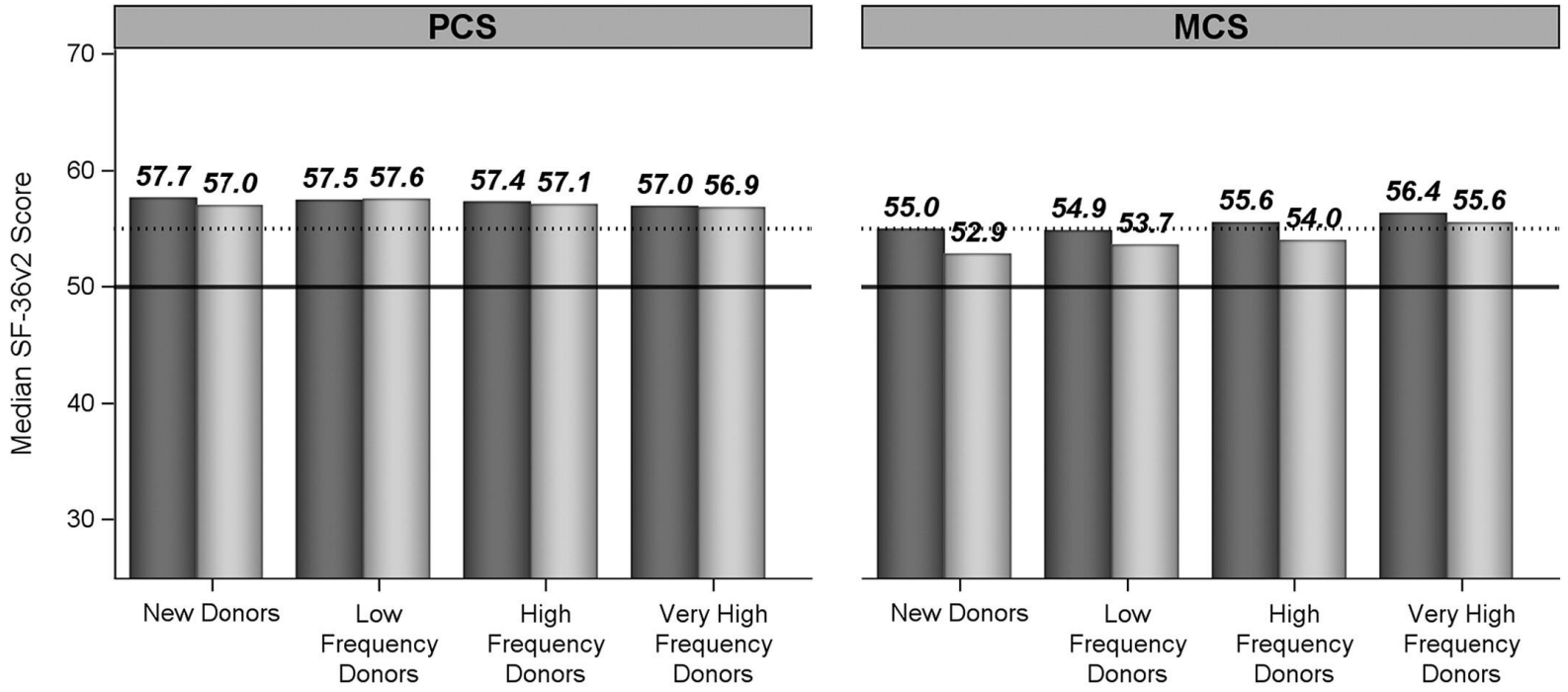
[1]*RBSD SRK Graubünden, Chur, Switzerland*
[2]*ZLB Plasma Services, Marburg, Germany*
[3]*Baxter Deutschland, Heidelberg, Germany*
[4]*Institut für Herzinfarktforschung, Ludwigshafen, Germany*
[5]*Deutsche Gesellschaft für Humanplasma, Ludwigshafen, Germany*
[6]*Institute of Hemostaseology and Transfusion Medicine, Ludwigshafen, Germany*

PPTA study

Fransen M, et al.

Effects of donation frequency on U.S. source plasma donor health

Transfusion 2023



from the article (open access, can be freely copied for non-commercial purposes)

Received: 6 November 2023 | Accepted: 6 November 2023

DOI: 10.1111/trf.17601

COMMENTARY

TRANSFUSION

Very-high frequency plasmapheresis and donor health –absence of evidence is not equal to evidence of absence

Hans Van Remoortel[1,2] | Katja van den Hurk[3,4] | Veerle Compernolle[5,6] | Peter O'Leary[7] | Pierre Tiberghien[7,8,9] | Christian Erikstrup[10,11]

Very-low quality evidence that should not be used to substantiate claims regarding the safety of repeated plasmapheresis

SUPPLY WORKPACKAGE 5
Recommendations on protection of plasma donors

Adherence to the Blood Guide (21st edition 2023) until further evidence is acquired.

However: **a maximum of two plasma donations per month**, pending sufficient evidence confirming the safety of higher donation frequencies. This recommendation is based on expert opinion and reflects the view of a majority of WP5 members.*

* Alternative recommendation, supported by two WP5 members: a maximum of two plasma donations per month, unless a donor health and IgG management system is established by the respective blood establishment.

Urgent need for initiation of large prospective studies to examine the health consequences of plasma donation at varying frequencies.

Implementation of a register for standardized haemovigilance data on a mandatory basis.

WP5 SUPPLY members

Hans van Remoortel
Tine D'aes
Natalie Schroyens
Emmy De Buck
Veerle Compernolle

Belgian Red Cross

Evidence-based by CEBaP

Torsten Tonn
Thomas Burkhardt

German Red Cross

Susan Mikkelsen

AARHUS UNIVERSITY HOSPITAL

Katja van den Hurk
Marloes Spekman

Sanquin

Elodie Pouchol
Pascale Richard

EFS
ÉTABLISSEMENT FRANÇAIS DU SANG

Pierre Tiberghien
Peter O'Leary
Petar Kos
Gaia Mori

eba
European Blood Alliance

Plasma donor safety through the Assessment of Short- and long-term effects of Multiple frequencies Across diverse populations (PLASMA)

Katja van den Hurk, Christian Erikstrup, Peter O'Leary, Pierre Tiberghien

EDQM STAKEHOLDER EVENT - PLASMA SUPPLY CONTINUITY, 26-03-2025

For Life.

Two Roma boys walk to the plasma donation centre, a regular source of income in Ózd, Hungary, where job opportunities are scarce. All photographs by Béla Váradi

The Guardian picture essay

Hungary's most deprived people donate blood plasma to survive - photo essay

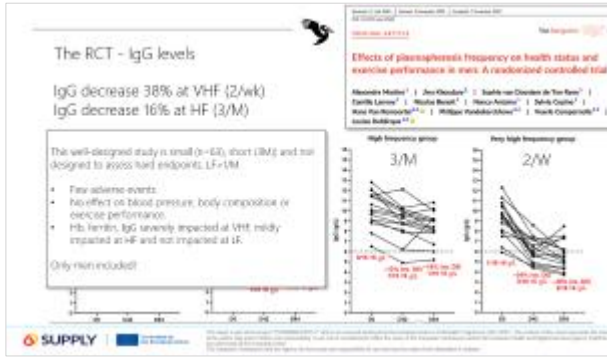
The Guardian, 25 Nov 2024

"It is true that plasma saves lives – but what happens when the lifesaver's health is sacrificed in the process?"

EU co-funded SUPPLY project: Evaluation of evidence – systematic review

Impact of plasmapheresis frequency on donor health / safety?
Studies finally included:

- 4 observational studies
- 1 RCT and 1 non-randomised trial
- 1 ongoing RCT (Haugen et al., Norway)



Original Articles

Balancing Donor Health and Plasma Collection: A Systematic Review of the Impact of Plasmapheresis Frequency

Tine D'aes[a,b], Katja van den Hurk[c,d], Natalie Schroyens[a,b], Susan Mikkelsen[e], Pieter Severijns[a], Emmy De Buck[a,b], Peter O'Leary[f], Pierre Tiberghien[g,h], Veerle Compernolle[i,j], Christian Erikstrup[e,k], Hans Van Remoortel[a,b,*]

SUPPLY | Co-funded by the European Union

This report is part of the project "101056988/SUPPLY" which has received funding from the European Union's EU4Health Programme (2021-2027). The content of this report represents the views of the author only and is his/her sole responsibility; it can not be considered to reflect the views of the European Commission and/or the European Health and Digital Executive Agency (HaDEA) or any other body of the European Union.
The European Commission and the Agency do not accept any responsibility for use that may be made of the information it contains.

The RCT - IgG levels

IgG decrease 38% at VHF (2/wk)
IgG decrease 16% at HF (3/M)

This well-designed study is small (n=63), short (3M)) and not designed to assess hard endpoints. LF=1/M.

- Few adverse events
- No effect on blood pressure, body composition or exercise performance.
- Hb, ferritin, IgG severely impacted at VHF, mildly impacted at HF and not impacted at LF.

Only men included!

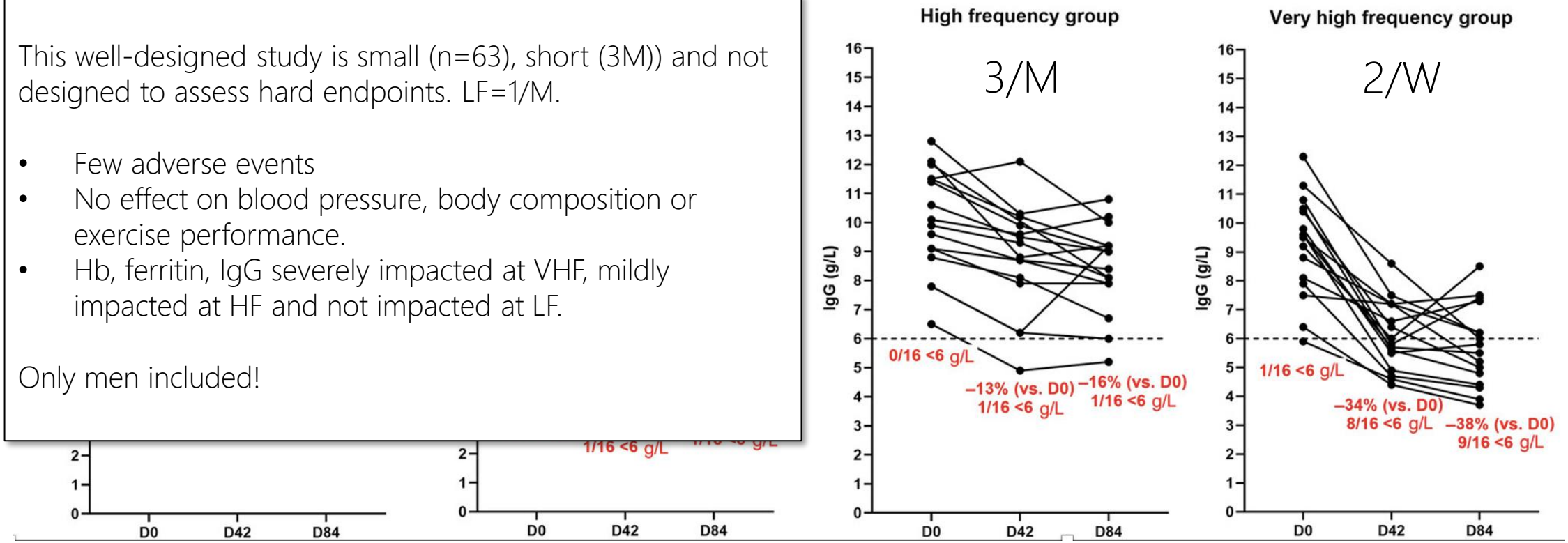
Received: 11 July 2023 | Revised: 3 November 2023 | Accepted: 7 November 2023
DOI: 10.1111/vox.13569

ORIGINAL ARTICLE

Vox Sanguinis ISBT International Society of Blood Transfusion

Effects of plasmapheresis frequency on health status and exercise performance in men: A randomized controlled trial

Alexandre Mortier[1] | Jina Khoudary[2] | Sophie van Dooslaer de Ten Ryen[1] | Camille Lannoy[1] | Nicolas Benoit[1] | Nancy Antoine[1] | Sylvie Copine[1] | Hans Van Remoortel[3,4] | Philippe Vandekerckhove[2,4] | Veerle Compernolle[2,5] | Louise Deldicque[1,6]



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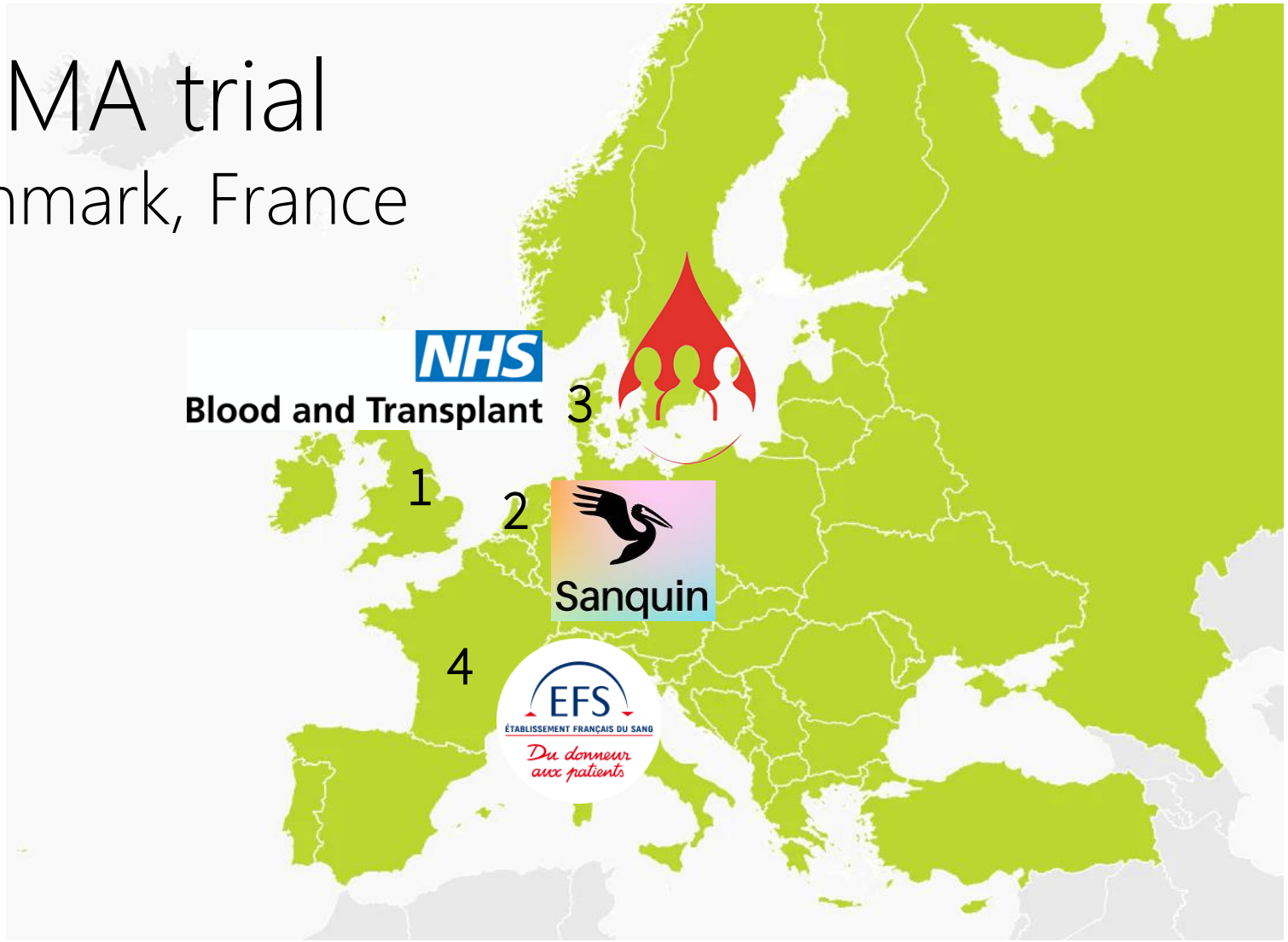
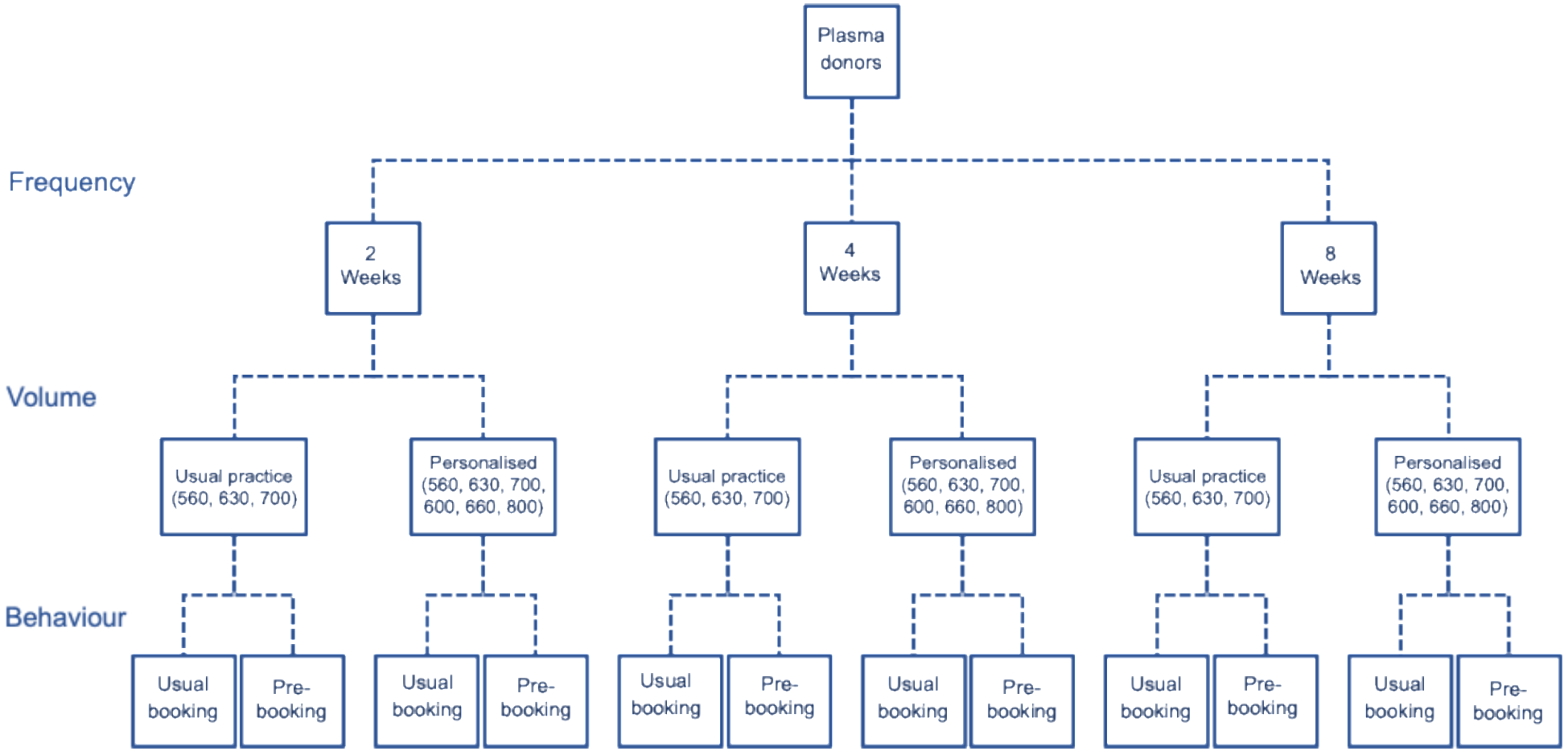
Multinational PLASMA trial

U.K., the Netherlands, Denmark, France

1. U.K. (NHSBT): SHAPE trial starting 2025
2. The Netherlands (Sanquin): pilot starting 2025
3. Denmark: plans to start a.s.a.p.
4. France (EFS): plans to start a.s.a.p.



SHAPE Trial – NHSBT – 3*2*2 factorial design



SHAPE plasma

In partnership with

UNIVERSITY OF CAMBRIDGE · NHS Blood and Transplant · University of Nottingham

Main trial endpoints

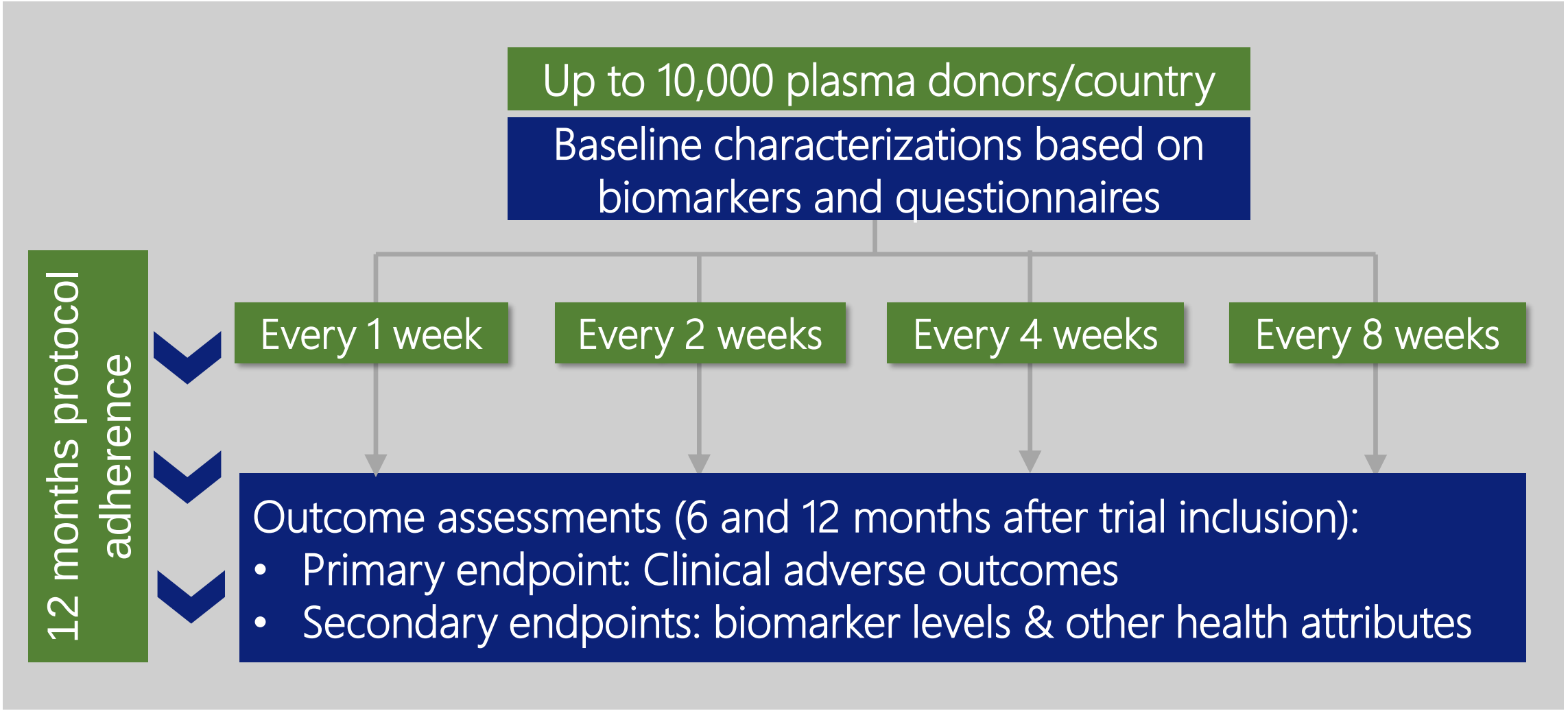
	Endpoint
Primary	Plasma volume collected
Secondary	Donors' well-being
	Clinical adverse outcomes
	Changes in total protein and immunoglobulin G
	Donor's retention

SHAPE plasma

In partnership with

UNIVERSITY OF CAMBRIDGE NHS Blood and Transplant University of Nottingham

PLASMA trial: varying plasma donation frequencies



Study population

Inclusion criteria:

- New donors: never donated whole blood or plasma
- Repeat donors: donated plasma >3 months ago

Exclusion criteria:

- Donated whole blood <12 months ago

N=40,000:

- Powered for respiratory tract infections
- Enables subgroup analyses on other outcomes

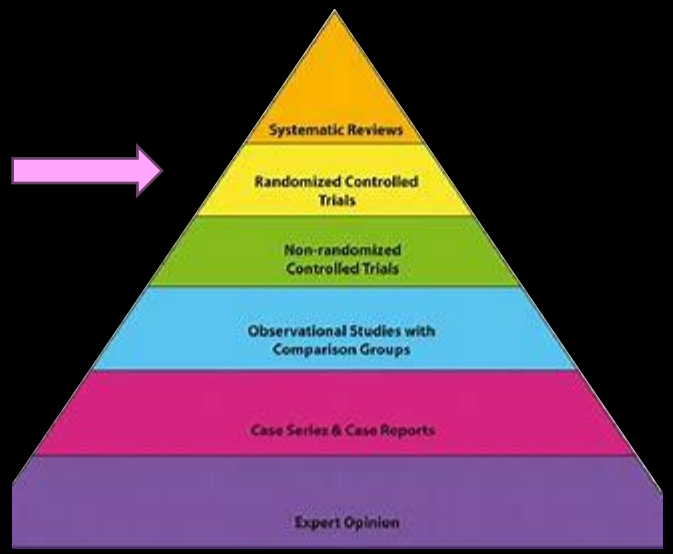
Outcomes & main determinants

Baseline, 6M and 12M measurements

- **Primary** outcome: **Clinical adverse outcomes**: incident (infectious) disease, vasovagal reactions, citrate toxicity, nerve/tendon injury, major cardiovascular events
- **Secondary**: Attendance, Biomarker levels (IgG, TP, Albumin, FBC, Ferritin), Fatigue, Physical & Mental health, Bruising or Scarring, Volume collected
- **Baseline characterizations**: Age, Sex, Genetics, Lifestyle behaviours, Menopausal status & HMB, Medication use, Medical & Donation history, Physical & Mental health, Body size/blood volume, Baseline status of all outcomes

Anticipated implications

High-level, unbiased evidence on health effects of repeated plasma donations for personalized donation strategies



ECDHM

6th European Conference on Donor Health and Management

SUSTAINABILITY IN DONATIONS

Wijk aan Zee
The Netherlands
10-12 september 2025
www.ECDHM.org