



Iron Management in Irish Blood Donors

IBTS Research Day 2023



Donor Iron Management In Ireland

- Haemoglobin Point-of-care finger prick test
 - Female 12.5 g/dL
 - Male 13.5 g/dL
- Test measures the amount of haemoglobin in your blood.
- DEFER if donor is on medication to treat or prevent anaemia, i.e. iron tablets or other treatment
- DEFER if donor is diagnosed with anaemia
- ACCEPT if donor is taking iron supplements over the counter and is not being treated for anaemia
- No routine ferritin testing at IBTS



Donation Iron loss and Iron Deficiency

Often no detectable difference in haemoglobin measurements pre- and post- donation.

It can take at least 180 days for whole blood ferritin levels to restore to pre-donation values

As many as 25% of women and 1.6% of men have ferritin levels ≤ 30 ng/mL at their first blood centre visit.

Iron Deficiency is detected more frequently in women (39.5%) than in men (18.0%).

Prinsze *et al.*, 2021; Fillet *et al* 2021; Spekman *et al* 2021
Schotten *et al.*, 2016; Vinkenoog *et al* 2020;
Gestsdottir *et al* 2022; Saldeen *et al* 2022



Donation Iron loss and Iron Deficiency

Donors with normal haemoglobin levels may already be iron deficient without anaemia

Donation causes an initial reduction in haemoglobin which is subsequently replenished by stored iron (ferritin)

Ferritin levels decline and reach their lowest point about 29 days post-donation.

If your blood ferritin level is lower than normal, it indicates your body's iron stores are low and you have iron deficiency

Prinsze *et al.*, 2021; Fillet *et al* 2021; Spekman *et al* 2021
Schotten *et al.*, 2016; Vinkenoog *et al* 2020;
Gestsdottir *et al* 2022; Saldeen *et al* 2022

Donation Iron loss and Iron Deficiency

Measuring the donor ferritin level may be a more accurate measure of blood iron stores, thereby improving the capacity to diagnose iron insufficiency amongst donors.

Ferritin based donation policies have been implemented in European countries and there is a lot on-going research & monitoring into how effective they are

Evaluation of ferritin levels in Irish donors at donation may inform our blood donor iron management policies and practices.

There is currently no consensus on the best donor iron management policy.

Prinsze *et al.*, 2021; Fillet *et al* 2021; Spekman *et al* 2021
Schotten *et al.*, 2016; Vinkenoog *et al* 2020;
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Aim & Objectives

Provide baseline data on ferritin iron stores in Irish whole blood donors

Determine the demographic and haematological factors impacting this.

1. Measure the ferritin level in residual blood donor plasma samples
2. Determine the % of donors which may have been impacted by the inclusion of ferritin testing
3. Determine if ferritin is correlated or associated with donation variables.
4. Provide recommendations for future donor iron assessment policy in Ireland based on the study outcomes

Methods & Analysis

Anonymised donor
residual plasma
(n = 1882)

Variables

- Ferritin (ng/mL)
- Haemoglobin (g/dL)
- Donation frequency
- Clinical details
- Gender
- Blood group
- Age

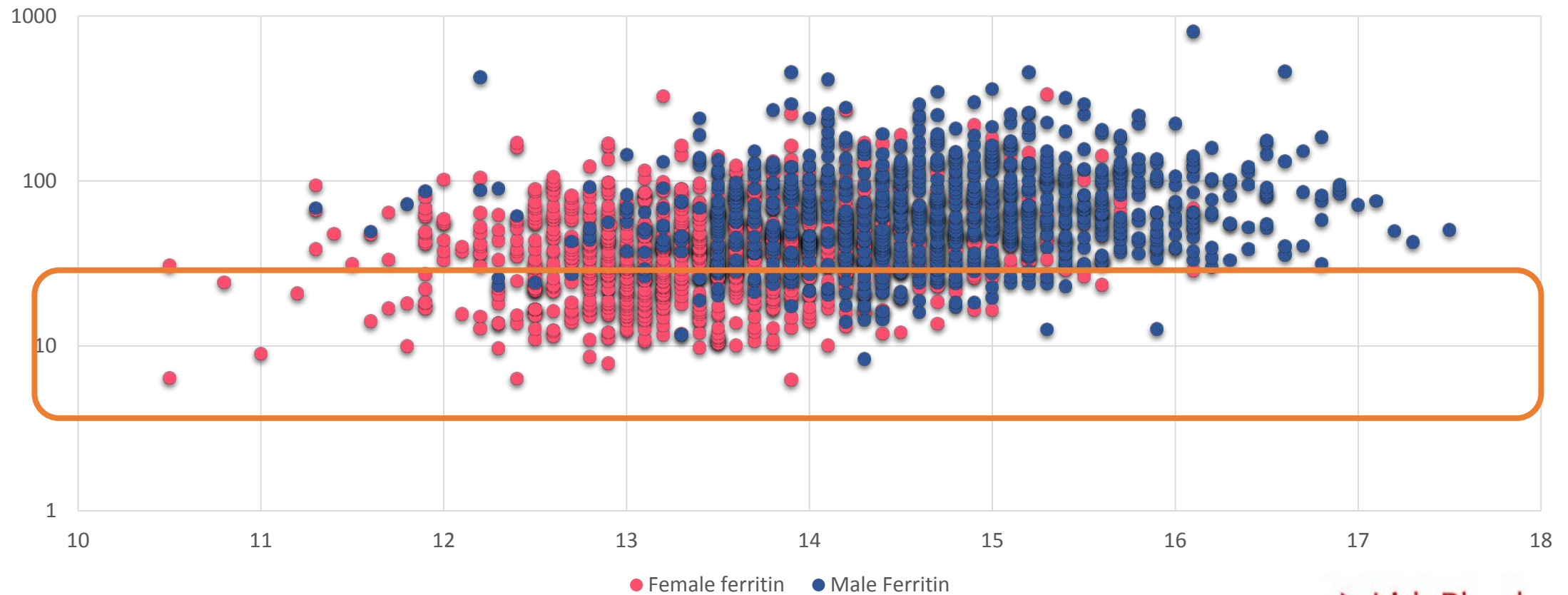
Abbott Architect
Quantitative Ferritin
testing



Ferritin and Haemoglobin Levels in Irish blood donors

	Female Hb	Female Ferritin	Male Hb	Male Ferritin
median	13.50	38.57	14.70	64.00
mean	13.54	46.85	14.72	80.64
High	16.10	335.79	17.50	802.89
Low	10.50	6.24	11.30	8.31

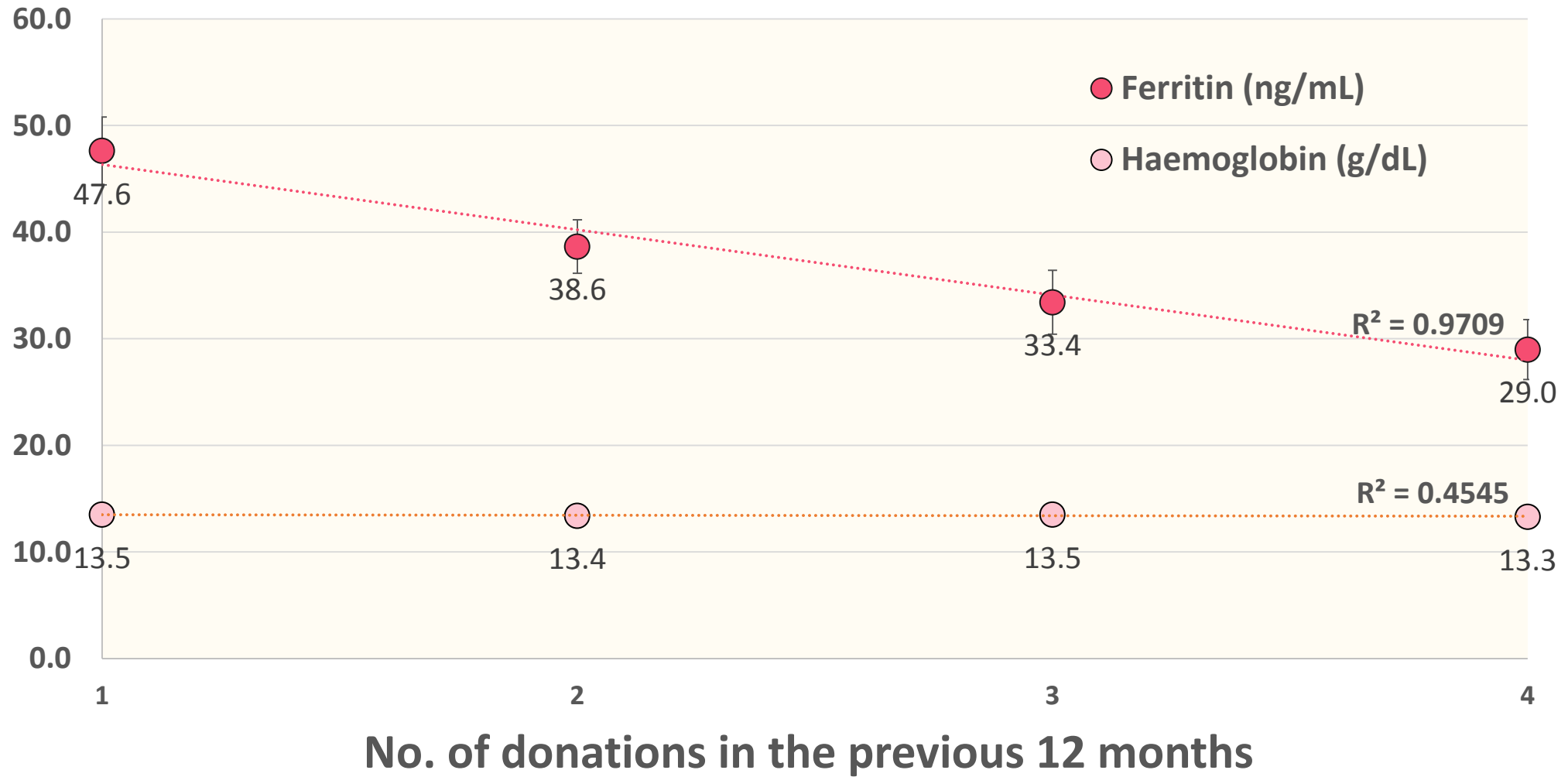
Ferritin (y-axis) and Haemoglobin (x-axis) levels in Men and Women



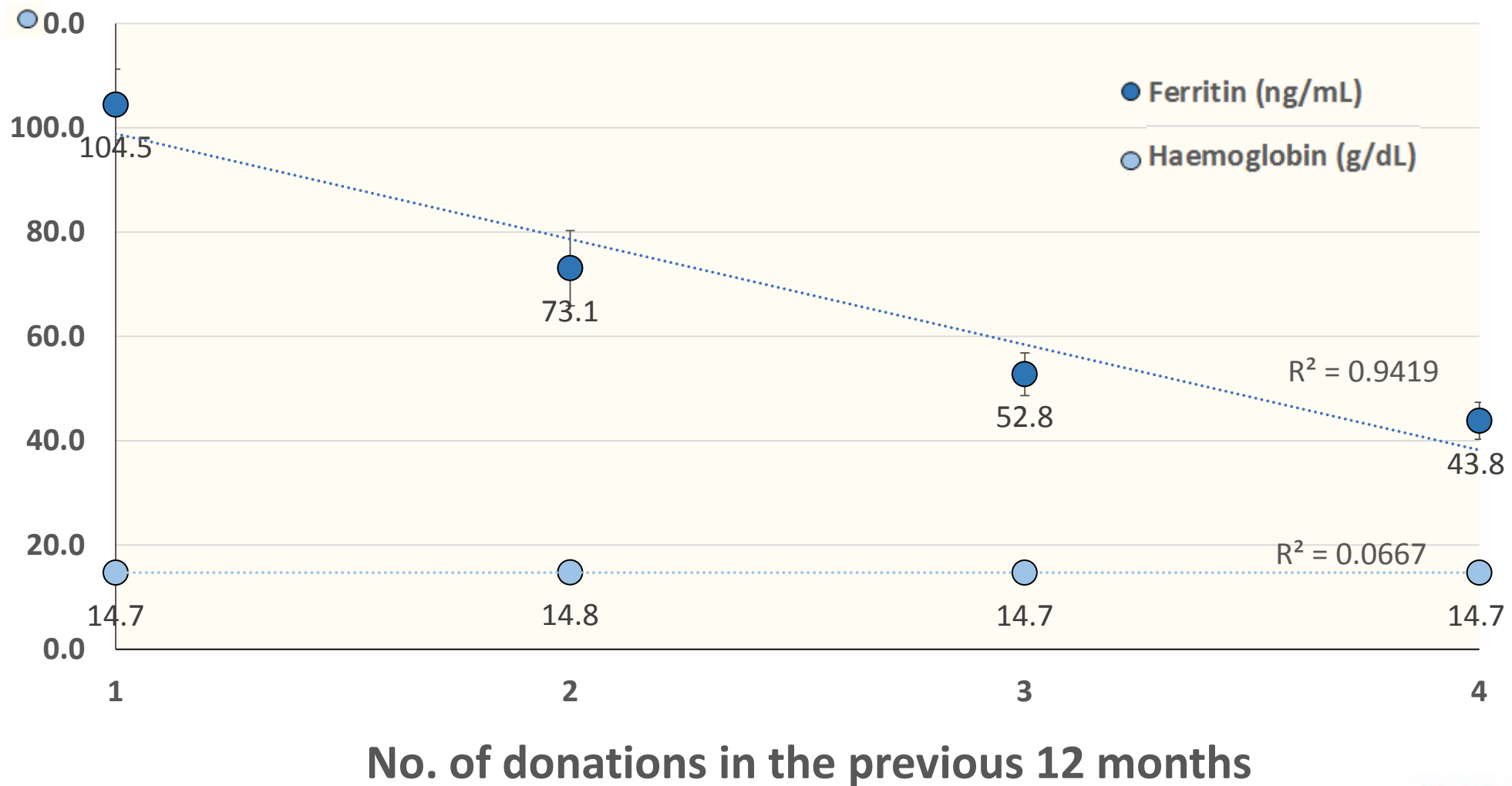
Donors which may have been impacted by the inclusion of ferritin testing

Ferritin	<15 ng/mL		15 to <30 ng/mL		>30 ng/mL	
	%	n	%	n	%	n
Female	7.9%	75	27.5%	261	64.6%	612
Male	0.8%	7	10.2%	88	89.0%	770

Iron Stores in Irish female repeat blood donors



Iron Stores in Irish male repeat blood donors





Conclusions

35% female and 11% of male whole blood donors had ferritin levels below 30 ng/mL

Iron deficiency disproportionately impacted female donors.

7.9% of women, compared <15 ng/mL.

Repeated donation significantly reduced ferritin levels

Reduction in iron levels was not detected by pre-donation Hb screening.

Women with > 3 donations per year were more likely to have ferritin levels indicative of ID

Recommendations



Repeated donation depleted iron stores below the recommended ferritin level and longer donation intervals, especially for female donors, may be an effective measure to mitigate donor iron deficiency.

Iron deficiency is not detectable by pre-donation haemoglobin. These levels of which remain stable regardless of number donations in the previous 12 months.

A combination of Hb and ferritin testing of donors may provide a more accurate measure of blood iron stores, thereby improving our capacity to diagnose iron insufficiency amongst donors.

Ferritin testing should be included in future blood donor iron management policies and practices in Ireland.

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<https://healthprofessionals.giveblood.ie/>

