



Heavy Menstrual Bleeding

Validation of a new symptom checker for preliminary heavy menstrual bleeding assessments

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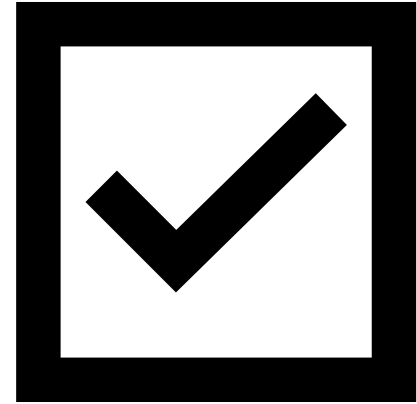
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Disclosures

I have no actual or potential conflict of interest in relation to this congress or this presentation





Iron deficiency anaemia (IDA) and menstrual bleeding

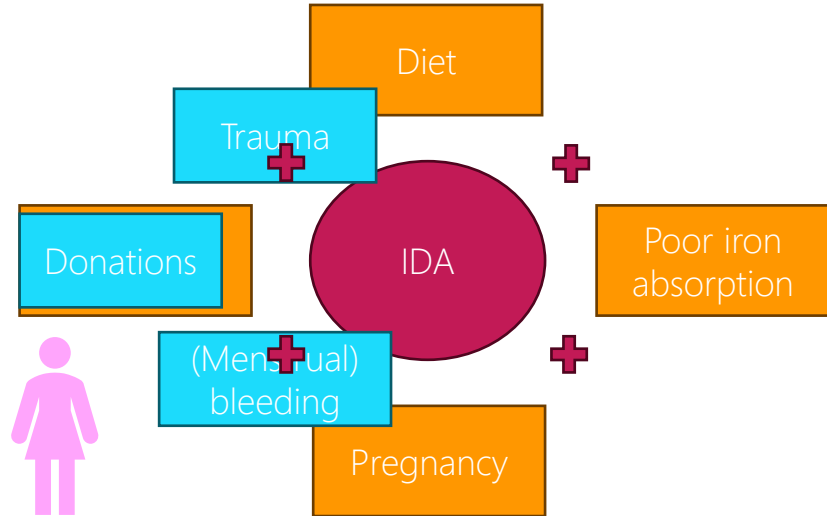
Iron deficiency anaemia

- 16.5% of women aged 15-49 in the Netherlands
- 30.7% worldwide (WHO, 2023)

Heavy Menstrual Bleeding (HMB)

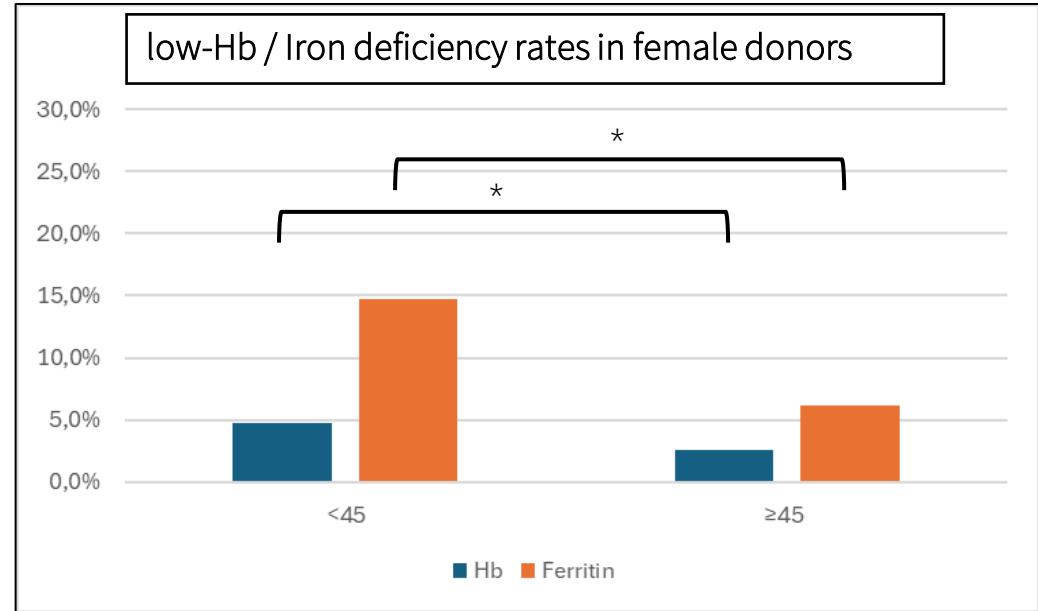
- Prevalence estimated between 10 – 40% (Ekroos, 2024)
- ≥ 80 ml blood per cycle
- Change menstruation products ≤ 2 hours
- Menstruation ≥ 7 days

- Menstruation currently not taken into account at Sanquin





Iron deficiency anaemia and menstrual bleeding





Iron deficiency anaemia and menstrual bleeding

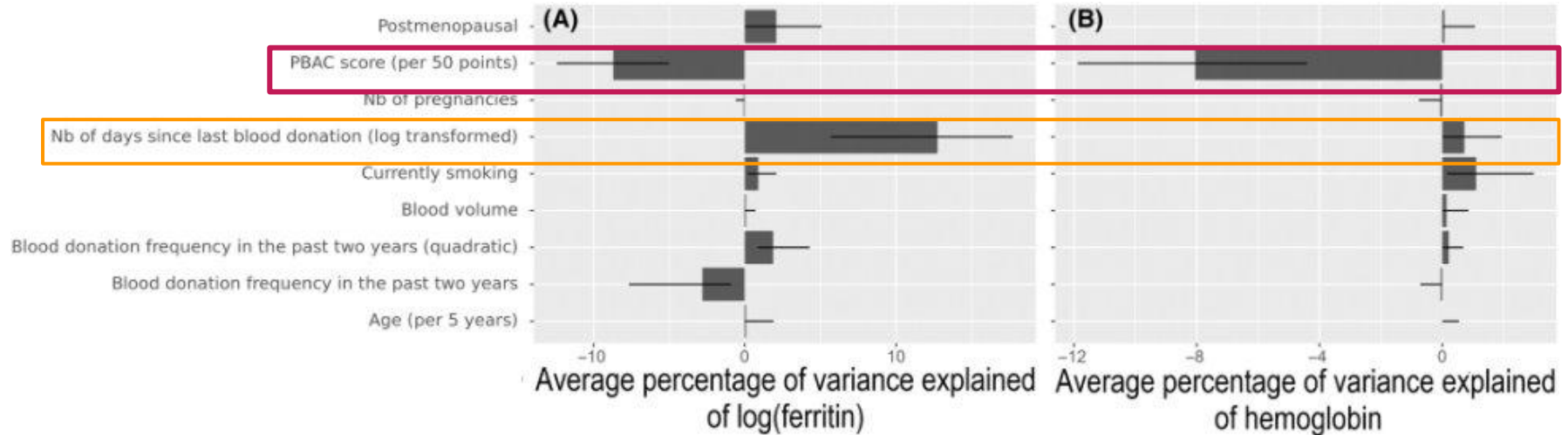


Figure 1: Relative importance analysis (RIA) of a linear model of ferritin (A) and Hb (B). RIA estimates the average percentage of variance in the outcome variable explained by each covariate. A positive value represents a positive correlation, and a negative value represents a negative correlation. The bootstrapped 95% CIs are characterized by the black lines.



Assessing heavy menstrual bleeding

Gold standard: Pictorial Blood Assessment Chart (PBAC)

PADS	DAY							
	1	2	3	4	5	6	7	8
TAMPONS	DAY							
	1	2	3	4	5	6	7	8

Figure 2: PBAC. Score $\geq 150 \rightarrow$ HMB

HMB symptom checker, by Y. Dixon et al.



Figure 3: HMB symptom checker



Aim

To evaluate the accuracy and precision of the HMB symptom checker in comparison to the pictorial blood assessment chart in identifying HMB among female blood- and plasma donors



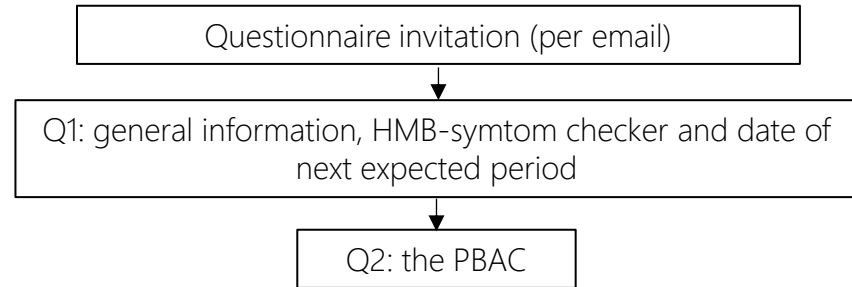


Method

March – August 2025

Cross-sectional study design

- Female blood- and plasma donors (aged 18-50), using sanitary pads and/or tampons



- Sample size determined on prevalence in first 200 participants. Invitations were sent in 2 batches, based on response rate and required sample size.
- Sensitivity, specificity and ROC analyses



Results

Responses

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- **31,269 invited to participate**
 - 3,328 (10.6%) completed HMB checker
 - 2,121 (6.8%, 63.7% of 3,328) also completed the pictorial blood assessment chart (PBAC)
- **2,026 (6.5%; 60.9% of 3,328) female donors had complete data**
 - 1,230 required



Results

Gold standard – Pictorial blood assessment chart (PBAC)

	HMB (PBAC)	
UNPUBLISHED WORK	No (n=1,665; 82.2%)	Yes (n=361; 17.8%)
Age (mean, SD, in years)	35.50 (8.14)	36.65 (8.20)
Self-reported menstruation pattern (%)		
• Light	26.1%	1.4%
• Normal	60.3%	40.7%
• Heavy	13.6%	57.9%
Cycle pattern (%)		
• Regularly, usually no more than 2 days early or late	72.0%	61.2%
• Irregular, usually 3-7 days early or late	17.5%	28.3%
• Unpredictable	10.5%	10.5%
Iron supplementation (%)	23.3%	25.8%



Results

HMB symptom checker

Symptom selection
frequency within

No-HMB / **HMB**
groups

11 / **21** %

17 / **66** %

20 / **51** %



17 / **62** %

33 / **55** %

8 / **19** %



Results

Diagnostic accuracy

Area Under the Curve 0.7 - 0.8 indicates a **good** performance of the test to distinguish between the two groups.

Model * Best performing presented	Sensitivity	Specificity	Area Under the Curve (AUC)
1 symptom	UNPUBLISHED WORK		
Period > 7 days	20.8%	92.4%	0.566
Frequently changing product	65.7%	83.4%	0.745
Frequent period leaks	62.0%	83.5%	0.728
€1 coin clots	51.2%	79.6%	0.645
Combination of 2 symptoms:			
"Frequently changing" OR "frequent period leaks"	78.7%	75.0%	0.768
Combination of 3 symptoms:			
"Frequently changing", "frequent period leaks" OR "€1 coin clots"	82.3%	63.8%	0.730

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Summary

Dear donor,
Do you have

- ☒ Frequent period leaks?
- ☐ To change your menstrual product every two hours?

The HMB symptom checker shows good performance in comparison to the gold standard and might be used for HMB assessments in donor screenings.

Next step → include other menstrual products (cups, underwear) and assess its usefulness in practice



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