

# Low haemoglobin deferrals in blood donors: does black ethnicity matter?

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## Recruiting black donors in Scotland

Scotland needs more donations from black donors to meet increasing transfusion requirements for patients with sickle cell disorder. Challenges to recruitment and retention of black donors include:

- The small size of the black population in Scotland (0.7% of the Scottish population<sup>1</sup>),
- A higher rate of deferrals due to malaria risk or antibodies amongst black donors and
- A higher rate of low haemoglobin deferrals amongst black female donors.

It has been suggested that the 'normal' range for haemoglobin is lower in black populations<sup>2</sup>. This may contribute to inadvertent discrimination if black donors are barred from donation unnecessarily.

We sought to address two questions: 1) do we see a difference in haemoglobin (Hb) levels between white and black donors and 2) what impact could reducing the Hb limit from 125 g/L to 120 g/L have on deferral rates in female donors?

## What did we do?

We used eProgesa, the Scottish National Blood Transfusion Service's (SNBTS) donor database, to collate data on donor ethnicity and haemoglobin levels. For deferred donors, haemoglobin levels were accessed directly from donor session records.

## Q1) Is there a difference in Hb levels between white and black donors

### Data Sources

All donors of black or mixed white/black ethnicity donating at a whole blood donor session over a 1-month period were included. An equivalent number of white donors were selected at intervals from a search for attendance on one day of the study period

## The challenge we face...

Over a three-month period (Feb – Apr 2024):

**28** female donors of black ethnicity attended an SNBTS session to give whole blood

Of these, **10** gave a donation.

**9** were taken for samples only (malaria risk).

**9** were deferred from donation.

Of these, **5** were deferred for low haemoglobin...

...an **18%** low Hb deferral rate.

Nearly 9/10 black donors reported African rather than Caribbean ethnicity

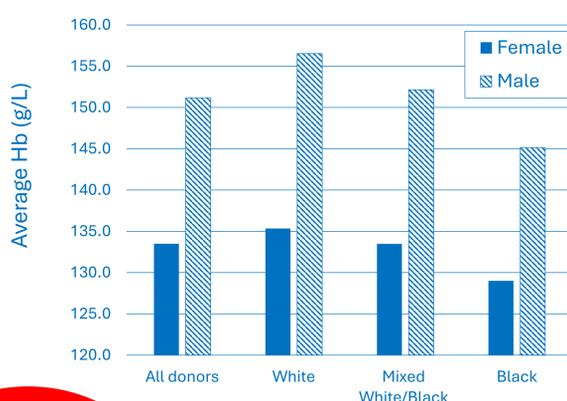
## Q2) How many donations could be rescued by a lower haemoglobin limit for female donors?

### Data Sources

Donors of non-white ethnicity who had failed haemoglobin screening (Hb < 125 g/L) over an 18-month period were identified in eProgesa using standard deferral codes. A reference group of white donors was created using low haemoglobin deferrals from ten geographically-dispersed sessions, selected at various time points over a year.

## Mean Haemoglobin (g/L) by ethnicity

Ethnicity	Female	Male
	Mean Hb g/L (n)	Mean Hb g/L (n)
Black	129.0 (11)	145.1 (14)
Mixed White/Black	133.5 (25)	152.1 (14)
White	135.3 (27)	156.5 (13)
All categories	133.5 (63)	151.1 (41)



Black donors had a lower mean haemoglobin than white donors for both male and female donors

Mixed white/black donors had intermediate levels

## Rescuing donations

The normal range for female haemoglobin levels is defined as 115 – 165 g/L. Under the Blood Safety and Quality Regulations (BSQR) 2005, female donors must have a haemoglobin level of at least 125 g/L to be eligible for blood donation. Prior to BSQR, UK guidelines allowed donation at a haemoglobin of 120 g/L and above.

In this study, most deferred donors had a haemoglobin level in the low normal range. Reducing the lower donation limit to 120 g/L for donors of all ethnicities would have resulted in 27% of donations being 'rescued'. For the subset of black heritage donors 32% of deferred donors could have been accepted using the lower limit.

Category	Hb level (g/L)	Number of donors (%)		
		All donors	Black heritage*	White
All low Hb deferrals	< 124	66 (100)	25 (100)	23 (100)
Hb below normal range	< 114	28 (42)	9 (36)	7 (30)
Low normal Hb	115 – 124	38 (58)	16 (64)	16 (70)
Rescued donations if limit lowered	120 – 124	18 (27)	8 (32)	6 (26)

\*Black heritage is defined as black (African or Caribbean) or mixed white / black ethnicity

More than 1/4 of low Hb deferrals could be avoided with a lower Hb limit

## Conclusions

- Evidence from Scottish donors is consistent with a hypothesis that black populations have a lower mean haemoglobin level than white populations. The sample size is too small to draw firm conclusions, but it is striking that donors of mixed ethnicity displayed an intermediate mean haemoglobin level.
- Even if slightly lower haemoglobin levels were proven to have no health impact on black populations, varying haemoglobin acceptance ranges for donors based on black ethnicity would be challenging to implement.
- Reducing the lower haemoglobin limit to 120 g/L for female donors would result in over a quarter of deferred donors being accepted for donation. The benefit of this change would be greater for black donors, as they are more likely to be deferred
- Mitigation strategies to ensure no risk to donor health from such a reduction would be required, for example a longer inter-donation interval.

Female Black donors tended to be younger than female white donors, but age did not correlate with Hb levels

## References

<sup>1</sup>Scotland's Census: Ethnicity. Available at <https://www.scotlandscensus.gov.uk/census-results/at-a-glance/ethnicity/> (Viewed on 4<sup>th</sup> August 2024; 20:29)

<sup>2</sup>Lim E, Miyamura J, Chen JJ. Racial/Ethnic-Specific Reference Intervals for Common Laboratory Tests: A Comparison among Asians, Blacks, Hispanics, and White. Hawaii J Med Public Health. 2015 Sep;74(9):302-10. PMID: 26468426; PMCID: PMC4578165.