

# The Challenge of Out of Range Full Blood Count Parameters in Donor Screening

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## Introduction

- Haemoglobin estimation is required for donation.<sup>1</sup>
- NHS Blood and Transplant uses a predominately qualitative gravimetric method for haemoglobin screening, backed up by capillary point of care test (HemoCue) with a numerical value.
- Using full blood count (FBC) by venous sampling and analyser is more accurate for haemoglobin measurements, but yields 20+ other parameters for review.
- Out of Range (OOR) results require clinical assessment + donor communications that are potentially distressing until the test is repeated or explained.

**Aim: to analyse the potential impact of FBC on donor deferrals and management**



## Methods

- FBC results on 65,884 blood donors were reviewed as part of a major clinical trial Jan 21 to May 22
- Minor OOR: repeat the test (if persistent, it becomes major)
- Major OOR: clinical (+/- GP) review, donor contact and further management



## Results

- Significant OOR in 3.8% (2521) donors.
- Low haemoglobin accounted for 43% of significant OOR results.
- 20% of deferrals = raised total white blood cell counts and neutrophils; many changes were mild and physiological, with no evidence of infection.
- Low platelet count in 22% of significant OOR; no evidence of a bleeding disorder.
- Most of the very low platelet counts were related to difficult venepuncture.
- Monocytosis (>1.0) in 11% of OOR. Some individuals, predominately male donors maintained the monocytes between 1.0 - 1.2 without any evidence of chronic myelomonocytic leukaemia or progression.

## Conclusion

- Using FBC as a haemoglobin screening tool is more accurate BUT -
- It reveals significant OOR in all other parameters
- Donors find it difficult to access GP and repeats
- Resources are required to manage and communicate with donors
- **Further investigation will indicate whether certain OOR parameters can be ignored - but they complicate donor management**



FBC parameter	All OOR (2521 or 3.8%) *			Repeated (results or ranges)	Repeat awaited or no result
HB < 115	194 (7.7%)	186	8	2 (112, 114)	184
HB 115 - 124	635 (25%)	569	66	174 (115 – 124, 129)	394
HB 125 - 134	256 (10.1%)	-	256 (10.1%)	104 (125 – 134)	152
WBC > 11.9	425(16.8%)	257	168	36 (12 – 17.3)	389
Neutrophils < 1.0	29 (1.1%)	13	16	1 (0.88)	28
Neutrophils > 7.5	485 (19%)	301	185	31 (10 – 17)	454
Lymphocytes < 1	124 (5%)	33	91	38 (0.28 – 1.63)	86
Lymphocytes > 6.0	27 (1.1%)	10	17	-	27
Monocytes > 1.0	281 (11%)	108	173	42 (0.9 – 1.2)	239
Platelets < 50	93 (3.7%)	37	56	2 (86, 96)	91
Platelets <150	555 ((22%)			183	371
Platelets > 450	122 (4.8%)	105	17	25 (451 – 575, 733)	97

Summary of the key results for each parameter \* n= 65,884 blood donors

## Key message

**Accuracy vs. Investment in clinical resources to support donor management and the implications of clinically insignificant OOR**



Reference: <sup>1</sup> Blood Safety & Quality Regulations (2005)