# Detection of red cell antibodies in patient plasma after 3 months storage above the recommended -30°C

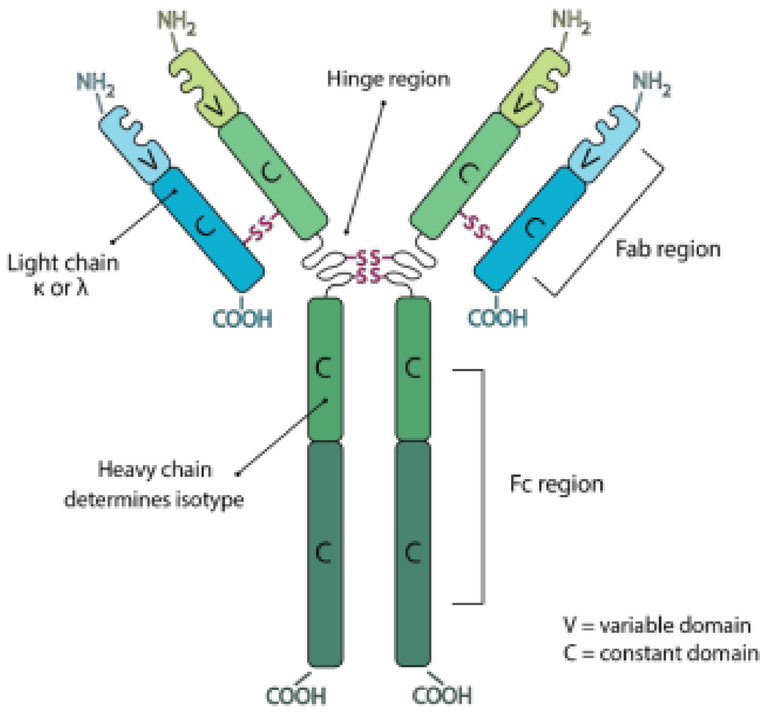
*Manning, K [October 2019]*

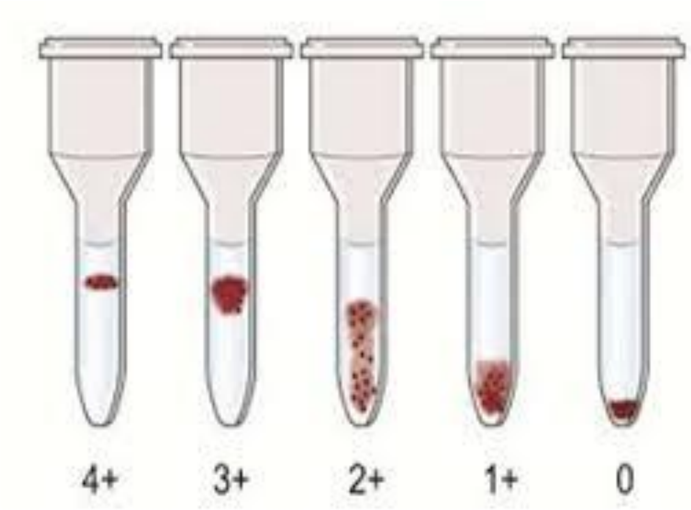
## Background

The detection of clinically significant antibodies in patient plasma is an essential step in preventing transfusion reactions. Antibodies are detected using the indirect antiglobulin test (IAT) at 37°C and identification is achieved using a panel of prepared group O red cells with known phenotypes.

Samples are then stored for 3 months to ensure retesting of patient plasma is available. Longer term storage also allows for the investigation of delayed transfusion reactions.

BCSH[1] guidelines state that plasma samples should be stored below –30°C; however, the specimen freezers at St James' Blood Bank in Leeds (SJUH) run at a much higher temperature. A previous study[2] tested 118 frozen samples with specific antibodies using BioRad ScanGel, a similar method to the DG card technology used at SJUH, with 95.7% of the samples testing positive for antibodies after storage. The purpose of this experiment was to ensure that the storage of specimens at a higher temperature than recommended will not affect a repeat antibody screen and the results will not be changed. A risk assessment was produced after this experiment to determine whether the samples can continue to be stored at a higher than recommended temperature.




## Methodology

90 samples that had previously been tested positive for antibodies were retrieved from storage with an average age of 91 days (range 84-106 days). The two freezers that the samples were stored in had an average temperature of –17.7°C.

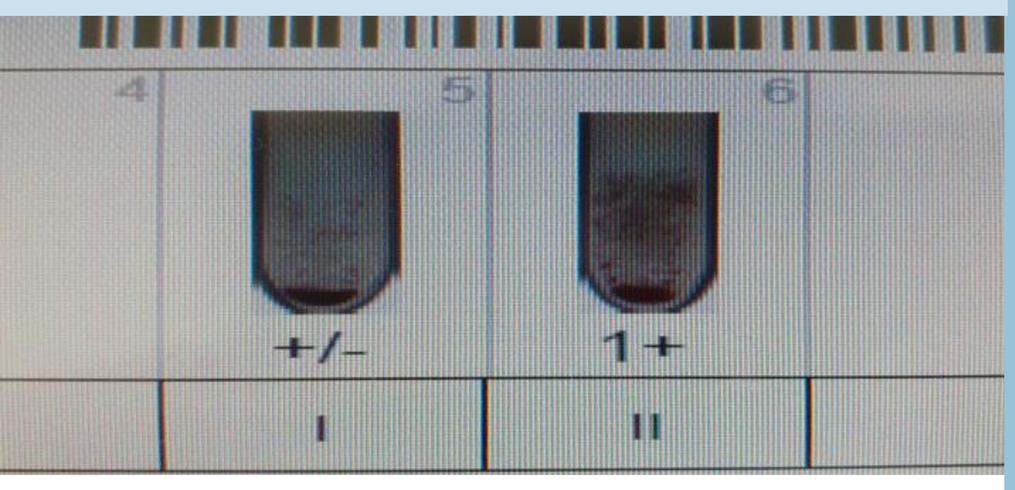
The plasma of separated specimens was tested over a period of 3 months on the Grifols Erytras at St James' Blood Bank for an antibody screen (IAT). The new results were recorded manually and compared to the previous results which were gathered from the laboratory information management system (LIMS). A grading difference of 1 was acceptable for a pass.

## Results

Of the 90 samples, 89 (98.9%) passed by obtaining a grading difference ≤1; however, 4 (4.4%) tested negative after 90 days storage. 42% obtained the same grading as the previous result and 21% obtained a higher grading than the previous result. This may be due to the use of different batches of screening cells.

The sample that failed had a reaction grading difference of 1.5 and was identified as anti-M. This was still identified at day 97; however anti-M is not normally known to cause a transfusion reaction. Three of the four antibodies that were no longer detectable (1 anti-E and 2 anti-Jkb) will have antigen negative blood selected from the first result. The fourth antibody that was no longer detectable was anti-M which is not usually identified as a clinically significant antibody; only when tested at 37°C which was not confirmed at the time.

These results confirm that red cell antibodies can still be detected at higher than the recommended storage temperature of -30°C, with some exceptions. 38/90 (42.2%) were tested after 90 days which also verifies that samples are capable of being stored past the recommended 90 days.




## References

1. BCSH (2012) Guidelines for pre-transfusion compatibility procedures in blood transfusion laboratories. *Transfusion Medicine 23* (1), 3-35.

2. Bouix, O. et al. (2008) Erythrocyte-magnetized technology: an original and innovative method for blood group serology. *Transfusion 48,* 1878-1885.

BSH2020
EP-181-A
Transfusion
Kara Manning
Poster presented at: British Society for Haematology
PosterSessionOnline.com