UK NEQAS
Haematology and Transfusion

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UK NEQAS (BTLP): EQA as an opportunity for education

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Background and Aims

UK NEQAS (BTLP) provides EQA to 339 laboratories (mostly based in hospitals) in the UK, and another 372 laboratories worldwide, for ABO and D grouping, antibody screening +/- identification, crossmatching, and red cell phenotyping, with interpretations assessed and scored. Additional information is collected regarding reaction grades, technologies used, and 'non-scoring' elements, e.g. samples with a dual population for ABO and/or D, or pre-transfusion testing in 'emergency' scenarios. This allows trends to be identified and educational points, both general and specific to UK practice, to be highlighted.

In October 2016, an EQA plasma pool containing anti-C (2+ in the Indirect Antiglobulin Test (IAT)) was found to be contaminated with a very weak anti-D (not detectable by IAT). Although the anti-D did not meet specifications for scoring, as it was not reacting by all technologies in IAT, this anti-C+D was included as a deliberately non-scoring sample in an exercise where other samples were used to assess antibody screening and identification.

No clinical details were provided to participants of this exercise, and there were no penalties associated with reporting or not reporting the anti-D as positively identified, but the data was used to highlight the risks of reporting anti-D in a specific patient group, i.e. females of child bearing potential. UK (BSH) guidelines[1] for testing in pregnancy make recommendations for further testing where apparent anti-D+C is identified, and highlight the need to determine if any anti-D detected is immune, or prophylactic in origin.

Methods

This sample was issued to 494 laboratories in 24 countries. Results were analysed based on antibody(ies) reported, antibodies not excluded, techniques and technologies used.

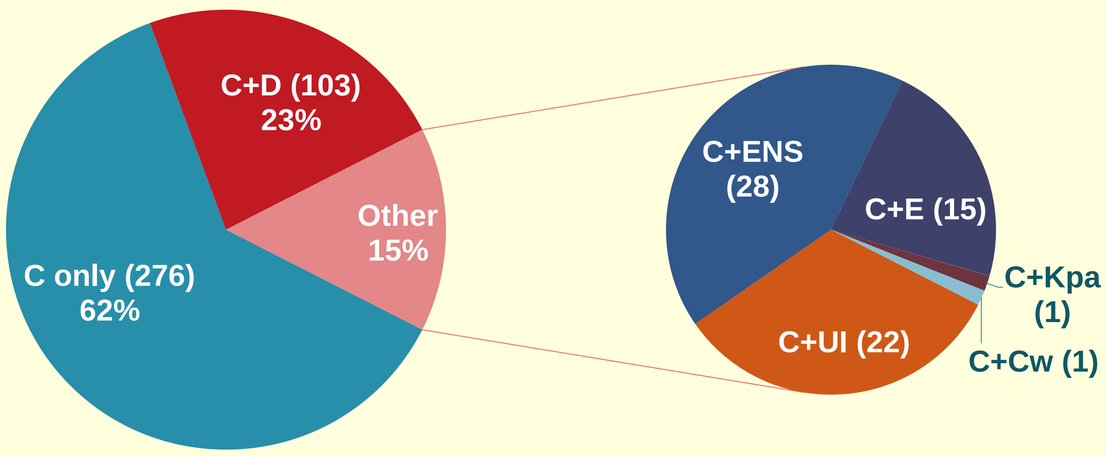
In house testing

In house testing was initially performed by the supplier (NHSBT), then by UK NEQAS at pre-acceptance, on distribution day, and on closing day.

- Anti-C was detectable by all technologies used at all points in the testing schedule.
- Capture detected anti-D by IAT at pre-acceptance, but not at closing; no other IAT technologies detected anti-D.
- Grifols enzyme treated cells detected anti-D at all points of testing.
- DiaMed enzyme treated cells detected anti-D at pre-acceptance but not after distribution.
- BioVue and tube technologies (NHSBT cells) did not detect anti-D at any point.

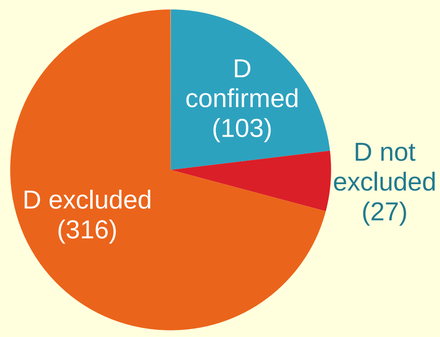
Results

Antibodies identified

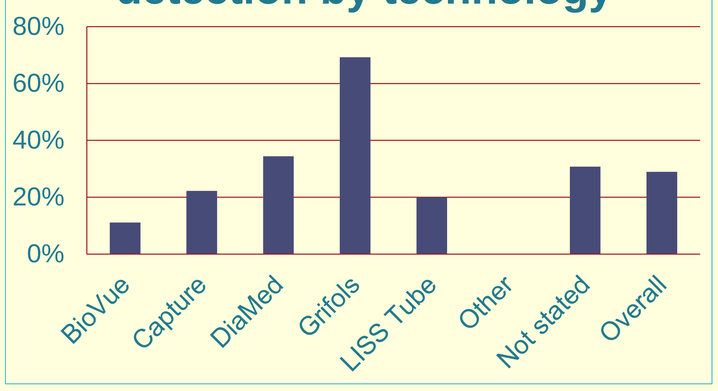


ENS = Enzyme Non Specific
UI = Unidentifiable

Anti-D identification



Anti-D or potential anti-D detection by technology



This exercise was not designed to assess whether or not laboratories could detect or identify weak anti-D, but to highlight the difficulties in identifying weak antibodies, and to provide an opportunity to make a educational points regarding the reporting of anti-D.

Discussion points

Apparent anti-C+D could be anti-G

Reactions with D positive, C negative cells in an apparent anti-D+C could be due to anti-G (+/- anti-C and/or anti-D), especially where the anti-C is stronger than the anti-D, as it was in this exercise.

During pregnancy, it is important to perform further testing to confirm whether anti-D is present or not, to ensure anti-D prophylaxis is offered where appropriate.

Weak anti-D could be passive anti-D immunoglobulin

Weak anti-D detected in pregnancy could be immune or passive due to administration of anti-D immunoglobulin (Ig) prophylaxis.

Recording immune anti-D in the patient's transfusion record outside pregnancy could result in failure to offer anti-D prophylaxis in the event of future pregnancies.

Weak anti-D may look like anti-E

Weak anti-D can react preferentially with R_2R_2 (cDE/cDE) cells, as these have a high D antigen site density, making it difficult to distinguish from weak anti-E reacting only with a 'double dose' of the E antigen on R_2R_2 cells .

An enzyme panel can be helpful in this situation, but referral may be required for further testing[1].

Conclusions

Although it is interesting to look at the rates of detection and identification of anti-D, it was not expected that this very weak example of anti-D would be detectable by routine pre-transfusion testing in all laboratories, and this was the case. The results of the exercise facilitated discussion on the risks of misreporting anti-D in clinical context.

It is essential to confirm that anti-D is actually present and is of immune origin before reporting it in females of child bearing potential. BSH guidelines[1] include detailed algorithms for procedures to be followed where anti-D is detected in pregnancy. However, there is a risk that females of child bearing potential could be incorrectly 'labelled' as having immune anti-D (+anti-C) before becoming pregnant, if they have produced anti-G (but not anti-D). Although not currently stated in UK guidelines[2], we suggest this testing is indicated for all females of child bearing potential, rather than just in pregnancy, to prevent future pregnancies being compromised. Once anti-D is on a patient's transfusion record, it may not be investigated in the event that the patient later becomes pregnant. This recommendation will be considered when the guideline[2] is next reviewed.

The EQA report for this exercise was used as a platform to highlight some risks when reporting antibody identification in pregnancy, as identified in recent UK guidelines[1], and an educational point was also included for those misidentifying anti-D as anti-E.

References

([1]) British Committee for Standards in Haematology (BSH) (2016): White J, Qureshi H, Massey E, Needs M, Byrne G, Daniels G, Allard S. Guideline for blood grouping and red cell antibody testing in pregnancy. http://www.b-s-h.org.uk/guidelines/

([2]) British Committee for Standards in Haematology (BSH) (2012): C Milkins, J Berryman, C Cantwell, C Elliott, R Haggas, J Jones, M Rowley, M Williams, N Win. Guidelines for pre-transfusion compatibility procedures in blood transfusion laboratories. http://www.b-s-h.org.uk/guidelines/

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