

PP 80. Blood Bank Pilot Study: Comparison of four automated methods for the identification of alloantibodies

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Aim

To compare results of 3 automated systems against the current reference laboratory automation. This comparative study focused on detection and identification of irregular blood group alloantibodies.

Background

Western Province Blood Transfusion Service (WPBTS) has used an automated crossmatch system for 10 years. New and updated systems need to be evaluated regularly to assess the efficacy of the current instrument with other available automation.

Three automated systems were compared with the Grifols WaDiana - the Ortho Autovue, Immucor Echo and the Neo.

Process

Samples for this study were provided by WPBTS Reference Laboratory. These samples were tested and antibody identification performed on the Grifols WaDiana platform using column technology.

The automated systems evaluated utilised different technologies, ie Autovue Column Agglutination Technology(CAT)) and Immucor Capture-R Ready-ID (solid phase technology).The red cell identification panels used were the Grifols Identisera Diana, Ortho Resolvagen and Immucor Capture Ready.

Methods

32 patient samples were sourced from the Reference laboratory. The antibodies had been identified on the Grifols WaDiana. Two Blood Banks were selected to perform the study. The methods followed were according to the manufacturer's instructions. Results were correlated and compared.

Results

Of the 32 reference samples, Grifols Diana panel identified 16 antibodies with single specificity, 14 with mixed specificity and 2 unidentified specificity. 31 antibodies were identified with the Ortho panel (17 single specificity, 7 mixed specificity and 7 unidentified).29 antibodies were identified with the Immucor Neo (17 single specificity, 9 mixed specificity and 3 unidentified). 29 antibodies were identified with the Immucor Echo (18 single specificity, 8 mixed specificity and 3 unidentified). Of the 32 antibodies, 25 were identified as clinically significant (Anti-C, D, E, K, e, Fya), 4 clinically insignificant [Anti-Le(a)] and 3 classified as auto and unidentified.

Antibody specificity was 93.75% on the Wadiana, 81.25 % on the Neo and Echo, and 75% on the Ortho Autovue Innova. All systems correctly identified the clinically significant alloantibodies. Differences were noted in detection and determination of mixed antibodies. The Grifols Wadiana proved to be the most sensitive, probably due to the fact that it has the ability to test in both media(antihuman globulin(AHG) and enzyme)The enzyme technique identified antibodies in 6 samples

When comparing AHG technique alone, the Immucor Neo and Echo platforms appeared to be the more sensitive (possibly due to 14 panel cells, as opposed to 11 on the other systems). Immucor however failed to detect clinically insignificant antibodies, anti-Le (a) in 3 out of 4 samples. Similarities exist between the Neo and Echo as they are manufactured by the same supplier, utilise the same reagents, plates and consumables. The Ortho Autovue had the most unidentified and weakest individual panel cell results when compared to the other analysers.

Conclusion

WPBTS is looking to replace its automated Blood Bank platform in the near future. While this study focused on antibody identification and did not include the most frequently used Blood Bank test options (grouping and crossmatch), the findings will however supplement future evaluations in the Blood Bank.