Reduced Error Rates with Rh and K Phenotyping With Automated Testing

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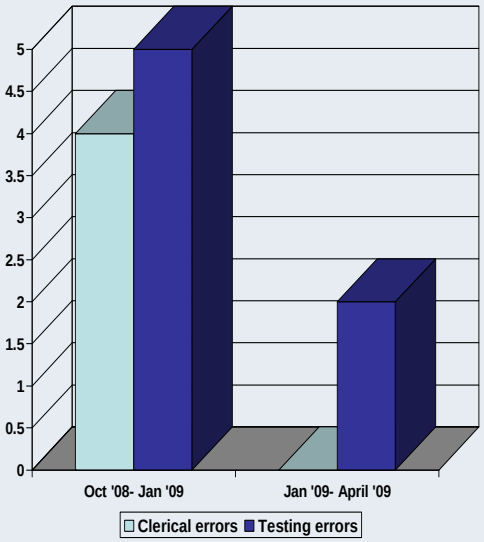
Background: Most blood centers rely upon Rh/Kell extended phenotyping of blood donors for labeling blood products as antigen negative for recipient transfusion. Historically, testing combined semi-automated gel testing and manual tube methods. Result release was accomplished by transcription and manual data entry of results. Both clerical and testing errors occurred. Recently, several automated methods have become available in the United States. A large regionalized donor testing laboratory opted to utilize a fully automated pre-transfusion analyzer for the performance of Rh/Kell typing for an initial volume of 2100 samples a month. The automated analyzer allowed for the upload of test results into the laboratory information system (LIS) which transmitted these results to the donor center.

Methods: Manual typing and clerical errors as determined by either donor phenotype history or confirmation typing by the blood collection facility were tracked for a 3-month period for which a combination of semi-automated and routine manual tube typing were performed. That error rate was compared to the rate of equivalent testing and clerical errors for a 3-month period after implementation of the automated testing and result release processes. Based on internal requirements, all little e (Rh5) antigen negative results from the automated method were manually confirmed prior to result release. All other phenotype results were released directly from the instrument.

Results: There were four clerical and five testing errors (9-total) reported from October 20 2008 to January 20 2009, during the semi-automated testing and manual reporting for 6750 tests, which yields a 0.13 % (9/6750) error rate . From January 20 2009 to April 20 2009 (automated testing and reporting) there were two testing errors and no clerical errors reported within 6782 tests, which yielded a 0.03% (2/6782) error rate. Testing errors were reduced from a rate of 0.07% (5/6750) to 0.03% and clerical errors were eliminated for that period. The 2-testing errors on the automated method were due to partially clotted samples causing false positive reactions that were not detected by the operator.

Conclusion: The use of instrument automation showed improved performance for both Rh/Kell phenotyping and result report management.



Error Categories	Semi-Automated and Manual Processes N = 6750 10/20/08-01/20/09	Automated Processes N = 6782 01/21/09-04/20/09
Clerical	4 (0.06%)	0 (0.0%)
Testing	5 (0.07%)	2 (0.03%)*
Total	9 (0.13%)	2 (0.03%)*

*Partially clotted samples

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