Becoming More Efficient: A Review of HLA Test Systems

Problem

Increased volume in the HLA Lab introduced stressors which, if not addressed, could eventually lead to increased turn-around times for test results, technologist dissatisfaction, and potential safety issues.

Goal

The goal of our investigation was to identify and reduce unnecessary tests performed in order to compensate for our increase in test volume.

Project Team

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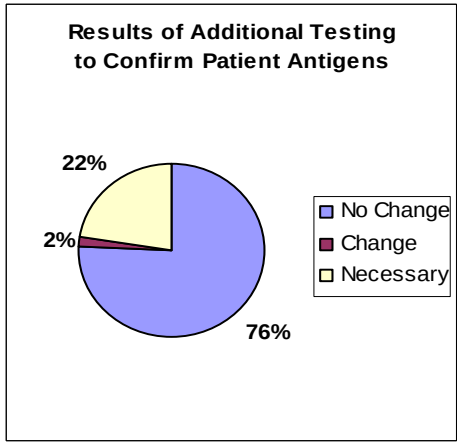
Investigation

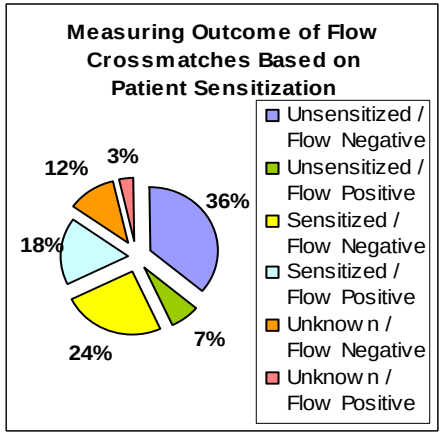
Two test systems were identified with potential for improved efficiency:

1. Additional testing performed to confirm patient antigens: requires resources, tech time, and increases turn-around time in reporting results.
   - Six months of data comprising over 150 additional HLA antigen tests were reviewed to identify the reason testing was ordered, the outcome, and if testing resulted in the identification of a new antigen.
     - Four reasons contributed to additional testing: ambiguous results, homozygous results, failed lane(s), and false positive bands.
     - Three possible outcomes from additional testing were determined: testing did not change initial antigens, testing necessary to confirm initial antigens, and initial antigens changed based on additional testing.
2. Flow cross-matching: requires additional blood tubes from both the recipient and donor, processing and shipment of the blood tubes to an external contract laboratory, and third party billing and reporting of test results.
   - One year of data comprising 120 flow crossmatches were reviewed to identify the number of unsensitized transplant recipients and the outcome of the flow cross-matches.
     - Sensitization based on HLA antibody status at the time of transplant.

Results

Depicted below are the identifiers from our investigation represented as a percentage of the total number of events.





- Homozygous results and ambiguous rare allele combinations can be excluded from additional testing. This amounts to a potential decrease of 188 additional tests in a period of one year. In addition, approximately 40 additional tests due to failed lanes can potentially be eliminated for a total reduction of 228 tests a year.
- In consultation with the transplant service, we eliminated flow crossmatches for unsensitized patients.

Next Steps

- Compare 1st quarter statistics from 2009 and 2010 to determine actual decreases
- Calculate tech time and cost savings for 1st quarter 2010
- Monitor for any patient safety issues

Lessons Learned

- A simple review of our test systems provided the answers to become more efficient during a critical time of growth in the HLA Lab.
- Monthly statistics already being collected by the HLA Lab provided the necessary data to assess the feasibility of eliminating tests.
- Maintaining a collegial relationship with the Transplant Institute staff aided the process of modifying the patient work flow for flow cross-matching. .

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