

**Quality Approach to Investigate Donor ABO/Rh Discrepancies**

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### INTRODUCTION

When a donor’s ABO/RH does not match historical typing, a laboratory investigation is initiated. Many discrepancies can be attributed to test system limitations and red cell antigen sub-groups or variants. Once serological reasons are ruled out, the focus shifts to the collection process to determine if there was a mix up in paper-work, specimens, data entry, or labels.

Our facility used a 2-pronged approach, retesting 9 products collected before and after the index case and then interviewing staff involved. Interviews with staff rarely provided useful information because it was difficult for them to recall details for a particular collection event several days afterwards.

Our goal was to establish a new approach for prompt, tailored investigations that would resolve the case quickly and yield useful information for process improvement.

### OBJECTIVES

To improve the effectiveness and efficiency of investigation and resolution of blood donor typing discrepancies by:
- Describing the most common types of miss-matches that occur in our facility
- Identifying possible/probable points of failure for each type of miss-match
- Developing a tool for guided investigation and follow up of typing discrepancies

### MATERIALS AND METHODS

The BECS flags records when the current donation blood type does not match historical. Deviations are entered into our Quality (QMS) software to track investigation, RCA and CAPAs.

Data from the QMS were reviewed and analyzed by a cross-functional working group that included the labs, collections and quality. A review of 2 years data led to “most probable” scenarios given our particular work environment, processes, and process controls.

This allowed us to develop tailored investigational pathways to eliminate unnecessary investigation steps and speed up resolution.

### RESULTS

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Donor</th>
<th>Hist Type</th>
<th>Test Tube</th>
<th>Bag Seg</th>
<th>Bag Label</th>
<th>Outcomes/Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Record Mix-up</td>
<td>#1</td>
<td>O+</td>
<td>A-</td>
<td>A-</td>
<td>A-</td>
<td>RETURNING DONORS are detected by BECS. If the BECS does not identify a corresponding discrepant donation, suspect first time donors typing as O+, and returning donors whose historical type is A-, but whose current donation was not tested because the collection was incomplete.</td>
</tr>
<tr>
<td>Donor Paperwork Mix-up</td>
<td>#1</td>
<td>O+</td>
<td>A-</td>
<td>A-</td>
<td>A-</td>
<td>RETURNING DONORS are detected by BECS. If the BECS does not detect a corresponding discrepant donation, suspect first time donors typing as O+, and returning donors whose historical type is A-, but whose current donation was not tested because the collection was incomplete.</td>
</tr>
<tr>
<td>Test Tube Mix-up</td>
<td>#1</td>
<td>O+</td>
<td>A-</td>
<td>O+</td>
<td>A-</td>
<td>RETURNING DONORS are detected by BECS. If the BECS does not identify a corresponding discrepant donation, suspect first time donors typing as O+, and returning donors whose historical type is A-, but whose current donation was not tested because the collection was incomplete.</td>
</tr>
<tr>
<td>Blood Bag Label Mix-up</td>
<td>#1</td>
<td>O+</td>
<td>O+</td>
<td>A-</td>
<td>O+</td>
<td>RETURNING DONORS and FIRST TIME DONORS are NOT detected by BECS. They are detected when segment testing is performed at the Hospital. Test all donations drawn within 30 minutes of the implicated unit.</td>
</tr>
</tbody>
</table>

By identifying most probable point of failures, we can target staff interviews to gather timely information that helps resolve the case and leads to process improvement.

In addition, we found that retesting 9 units collected before and after the index case is not useful for resolving ABO/Rh discrepancies. Instead, we adopted a time based approach (+/- 30 minutes from start bleed time) to identify units that could have been implicated in the mix up.

### CONCLUSIONS

Use of a logic tree to facilitate investigations based on most probable cause has reduced non-value added retesting and provided for faster resolution of these cases.

While a tailored approach to the ABO discrepant investigations is an improvement, mix-ups that involve donors with the same ABO and RH type may continue to go undetected. To achieve the next level of safety, Donor Centers may consider assigning alerts in their BECS system to detect discrepancies in extended historical phenotype compared to testing done on the current donation.

### ACKNOWLEDGEMENTS

Thanks to NYBC Collections and Core Operations Departments for collaboration in analyzing our processes and development of this tool.

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