Protocols for handling patients exhibiting anti-CD38 interference including sending out to reference lab, provision of genotypically or phenotypically matched units, and in house testing using DTT treated red cells had to be prepared fresh daily which accounted for half of the procedure time. Our next step was to attempt to increase the life of the DTT treated cells to further reduce TAT and costs (Protocol 5.)

**Test of Change 2 Improving Reagent**

**Validation of DTT treated RBCs for 7 day expiration**

- Reagent red cells were selected for antigens known to deteriorate with age:
  - Duffy (heterozygous expression)
  - Kidd (heterozygous expression)
  - Lewis (homozygous expression)
- Selected cells underwent DTT treatment performed by three technologists.
- After treatment, the cells were stored at 2–8 degrees C for 10 days and periodically monitored for antigenic deterioration and hemolysis.
- After 10 days of storage, results for all antigen typings were acceptable. Moderate hemolysis was observed which resolved upon washing of reagent cells.

Next Steps

Protocol evaluation proved to increase our Turn-around-time (TAT) average from 72 hours to 4 hours using Protocol 4 and greatly reduced the cost per patient. The staff tech time burden had increased as DTT treated red cells had to be prepared fresh daily which accounted for half of the procedure time. Our next step was to attempt to increase the life of the DTT treated cells to further reduce TAT and costs (Protocol 5.)

Cost Results

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Antibody investigation including DTT treatment</td>
<td>American Red Cross (ARC)</td>
<td>American Red Cross (ARC)</td>
<td>N/A</td>
<td>Shrely using DTT treated cells with 24 hour expiration</td>
<td>Shrely using DTT treated cells with 7 day expiration</td>
</tr>
<tr>
<td>Genotyping performed/By whom</td>
<td>No</td>
<td>No</td>
<td>Yes Blood Center of Wisconsin (BCW)</td>
<td>Yes BCW</td>
<td>Yes BCW</td>
</tr>
<tr>
<td>Safe blood provided for patient</td>
<td>K negative units screened by ARC</td>
<td>K negative units screened by Emory</td>
<td>Phenotypically or genotypically matched units provided by ARC</td>
<td>K negative units screened by Emory</td>
<td>K negative units screened by Emory</td>
</tr>
</tbody>
</table>

**Conclusion**

On 12/29/2016 we standardized testing to follow Protocol 5. Developing an in house testing protocol including validation of extended dating of DTT treating RBCs resulted in the following:

- 97.2% reduction in TAT
- 79.7% reduction in cost

This novel protocol developed at the Emory Center for Transfusion and Cellular Therapy department offers patients suffering from Multiple Myeloma relief from extended waiting times for transfusion as well as a significant reduction in laboratory associated costs.