BACKGROUND:
The neutrophil alloantigens HNA-1a, HNA-1b, HNA-1c, HNA-3a, and HNA-4a have all been reported to cause neonatal alloimmune neutropenia (NAN). Antibodies against HNA-1a, -1b, and HNA-3a have all been implicated in cases of TRALI, with HNA-3a antibodies being the most frequent cause of fatal TRALI reactions. Population studies suggest the HNA-1c and HNA-5a antigens may be more important as a cause of alloimmunization than previously appreciated.

<table>
<thead>
<tr>
<th>ANTIGEN</th>
<th>COMMON NAME</th>
<th>GLYCOPROTIEN LOCATION</th>
<th>ANTIGEN FREQUENCY (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutrophil-specific:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HNA-1a</td>
<td>NA1</td>
<td>CD16 (FcyRIIIb)</td>
<td>54</td>
</tr>
<tr>
<td>HNA-1b</td>
<td>NA2</td>
<td>CD16 (FcyRIIIb)</td>
<td>88</td>
</tr>
<tr>
<td>HNA-1c</td>
<td>SH</td>
<td>CD16 (FcyRIIIb)</td>
<td>5</td>
</tr>
<tr>
<td>HNA-2</td>
<td>NB1</td>
<td>CD177</td>
<td>97</td>
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<tr>
<td>Shared antigens:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HNA-3a</td>
<td>5b</td>
<td>CTL2</td>
<td>95</td>
</tr>
<tr>
<td>HNA-3b</td>
<td>5a</td>
<td>CTL2</td>
<td>70</td>
</tr>
<tr>
<td>HNA-4a</td>
<td>MARTa</td>
<td>CD11b (Mac-1)</td>
<td>92</td>
</tr>
<tr>
<td>HNA-5a</td>
<td>ONDa</td>
<td>CD11a (LFA-1)</td>
<td>85</td>
</tr>
</tbody>
</table>

METHOD:
Allele-specific PCR. Genotypes for HNA-1a/1b/1c, HNA-4a/4b, and HNA-5a/5b are assigned after PCR products have been analyzed by agarose gel electrophoresis.

Genotypes for HNA-3a/3b are determined by TaqMan® PCR followed by genotyping with allele-specific hydrolysis probes.

REASONS FOR REFERRAL:
- Confirmation of antibody specificity in patient samples.
- In cases of NAN, parental genotyping provides information on the probability of future infants being affected.
- Genotyping of blood donors can be used to determine those at risk of producing HNA-3 antibodies to serve as a TRALI risk reduction practice.
SPECIMEN REQUIREMENTS:
7-15 ml amniotic fluid, 1 ml cord blood, 5x10^6 cultured amniocytes, or 3-5 ml EDTA (lavender top) whole blood. For evaluation of NAN, include both maternal and paternal whole blood.

SHIPPING REQUIREMENTS:
Ship whole blood at room temperature. Place the specimen and a completed test requisition in plastic bags, seal, and place in a Styrofoam container. Seal the Styrofoam container, place in a sturdy cardboard box and tape securely. Ship the package in compliance with your overnight carrier guidelines. Please notify the laboratory if shipping on Friday, Saturday, or the day before a holiday. Send to:

Client Services/Platelet and Neutrophil Immunology Lab
BloodCenter of Wisconsin
638 N. 18th Street
Milwaukee, WI 53233
800-245-3117 x6250

TURNAROUND TIME: 7 days

CPT CODES:
HNA-1: 81479
HNA-3: 81479
HNA-4: 81479
HNA-5: 81479
Panel (HNA-1,3,4,5): 81479x4

REFERENCES:

January 2013