BACKGROUND:
Numerous blood group antigens are considered clinically significant in transfusion medicine. Patients receiving allogeneic blood products are exposed to antigens expressed on donor red cells. This exposure can lead to alloimmunization in as many as 13% of chronically transfused recipients. In addition to the risks of alloimmunization associated with chronic transfusions, patients with sickle cell disease often have high rates of alloimmunization to red cell antigens due to racial differences between donor and recipient phenotypes. To reduce alloimmunization, precise matching of donor and recipient blood groups is beneficial before the transfusion regimen begins. Phenotyping can be inaccurate for patients who have been recently transfused, when IgG is bound to their red cells (positive DAT), or if an altered or variant antigen is expressed. These phenotyping problems can be circumvented by using molecular techniques to distinguish the blood group alleles present to unequivocally determine the patient’s genotype.

REASONS FOR REFERRAL:
• When phenotyping is not possible due to recent transfusion or a positive DAT.
• To help resolve the weak expression of blood group antigens, for example when two or more serological reagents give conflicting results.
• When a partial or variant antigen is present leading to conflicting serological antibody investigations.
• To provide antigen-negative and crossmatch-compatible blood to help prevent red cell alloimmunization.

COMMON PANEL:
C, c, E, e, M, N, S, s, K, k, Fy\textsuperscript{a}, Fy\textsuperscript{b}, Jk\textsuperscript{a}, Jk\textsuperscript{b}, Js\textsuperscript{a}, Js\textsuperscript{b}, Do\textsuperscript{a}, Do\textsuperscript{b}, Lu\textsuperscript{a}, Lu\textsuperscript{b}, Kp\textsuperscript{a}, Kp\textsuperscript{b}, U, Uvar

Rh VARIANT PANEL:
C, E, c, e (including ce\textsuperscript{i}), hr\textsuperscript{c} (Rh19), hr\textsuperscript{e} (Rh31), altered C (r\textsuperscript{s}), V, VS, Crawford (Rh43)

METHOD:
COMMON PANEL: 32 PCR-hybridization probes are used in 16 polymerase chain reactions to identify the alleles associated with 24 blood group antigens.
Rh VARIANT PANEL: 24 PCR-hybridization probes are used in 12 polymerase chain reactions to identify the alleles associated with the expression of 10 Rh antigens.
LIMITATIONS:
Mutations outside of the targeted region will not be detected. Novel mutations leading to altered or partial antigen expression and null phenotypes may not be detected by this testing method. Results from stem cell transplant patients may not match genotype obtained from other tissues.

SPECIMEN REQUIREMENTS:
5 ml EDTA (lavender top) whole blood.

SHIPPING REQUIREMENTS:
Place the room temperature specimen and requisition in plastic bags, seal and insert 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. Address package to:

Client Services/Immunohematology Reference Laboratory
BloodCenter of Wisconsin
638 N. 18th Street
Milwaukee, WI 53233
800-245-3117, ext. 6250

TURNAROUND TIME: 3 days
STAT: Same day (for sample arriving by 10 am, STAT fee applies)

CPT CODES:
COMMON PANEL: 81403
Rh VARIANT PANEL: 81479

REFERENCES:
