

# Laboratory Lines

News from Florida Hospital Clinical Laboratories and Florida Pathology Lab (FPL)

## QUANTITATIVE KAPPA AND LAMBDA FREE LIGHT CHAINS IN SERUM

Chemistry Laboratory at Florida Hospital Orlando is now offering an in-house quantitative assay to measure Kappa and Lambda Free Light Chains in serum samples. This assay was previously offered as a send-out test. The assay will be performed on Monday, Wednesday, and Friday from 0700 to 1500. The test code for this assay is KLQNT, which includes quantitative kappa and lambda light chains and a kappa lambda ratio. Serum is the required specimen type.

Elevated serum levels of monoclonal FLC (free light chains) are associated with malignant plasma cell proliferation (multiple myeloma), primary amyloidosis, and light chain deposition disease. Raised serum levels of polyclonal FLC may be associated with autoimmune diseases such as systemic lupus erythematosus. Measurement of the various amounts of the different types of light chains aids in the diagnosis and monitoring of multiple myeloma, lymphocytic neoplasms, Waldenstrom's macroglobulinemia, amyloidosis and light chain deposition disease, and could also be important in the evaluation of connective tissue diseases such as systemic lupus erythematosus. This test is also important in the assessment of Monoclonal Gammopathy of Undetermined Significance (MGUS). Please direct any questions regarding this new assay to Susan White, Chemistry Manager at 407-303-5600, ext. 1104909 or Dr. Luis Guarda at 407-303-1537.

## NEW TESTS FROM THE MOLECULAR DIAGNOSTICS LABORATORY

On August 31<sup>st</sup>, the Molecular Diagnostics Lab started testing for **Influenza A 2009 H1N1 Virus**. The methodology is by Polymerase Chain Reaction (PCR) and the reagent used is supplied by Focus Diagnostics. This test uses PCR technology to target two separate regions of

the hemagglutinin gene of the 2009 H1N1 allowing differentiation from seasonal Influenza A virus.

The Food and Drug Administration (FDA) has authorized the emergency use of the Focus Diagnostics Influenza A H1N1 (2009) reagent to test for the presence of the 2009 H1N1 influenza virus in clinical respiratory specimens (i.e., nasopharyngeal swabs (NPS), nasal swabs (NS), throat swabs (TS), nasal aspirates (NA) and bronchial washes (BW)) under an Emergency Use Authorization (EUA). The test is performed daily and the test will report out the Influenza A status as well as 2009 H1N1 Influenza A.

All outpatient specimens for influenza testing should be collected in a physician office or clinic and sent via Florida Pathology Laboratory (FPL) courier. Please ensure that a requisition is completed for testing. Florida Hospital Laboratory has prepared the *Nasopharyngeal Specimen Collection Guide for Providers* with specimen collection and transport information. Call Florida Pathology Laboratory (FPL) Client Services at 407-303-8561 for a copy of this guide or it can also be found on the web at [http://www.floridapathology.com/pdf/Nasopharyngeal\\_Collection-FPL3.pdf](http://www.floridapathology.com/pdf/Nasopharyngeal_Collection-FPL3.pdf).

On September 11<sup>th</sup>, the Molecular Diagnostics began performing **Herpes Simplex Virus** detection and differentiation by PCR methodology. Acceptable sample types are plasma, serum, CSF, cell cultures and swabs in universal/viral transport media. For more information, please contact George Corpus, Molecular Diagnostics Laboratory Manager, at 407 303-2779 or 407 303-2800 Ext.1104140.

## LAUNCH OF NEW TESTS FOR PLAVIX, ASPIRIN AND IIA/IIIB IN THE ORLANDO SURGICAL LABORATORY

The clinical laboratory will begin offering three new tests, the VerifyNow P2Y12 Assay, Aspirin Assay and IIB/IIIA Assay. The P2Y12 Assay measures the level of platelet P2Y12 receptor blockade in patients treated with drugs in

the thienopyridine class, including clopidogrel (Plavix). The Aspirin Assay is a qualitative assay to aid in the detection of platelet dysfunction due to the ingestion of Aspirin. The IIa/IIIb Assay is a semi-quantitative assay used to measure glycoprotein IIa/IIIb receptor blockade in patients treated with abciximab or eptifibatid. These tests can be ordered via laboratory test codes PFPLV, PFASP AND PFIIB. The required specimen type is fresh whole blood which can be collected from an indwelling catheter or by using direct venipuncture. The sample must be placed in the appropriate Greiner partial-fill collection tubes and sent to the laboratory immediately. They are kept at room temperature for the required incubation time, depending on the assay type, and then analyzed on the Verify Now system (the Aspirin and P2Y12 assays can be run up to 4 hours after collection but the IIb/IIIa must be run within 15 minutes of collection). Testing is usually completed within 30 minutes of specimen receipt. For more detailed information please contact Herald Waldon, POCT Manager, at 407-303-1594.

#### **TRANSFUSION-RELATED ACUTE LUNG INJURY (TRALI)**

Clinical signs and symptoms of TRALI typically include fever, chills, dyspnea, cyanosis, hypotension, and new onset of bilateral pulmonary edema. An increase in blood pressure, followed by hypotension is not uncommon. TRALI can be life threatening or fatal. Symptoms arise within 6 hours of transfusion, with most cases becoming evident within 1 to 2 hours after the end of transfusion. This disorder can be associated with a dramatic transient neutropenia or leucopenia. All plasma-containing components (FFP, platelets) have been implicated in TRALI. Transfusion volumes as small as 15 ml have led to cases of TRALI. TRALI is a form of acute lung injury. The lung injury is most often transient. Approximately 80% of affected patients will improve within 48 to 96 hours. In one large study of TRALI patients 100% of the patients required oxygen support, with 72% requiring mechanical ventilation. The remaining 20% of patients who do not improve rapidly will either have a protracted clinical course or a fatal outcome.

The three main conditions that need to be distinguished from TRALI are 1) anaphylactic transfusion reactions, 2) transfusion-associated circulatory overload (TACO) and 3) transfusion-related sepsis. In anaphylactic transfusion reactions, bronchospasm, laryngeal edema, severe

hypotension, erythema and urticaria are prominent symptoms. Fever and pulmonary edema are not associated with anaphylactic reactions. The clinical presentation of TACO is very similar to TRALI, with respiratory distress, tachypnea, and cyanosis as the most prominent features. The key distinction between the two entities is that the pulmonary edema in TACO is cardiogenic, and non-cardiogenic in TRALI. High fever with hypotension and vascular collapse are prominent features in transfusion-related sepsis. Respiratory distress is infrequently associated with these reactions. With rapid onset of respiratory distress, in addition to TACO and TRALI, coincident myocardial infarction and pulmonary embolus as well as other possible causes of acute lung injury (ALI) should also be considered. The precise mechanism of lung injury in TRALI has not been determined. TRALI has been associated with the infusion of antibodies to leukocyte antigens and the infusion of biological response modifiers. Infusion of either is thought to initiate a sequence of events that results in cellular activation and damage of the basement membrane. Pulmonary edema is secondary to leakage of protein-rich fluid into the alveolar space.

The true incidence of TRALI is unknown, but is estimated at 1:1300 to 1:5000 transfusions. TRALI is the leading cause of transfusion-related mortality reported to the FDA. Treatment of TRALI consists of respiratory and volume support. Treatment should be as intensive as required by the clinical situation. Oxygen supplementation (with or without mechanical ventilation) is required in almost all cases. Pressor agents may be needed to support blood pressure. Diuretics are not indicated because TRALI is not associated with volume overload. In addition, administration of corticosteroids has not been shown to improve clinical outcome in TRALI. Prevention includes multiple strategies, such as deferring donors implicated in a TRALI reaction, deferring multiparous females from donating plasma-rich components, testing multiparous females for HLA and HNA antibodies and using male-donor plasma exclusively for transfusion.

Mary Ann Womack, MBA (ASCP)SBB- Orlando Transfusion Service Manager.

#### References:

Technical Manual, 16<sup>th</sup> edition, AABB, Bethesda, MD  
Standards for Blood Banks and Transfusion Services, 25<sup>th</sup> Edition, AABB, Bethesda, MD