ChristianaCare

Department of Pathology & Laboratory Medicine

LabScope

March 3rd, 2025

Transformation is Underway!!

After a year of planning, the chemistry departments across ChristianaCare Campuses are undergoing a transformation. Abbott Laboratories is the new vendor for our chemistry and immunoassay analyzers as well as the new automation line, the GLP. The analyzers are currently undergoing validation at all the sites: Newark, Wilmington, Middletown, Helen F Graham Cancer Center, and Union Cecil Campus. We will go live with testing at all the sites simultaneously in mid-April of this year.

The Abbott Alinity analyzers will be replacing the current Beckman and Roche analyzers that served us for almost the last decade. Newark campus will replace 3 current analyzers with 8 new analyzers…4 chemistry and 4 immunoassay. Wilmington, Cecil, Middletown, and the Cancer Center labs will replace 2 current analyzers with 2 chemistry and 2 immunoassay analyzers each. Multiple analyzers with the same test offering will ensure redundancy of testing and aid us in making sure our patients get the best care with minimal downtime of our equipment. ***(Pictures of the new Abbott Alinity analyzers are featured on page 4, under our picture of the month section)***

The implementation of the new analyzers encompasses multiple moving parts. The new analyzers and assays require review and verification of reference ranges to make sure that the intervals are appropriate for the patient population. The technical and clinical leaders in the department of Pathology and Laboratory Medicine met with physician service line leaders, chairs, and medical directors across multiple service lines to provide analyzer specific reference ranges that are evidence-based.

Furthermore, AMS, the middleware, which connects the analyzers to the laboratory information System, Soft must be built carefully so that all the rules and ranges that we have set are applied to the results accurately. All the rules must be tested thoroughly to make sure that they are firing accurately and the results that are released are correct.

The GLP automated lines being adopted at Newark and Wilmington Campuses have many exciting features. They will include an input module for loading specimens that will receive barcoded specimens. The module looks at the cap color of the tubes to make sure the specimen was drawn in the correct tube. They will also take the weight of the specimen when the tubes arrive so it can match with similar tubes in weight for spinning.

After centrifugation, the track will deliver the specimens to the Alinity for testing. Each analyzer has a chemistry module and an immunoassay module so that the specimen can be sampled for all necessary testing at the same place. The track also prioritizes stats. If a STAT specimen comes to one of the analyzers, the specimens in front of the stat will be moved out of the way so that the stat specimen is processed expeditiously.

Other modules on the line include an aliquoter that can make daughter tubes which can be used for send-out testing. There is also a large storage module that can hold thousands of tubes. Each laboratory is also implementing IMS, the inventory management system. IMS is an automated system that will help us manage our inventory electronically whenever any reagent is removed from the refrigerator. This will ensure adequate inventory level to provide uninterrupted test offering.

According to Phoebe Holmes, MD, the Section Chief for Chemistry and Point of Care testing across the Delaware Campuses, the added throughput will enable the laboratory to automate testing that were previously performed in batches up until now, like glycated hemoglobin and infectious diseases. This will help clinicians diagnose and treat patients in a timely manner. Santosh Kadel, DCLS, the Clinical Architect for Laboratory Medicine, looks forward to the increased hemolysis threshold for high sensitivity troponin assay which will likely reduce the number of high sensitivity troponin samples being recollected for hemolysis as well as the fact that biotin, a very common dietary supplement does not interfere with the Alinity immunoassay tests for hormones, cardiac enzymes and tumor markers etc.

A huge undertaking, but our team of technical and IT experts are working hard to make sure that we can provide the most accurate and timely results for our stakeholders, caregivers and most importantly, our patients.
Stay tuned!!

Dr. Thomas Chou & Dr. Santosh Kadel: Chief Editors
Kim Evans: Vice President, Imaging, Laboratory & Pharmacy Services
Amy Amato & Angie Slayman: Administrative Support
Dr. Mary Iacocca: Chair, Department of Pathology & Lab Medicine

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Updates from our Laboratories……

GENERAL LABORATORIES….

Discontinuation of Urine Eosinophil Test

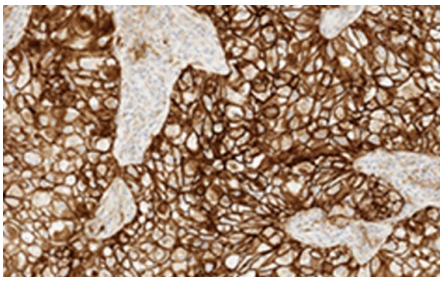
Urine Eosinophil test was discontinued in laboratories throughout ChristianaCare on February 11, 2025. The decision to discontinue this lab test was made in collaboration with the division of Nephrology.

Urine eosinophils were historically considered to be a hallmark finding in AIN (Acute Interstitial Nephritis). This assessment was based on several small and decades old studies and has recently been subject to further scrutiny. More contemporary, larger studies correlating this parameter with renal biopsy results have demonstrated urine eosinophils to lack diagnostic sensitivity and specificity. As such, reliance on urine eosinophils can lead to misdiagnosis and delayed or inappropriate treatment.

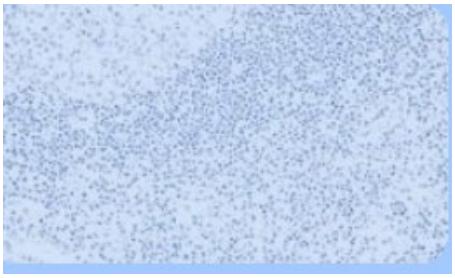
HISTOLOGY & CYTOLOGY….

The Role of the PD-L1 Test in Cancer

Immunohistochemistry is vital for modern cancer diagnosis. It involves the process of selectively identifying antigens in cells and tissue by utilizing the principle of antibodies binding specifically to antigens within the tissue. An example of an antibody is PD-L1 that is expressed in a broad range of cancers including lung, melanoma, urothelial, ovarian, head and neck, renal, hepatocellular, gastric or gastroesophageal junction and colorectal cancer. Pictured below is an example of a positive PD-L1 stain (brown chromogen staining) compared to tissue that is negative for PD-L1.



PD-L1 Positive



PD-L1 Negative

If the tissue is PD-L1 positive, there are immunotherapeutic drugs that can be used in the patient's treatment. Examples of these types of drugs are Keytruda® and Opdivo® which may contribute to an extended survival rate. This immunotherapy treatment strategy is evolving, and new drugs are on the horizon.

MICROBIOLOGY….

Update on Avian Flu H5N1

While the CDC still considers the risk of Avian flu (H5N1) to the public low, they are very closely monitoring the virus amidst very high levels of seasonal influenza. They have recommended that clinicians obtain detailed information regarding possible patient exposure to known sources, including both wild and domestic animals as well as unpasteurized animal products. Additionally, many of the human cases of H5N1 have experienced conjunctivitis symptoms so this should also be noted in the clinical history.

The CDC is now recommending expanding and accelerating the subtyping for hospitalized patients to prevent delays in detecting more human cases. Once a patient is determined to have an exposure risk, testing for influenza A should be performed, followed by subtyping to determine if the influenza is a seasonal strain or novel H5N1. High risk patients may also need to have expanded testing that includes conjunctival or oropharyngeal and nasal swabs to rule out avian flu.

At ChristianaCare influenza A can be determined to be seasonal influenza strains (H1 or H3) or 'non-typable', meaning the patient may have a subtype of influenza that is considered to be novel, such as avian flu. Specimens for all non-typable or suspected cases are sent to the state public health laboratories for confirmatory testing.

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Staff Appointments & Recognition

- Michelle Anson promoted to Wilmington Hematology Supervisor
- Yvonne Mbwiri promoted to Wilmington Chemistry Supervisor.

Thromboelastography (TEG) Q&A:

What is new with TEG?

The laboratories at Christiana and Wilmington Campuses replaced the TEG 5000 analyzers with the new TEG 6s analyzers on January 29, 2024. The TEG 6s analyzers use test cartridges which provide clinicians with rapid, comprehensive, and accurate assessment of a patient's hemostatic condition.

Why did we make the switch to TEG 6s?

The TEG 5000 analyzers are being retired by the manufacturer in 2026 after over 2 decades of service. While the results produced by the analyzers were accurate, testing required manual steps and was prone to multiple sources of error such as pipetting errors and environmental factors like vibration, temperature, and humidity. The TEG 6s analyzers require minimal hands-on time and are not prone to those errors.

Are the TEG tests and results the same?

The R and MA parameters are still the same, however, the TEG test now provides a new parameter "CFFMA" which reflects the functional fibrinogen. Rapid TEG and LY30 are included in both TEG tests. the Rapid TEG no longer comes with ACT and the K and α angle parameter are also not available on the TEG 6s tests.

Do I order TEG tests the same way?

The orders for TEG tests have changed. There are three different TEG test cartridges, and we have bult a new lab test for each of the cartridge.

1. TEG with Heparinase
2. TEG with Lysis Eval
3. TEG PlateletMapping (ADP and Arachidonic Acid)

Note: There is no order for Rapid TEG since it is included on both TEG with Heparinase and TEG with Lysis Eval tests.

Which TEG test do I order?

- Order TEG with Heparinase for adult cardiovascular surgery, cardiology, and liver transplantation procedures which often require patients to be on heparin.
- Order TEG with Lysis Eval for adult trauma in settings or patients not on heparin.
- Order Platelet Mapping for evaluation of qualitative platelet function and inhibition.

Are there additional considerations regarding TEG tests?

1. TEG tests do not replace traditional coagulation tests such as PT, APTT, Fibrinogen, Factor assays.
2. While TEG tests provide results in real-time via TEG Manager software, training is required to obtain access to the software. Training can be scheduled by emailing Jenna Guinter, Haemonetics Technical Specialist at JGuinter@haemonetics.com
3. TEG test cartridges are costly. TEG should be ordered only when an urgent hemostatic profile is needed to guide blood product administration.

If you have any laboratory questions or suggestions for future LabScope Q&A sections, you can submit it here:

Laboratory Q&A Submission Form

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Picture of the Month

Abbott Alinity ci Analyzers at Christiana Hospital Laboratory

Abbott Alinity ci Analyzers at Wilmington Hospital Laboratory