

Medical Center, Navicent Health
MEDICAL LABORATORIES COMMUNIQUE'
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CHEMISTRY

New Automated Chemistry Instrumentation:

The Laboratory is introducing new instruments for the performance of 122 chemistry and immunochemistry tests on January 20, 2015. These are the high volume routine tests in all chemistry profiles, most urine chemistries, stat chemistry tests and routine immunoassays. Modest changes in reference ranges will occur. A link to an intranet posted detailed list of tests and the old vs. new normal ranges follows:
<http://intranet/cgd/laboratory/files/newsletter/pdf/2014-12newsletter.pdf>

The preferred specimen type will change to serum (gold top) for all chemistry profiles and most of the blood assays on the new instruments for all hospital locations. A new "rapid clot" blood collection tube will be specifically available for locations having critical TAT needs (e.g. Emergency Center).

January 20th is the first step in the transition to a new state of the art laboratory chemistry/immunochemistry automation system which is expected to be completed by July 2015. The 1st phase introduces the new instrumentation and will be followed by the 2^d phase, installation of a robotics line that will provide sample handling, processing, storage, retrieval and improved data management. During the interim period, January – July, sample management will revert to a manual process. In particular, this will impact sample retrieval and add-on orders. This service will continue to be offered; however, delays from past turnaround timestimes will be unavoidable.

New tests to be offered include: glycated serum protein assay (fructosamine) and drug abuse assays specific for ecstasy and oxycodone (both included in a medical drug of abuse panel 8 that replaces the medical drug screen panel 7). In addition rheumatoid factor and amikacin level will be added to the new chemistry instrument system making those tests available 24/7.

HEMATOLOGY

Thrombelastograph (TEG) Analysis:

The Laboratory has expanded the hemostasis assessment by Thrombelastograph (TEG) analysis to include Trauma TEG Analysis and Platelet Mapping Analysis in addition to the Routine TEG assay.

TEG analysis provides a global assessment of coagulation including the enzymatic coagulation cascade, maximum clot strength due to fibrin formation/platelet function, and fibrinolytic activity following activation by kaolin. In contrast, plasma-based coagulation assays (e.g. PT, aPTT) measure the time to form a clot without the influence from other cellular components.

TRAUMA TEG adds tissue factor activation to kaolin activation and is optimized to provide a rapid assessment to differentiate between mechanical bleeding and coagulopathy. Rapid TEG provides an ACT result within 3 minutes of starting the assay, and an LY30% in addition to the parameters from routine TEG analysis. Trauma (rapid) TEG results have been shown to be strongly associated with clinical outcomes for severely injured patients¹. Trauma TEG is available 24/7.

Real time results viewing of the Trauma TEG instrument analogue output is available to clinicians via Citrix. Physician Citrix access requires completion of a training session (provided by the vendor) and security access from the Core Laboratory Manager, Lee Chapman, at 633-8024. Training sessions are scheduled for the last two weeks of January, register by January 15th.

Cautions: 1. TEG and Trauma TEG have been reported in the literature to be insensitive in detecting warfarin-coagulopathy despite an increase in INR in patients². Continued plasma based coagulation assay (PT, aPTT) should be considered. 2. Trauma TEG is not a substitute for the Routine TEG hemostasis assessment and cannot be used interchangeably.

TEG Platelet Mapping Assay: TEG analysis also has the capacity to evaluate the effects of anti-platelet medications. The TEG Platelet Mapping assay uses different activators and measures the platelet contribution to maximum clot strength. Two classes of antiplatelet agents are reported: ADP inhibitors (e.g. clopidogrel) and TxA2 inhibitors (e.g. aspirin). Patient results are reported as % inhibition and % aggregation for each category of agent.

1. Holcomb, J, et.al. Admission Rapid TEG can replace conventional coagulation tests in the ED. *Annals of Surgery*, 2012; 00:1-11.
2. Dunham, C, et.al. TEG and RapidTEG are unreliable for detecting warfarin-coagulopathy: a prospective cohort study. *ThrombosisJ* 2014, 12:4.

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Test Information Guide – New Tests

Fructosamine (glycated serum protein)

Specimen: Serum, gel tube, centrifuge within 2 hours
Minimum Volume: 0.5 ml
Stability: 8 hr Room Temp
7 days at 2 – 8° C
6 months frozen
Available: Monday – Sunday 24 hr daily
Turnaround Time: < 3 hr
CPT: 82985
Normal Range: 200 – 285 uM/L Adults
Interpretative guide: In general, fructosamine reflects glycemic control in diabetic patients over the previous 2 to 3 weeks. High values indicate poor control. This serves as an alternative to HbA1c in patients with Hb variants that alter RBC survival or interfere with HbA1c measurement.

Ecstasy (methylenedioxymethamphetamine, MDMA)

Specimen: Urine
Minimum Volume: 10 mL
Stability: 8 hr at room temp.
7 days at 2 – 8° C
6 months – frozen - 20° C
Availability: Monday – Sunday 24 hr daily
Turnaround Time: 2 hr
Normal Range: none detected (negative)
Cut-Off: 0.5 ug/mL
CPT: see Drug of Abuse Panel
Notes: Ecstasy is an amphetamine analogue typically detectable in urine for two days after use. At high concentrations this drug may also give a positive urine amphetamine screen; however, the specific assay has significantly greater sensitivity.

Oxycodone (Oxycontin, Percodan, etc.)

Specimen: Urine
Minimum Volume: 10 mL
Stability: 8 hr at room temp.
7 days at 2 – 8° C
6 months – frozen - 20° C
Availability: Monday – Sunday 24 hr daily
Turnaround Time: 2 hr
Normal Range: none detected (negative)
Cut-Off: 0.3 ug/mL
CPT: see Drug of Abuse Panel
Notes: Oxycodone is a semisynthetic narcotic analgesic. Screening cut-off is 0.3 ug/mL which typically corresponds to levels seen after a single 5 mg oral dose. It is not well detected by the general urine Opiate assay (morphine & analogues) which requires

very high concentrations to produce a positive result. Urine typically remains positive for 1 to 4 days post cessation of therapeutic dosing.

Thrombelastograph (TEG) Trauma Analysis

Specimen: Citrated whole blood within 1 hr of collection
Minimum Volume: 2.7 mL
Test Code: TEG
Stability: 1 ½ hr at room temp
Availability: 24/7
Turnaround Time: < 1/2 hr.
Normal Range: see report
CPT: 85576, 85347, 85384
Note: Specimens **must** be transported to the laboratory immediately after collection so that testing is performed within two (2) hours after collection. Transport of specimens to the laboratory must be by courier except from the OR and EC Trauma Bay where a specimen securely wrapped in “memory” foam and sent via the hospital pneumatic tube system is acceptable.

Remote Viewing: Real time results viewing of the Routine TEG & Trauma TEG instrument analogue output is available to clinicians via Citrix. Physician Citrix access requires completion of a training session (provided by the vendor), and security access from the Core Laboratory Manager, Lee Chapman, at 633-8024. Contact Lee to schedule vendor training.

Thrombelastograph (TEG) Platelet Mapping Analysis

Specimen: Citrated whole blood within 1 hr of collection
Minimum Volume: 2.7 mL
Test Code: TEG
Stability: 1 ½ hr at room temp
Availability: Monday – Friday, 7:30 am to 7:00 pm
Turnaround Time: < 1 hr.
Normal Range: see report
CPT: 85347, 85384, 85576x3
Note: Specimens **must** be transported to the laboratory immediately after collection so that testing is performed within two (2) hours after collection. Transport of specimens to the laboratory must be by courier except from the OR and EC Trauma Bay where a specimen securely wrapped in “memory” foam and sent via the hospital pneumatic tube system is acceptable.