CHEMISTRY

**NT-proBNP Assay:** Effective February 16, 2016 NT-proBNP will be offered. This new assay will be available in addition to the established BNP assay.

NT-proBNP and BNP are created in a 1:1 ratio by cleavage of the prohormone proBNP. BNP is metabolically active while NT-proBNP is inert. The half-life of NT-proBNP is ~2 hr. while BNP is ~½ hr. NT-proBNP is predominantly cleared by the kidney while BNP is further cleaved by membrane proteases.

Generally the two assays are considered equivalent diagnostically as indicators of hemodynamic stress. However, NT-proBNP is superior in patients taking *Entresto* (contains a neprilysin inhibitor) which causes BNP levels to remain elevated but does not affect NT-proBNP levels. NT-proBNP will have a longer stat TAT than BNP due to method performance differences.

**LS Ratio & PG Assays Discontinued:** Effective February 16th, both LS Ratio and PG determinations in amniotic fluid will no longer be performed at the MCNH Laboratory due to extremely low patient volume (2/yr.). These orders will be available as a send out test from our reference laboratory with a TAT of ~36 hours. Lamellar Body Count (LBC) is the only fetal lung maturity lab test available at MCNH.

**Thyroid Profile Eliminated and Thyroid Cascade Profile Added:** The Laboratory test listing for Thyroid Profile is being eliminated from all laboratory order tables effective March 1, 2016. The term Thyroid Profile has included the tests: Total T4, TUPtake and a Calculated FTI. This combination has been replaced by either sensitive TSH and/or Free T4 as the first line laboratory thyroid assessment test since 1997. The old Thyroid Profile is not recommended as an initial thyroid screen.

The reflex test panel Thyroid Cascade Profile is being added to the lab menu and represents the recommended primary lab profile for initial thyroid assessment. This is the same reflex combination previously known as a “TSH Reflex” order. It is composed of the following. Perform TSH assay:

1. If TSH (uiU/mL) is ≤ 0.10 perform Free T4. If Free T4 is normal perform Total T3 (possible hyperthyroidism).
2. If TSH is 0.11 - 0.32 Order Free T4 (borderline low TSH).
3. If TSH is > 4.94 Order Free T4 & TPO Antibodies (possible hypothyroidism)
   Note: T3 levels are frequently low in sick or hospitalized euthyroid patients.

**HSV- IgM 1 – 2 Typing:** This test is no longer available from our reference laboratory. HSV Total IgG with IgG typing and total HSV IgM assays continue to be offered and performed at MCNH. Acute HSV typing using PCR DNA analysis of swabs or fluids is recommended as an alternative.

**Glucose Critical Value Notification Change:** Effective January 18, 2015 the laboratory will only call subsequent Critical glucose values on the same patient when the collection time is > 45 minutes since the prior called critical sample. This change is being implemented to avoid duplicate calls occurring as a consequence of a new hyperglycemia critical glucose validation protocol for insulin dosing that will routinely lead to two results within a very short time period.

HEMATOLOGY

**Leukocyte Alkaline Phosphatase (LAP) Stain:** This test was discontinued December 1, 2015. The LAP score is no longer included among the diagnostic criteria for either CML or PV. The pathognomonic finding for CML (in the appropriate context) is the presence of BCR-ABL1 fusion protein. Elevated LAP scores are associated with a variety of illnesses, including stress, infection/inflammation, autoimmune disease, CRF, medications and pregnancy. In cases of suspected PV, JAK2 mutation analysis is recommended, as virtually all patients with PV carry this mutation, but it is not found in reactive conditions.

**Mylleloperoxidase (MPO) Stain:** This test was no longer performed at MCNH effective December 1, 2015. MPO is available as a send-out test that can be collected Sunday—Thursday. Samples must be received in the Laboratory by 4 pm in order to go out the same day and meet reference lab stability requirements.

COMPLIANCE CORNER

New CPT codes effective 1/1/2016 are listed in the Test Information Guide that follows.
Test Information Guide – New Tests

NT-proBNP
Alternate name: PBNP
Specimen: Serum, gel tube, centrifuge within 2 hours
Minimum Volume: 0.5 mL
Stability: 12 hr Room Temp, 3 days at 2 – 8°C
Available: Monday – Sunday 24 hr daily
Turnaround Time: < 3 hr, 1.5 hr stat
CPT: 83880
Normal Range: Manufacturer stated decision threshold.
0 – 125 pg/mL for < 75 years
0 – 450 pg/mL for ≥ 75 years
Interpretative guide: B-type natriuretic peptide (brain natriuretic peptide; BNP) is a small peptide secreted by the heart to regulate blood pressure and fluid balance. It is secreted in a pro form (proBNP) and once released is rapidly cleaved into NT-proBNP (76 aa’s) and the active BNP (32 aa’s). NT-proBNP has a T1/2 of ~1.5 to 2 hours while BNP has a T1/2 of ~20 minutes.

Both BNP and NT-proBNP are markers of atrial and ventricular distension due to increases intracardiac pressure. NT-proBNP loosely correlates with NYHA functional class for CHF according to the following table.

<table>
<thead>
<tr>
<th>Function Class</th>
<th>Median ProBNP (pg/mL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>377</td>
</tr>
<tr>
<td>II</td>
<td>1,223</td>
</tr>
<tr>
<td>III</td>
<td>3,130</td>
</tr>
<tr>
<td>IV</td>
<td>4,585</td>
</tr>
</tbody>
</table>

Values < 300 pg/mL have a high negative predictive value (~99%) for excluding acute CHF in individuals with an eGFR of > 60 for all age groups.
Adults under 50 years values > 450 pg/mL are consistent with acute CHF.
Adults 50 – 75 years a diagnostic cutoff of 900 pg/mL has been suggested. Values of < 1,200 in Patients with eGFR < 60 yields a sensitivity and specificity of 89% and 72% for acute CHF.
Adults > 75 years a cutoff of 1,200 pg/mL in patients with an eGFR < 60 yields a diagnostic sensitivity and specificity of 89% and 72% for acute CHF. A cutoff of 1,800 pg/mL has been suggested in the absence of renal failure.

Assay Comparability: All commercially available NT-proBNP assays in the USA are based on the same antibody, have excellent correlation and can be used interchangeably. This is not true of BNP assays which are manufacturer specific, have significant correlation biases, and cannot be used interchangeably.

Thyroid Cascade Profile
Alternate name: TSH Reflex
Specimen: Serum, gel tube, centrifuge within 2 hours
Minimum Volume: 1.0 mL
Stability: 12 hr room temp, 7 days 2 – 8°C, 30 days frozen.
Available: Monday – Sunday, 24 hr daily
Turnaround Time: 2 – 4 hr depending on # of tests run
Reflex Protocol: Perform TSH (uIU/mL) and evaluate.

1. If TSH is < = 0.10 perform Free T4. If Free T4 is normal perform Total T3. (Possible hyperthyroidism)
2. If TSH is 0.11 – 0.32 Order Free T4. (Borderline low TSH)
3. If TSH is > 4.94 Order Free T4 & TPO Antibodies. (Possible hypothyroidism)
4. If TSH is 0.33 – 4.94, “normal”, no further testing unless clinically indicated.

Limitation: T3 levels are frequently low in sick or hospitalized euthyroid patients.

CPTs: 84443 – TSH
84439 – (if required)
84480 – (if required)
86376 – (if required)

Normal Ranges: See individual tests.
Discussion: TSH is the recommended screening test for thyroid function in all patients without pituitary disease. The TSH Cascade is recommended for thyroid assessment in nonhospitalized patients without known or suspected pituitary disease.

New CPT codes effective 1/1/2016
New Obstetric Prenatal Panel - CPT 80081
Includes, Blood Count, Complete CBC and automated or manual differential count, Hepatitis B Surface antigen(HBsAG), HIV-1 antigen(s), with HIV-1 and HIV-2 antibodies, Rubella Antibody, RPR and Prenatal ABO and RH Screen.

Medicare Codes for Drug Screens
DELETED: G0431 Drug Screen, qualitative; Multiple drug classes by high complexity test method (e.g. immunoassay, enzyme assay), per patient encounter
REPLACED: G0479 Drug Tests, presumptive, any number of drug classes; any number of devices or procedures by instrumented chemistry analyzers (e.g. immunoassay, enzyme assay, TOP, MALDI, LDTD, DESI, DART, GHPC, GC Mass see), includes sample validation when performed, per date of service.
Affects: Med Drug Screen 7,8,9,10,11,12
DELETED: G6043 GCMS ID/Quant
REPLACED: G0480 Drug Tests definitive, GCMS and LCMS.