

Subject: Changes in Chemistry Samples, Test Menu, and Reference/Critical Ranges

To: All Northwest Hospital Laboratory Users

Effective Date: 12/15/2008

Explanation of Change: The Laboratory has acquired new chemistry/immunology “Dimension Vista” analyzers from Siemens. As a result, we are able to consolidate 4 different instrument platforms into one leading edge analyzer.

These analyzers will:

- Decrease sample analysis times
- Reduce sample volumes
- Increase sensitivity and specificity
- Improve testing efficiency while reducing expenditures

Improved Technology: There are some changes in sample type, the test menu, normal reference ranges and critical reporting.

- The primary chemistry sample type is switching from serum to **Lithium Heparin Plasma**. These samples will be collected in the **light-green-top PST** tubes. All general Chemistry panels, thyroid tests, cardiac tests, and Hepatitis tests will be drawn in the PST tube.
- Chemistry tests that will continue to need **serum** are: some therapeutic drugs (including Salicylate, DIG, Dilantin, and Carbamazepine), reproductive hormones (including FSH, LH, Prolactin, Progesterone, Estradiol, and Testosterone), tumor markers (including AFP, CA125, CEA, PSA, and cPSA), and special immunology testing (including HIV, CCP, Varicella, HSV, Rubella, dsDNA, ANA, ENA, and H. Pylori).
- Amylase testing: NWCL will be performing a total amylase instead of reporting a panel including a pancreatic amylase and calculated salivary amylase. If a serum Pancreatic Amylase is desired, it must be ordered individually (as a miscellaneous test in Soarian) and will be sent to Mayo Medical Laboratories for testing.
- New tests available: the Laboratory will be adding Free T3 and IGE to its test menu in the first quarter of 2009. These tests will be run on lithium heparin plasma and will be reported real-time.
- Reference range and critical value changes: these are necessary to adjust for changes in methodology and will better align ourselves with community standards for reporting. The changes listed below have been confirmed using our NWH normal patient population.

Test	Current Reference Range	New Reference Range								
Acetaminophen (new critical limit, no change in therapeutic range)	Critical value >10 ug/mL	Critical value >30 ug/mL								
Beta HCG **This test is not intended for aiding in the diagnosis of cancer, or for monitoring the treatment of cancer patients. If that is needed, please indicate on the requisition and the sample will be sent to a reference laboratory for testing.	(0 – 5 mIU/mL)	(0 – 3 mIU/mL)								
CRP	(0.0 – 0.9 mg/dL)	(0.0 – 3.0 mg/dL)								
DIG (no change in therapeutic range, new critical limit)	Critical value >3.1 ng/mL	Critical value >2.0 ng/mL)								
Ferritin	Female (10 – 291ng/mL) Male (22 – 322 ng/mL)	Female (10 – 250 ng/mL) Male (22 – 380 ng/mL)								
Folate	(5 – 24 ng/mL)	(4 – 20 ng/mL)								
Free T4	(0.7 – 1.9 ng/dL)	(0.7 – 1.7 ng/dL)								
Gentamicin (change in peak and random only)	Trough (1.0 – 2.0 ug/mL) Peak (5.0 – 10.0 ug/mL) Random (1.0 – 10.0 ug/mL)	Trough (1.0 -2.0 ug/mL) Peak (4.0 – 9.0 ug/mL) Random (1.0 – 9.0 ug/mL)								
GGT	Female (0. -40 U/L) Male (0 – 55 U/L)	Female (0 -50 U/L) Male (0 -70 U/L)								
Cardio CRP	(0.0 – 1.9 mg/L)	(0.0 – 3.0 mg/L) with the following interpretation guide: <table border="1"> <thead> <tr> <th>Risk</th> <th>Cardio CRP (mg/L)</th> </tr> </thead> <tbody> <tr> <td>Low</td> <td>< 1.0</td> </tr> <tr> <td>Average</td> <td>1.0 – 3.0</td> </tr> <tr> <td>High</td> <td>> 3.0</td> </tr> </tbody> </table>	Risk	Cardio CRP (mg/L)	Low	< 1.0	Average	1.0 – 3.0	High	> 3.0
Risk	Cardio CRP (mg/L)									
Low	< 1.0									
Average	1.0 – 3.0									
High	> 3.0									
HDL	Multiple pediatric age/reference ranges Adult Female (35 – 95 mg/dL) Adult Male (30 – 75 mg/dL)	0 – 2 years (12 – 60 mg/dL) 2 – 6 years (16 – 68 mg/dL) 7 – 11 years (26 – 77 mg/dL) 12 15 years (22 – 79 mg/dL) 16 – 18 years (24 – 74 mg/dL) Adult (40 – 59 mg/dL)								

Test	Current Reference Range	New Reference Range																																				
Hemoglobin A1C (no change in target, updated chart for relationship of % A1C to average plasma glucose)	ADA A1C target for adults with diabetes < 7% Relationship of % A1C to average plasma glucose (mg/dL): <table border="1"> <tr> <td>A1C</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> <td>9</td> <td>10</td> <td>11</td> <td>12</td> </tr> <tr> <td>GLU</td> <td>101</td> <td>136</td> <td>172</td> <td>207</td> <td>241</td> <td>271</td> <td>311</td> <td>345</td> </tr> </table> Diabetes Care 2001	A1C	5	6	7	8	9	10	11	12	GLU	101	136	172	207	241	271	311	345	ADA A1C target for adults with diabetes < 7% Relationship of % A1C to average plasma glucose (mg/dL): <table border="1"> <tr> <td>A1C</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> <td>9</td> <td>10</td> <td>11</td> <td>12</td> </tr> <tr> <td>GLU</td> <td>97</td> <td>126</td> <td>154</td> <td>183</td> <td>21</td> <td>240</td> <td>269</td> <td>298</td> </tr> </table> Diabetes Care 2008	A1C	5	6	7	8	9	10	11	12	GLU	97	126	154	183	21	240	269	298
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Homocysteine	(5.0 – 14.0 umol/L)	(3.5 – 11.0 umol/L)																																				
IGA	Multiple pediatric age/reference ranges Adult (60 – 380 mg/dL)	0 – 1 year (0 -85 mg/dL) 1 year – adult (87 -474 mg/dL)																																				
IGG	Multiple pediatric age/reference ranges Adult (600 – 1700 mg/dL)	0 - 1 year (200 – 700 mg/dL) 1 year – adult (600 1700 mg/dL)																																				
IGM	Multiple pediatric age/reference ranges Adult (60 – 350 mg/dL)	0 - 30 days (0 – 100 mg/dL) 1 month – 1 year (20 – 200 mg/dL) 1 year – adult (40 – 250 mg/dL)																																				
LDH	(70 – 225 U/L)	(70 – 210 U/L)																																				
LDL calculated and direct	Multiple pediatric age/reference ranges Multiple adult age/reference ranges	0 – 18 years (0 – 120 mg/dL) Adult (0 – 159 mg/dL) with the following interpretation guide: <table border="1"> <tr> <td>Optimal</td> <td><100</td> </tr> <tr> <td>Near optimal/above optimal</td> <td>100 -129</td> </tr> <tr> <td>Borderline high</td> <td>130 – 159</td> </tr> <tr> <td>High</td> <td>160 – 189</td> </tr> <tr> <td>Very High</td> <td>>189</td> </tr> </table>	Optimal	<100	Near optimal/above optimal	100 -129	Borderline high	130 – 159	High	160 – 189	Very High	>189																										
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Lipase (range change and removal of critical value)	(0 – 80 U/L) Critical value >600 U/L	(114 – 286 U/L) No critical value																																				
Microalbumin (change in units for microalbumin raw values and ma/creatinine ratio)	MA raw values reported in mg/dL (no reference range established) (0 – 14.9 mg/24 hrs) Alb/Creat ratio (0.000 – 0.019 mg MA/ mg Creat)	MA raw values reported in mg/L (no reference range established) (0 – 29 mg/24 hrs) Alb/Creat ratio (0 – 29 mg MA/g Creat)																																				
Magnesium (change in 24 hour urine reference range, no change in serum reference range)	Urine (72 – 120 mg/24 hours)	Urine (24 – 255 mg/24 hours)																																				
Potassium	0 – 2 days (5.0 – 7.5 mEq/L) 3 days – 3 months (4.0 – 6.2 mEq/L) 3 months to adult (3.5 – 5.5 mEq/L)	0 -1 year (3.4 – 6.0 mmol/L) 1 year – adult (3.5 - 5.5 mmol/L)																																				
T3 (change in units)	(65 – 210 ng/dL)	(0.65 – 2.1 ng/mL)																																				
T3-Uptake	(25 – 35 %)	(31 – 39 %)																																				
T4	(4.2 – 11.7 ug/dL)	(4.2 – 12.5 ug/dL)																																				

Test	Current Reference Range	New Reference Range								
Total Bilirubin (reference range adjusted for age, no change in critical value)	All ages (0 – 1.2 mg/dL)	0 – 1 day (0 – 5 mg/dL) 1 – 2 days (0 – 7.1 mg/dL) 3 – 30 days (0 – 10.2 mg/dL) 1 month – 17 years (0 – 0.7 mg/dL) Adult (0 – 1.2 mg/dL)								
Theophylline (change in critical value, no change in therapeutic range.)	Critical value > 30 ug/mL	Critical value > 25 ug/mL								
Triglyceride	(25 – 220 mg/dL)	(0 – 199 mg/dL) with the following interpretation guide: <table border="1"> <tr> <td>Normal</td> <td><150</td> </tr> <tr> <td>Borderline high</td> <td>150 – 199</td> </tr> <tr> <td>High</td> <td>200 – 499</td> </tr> <tr> <td>Very High</td> <td>>499</td> </tr> </table>	Normal	<150	Borderline high	150 – 199	High	200 – 499	Very High	>499
Normal	<150									
Borderline high	150 – 199									
High	200 – 499									
Very High	>499									
Uric Acid	Female (2.5 – 6.8 mg/dL) Male (3.0 – 8.2 mg/dL) Urine (250 – 750 mg/24 hrs)	Female (2.5 – 6.5 mg/dL) Male (3.0 – 8.0 mg/dL) Urine (200 – 900 mg/24 hrs)								
Valproic Acid (change in critical value, no change in therapeutic range.)	Critical value > 150 ug/mL	Critical value > 125 ug/mL								
Urine Total Protein Random	(0 – 19 mg/dL)	(0 – 11.8 mg/dL)								
Spinal Fluid Total Protein	(15 – 60 mg/dL)	(15 – 50 mg/dL)								

All of the above changes will print on the laboratory patient reports with a comment alerting providers that the range has changed effective 12/15/2008.

Information Contact:

Michelle Manis - Chemistry Supervisor, 206.368.2038

Richard Patton, MD - Pathologist, 206.368.1779