Lab Updates

Important announcements regarding tests, procedures and results are reported approximately once per month on this Web page:

May 2010
Laboratory Testing/Reporting of Antibody to Hepatitis C Virus (HCV) | Specimen Handling | JAK2 Exons 12 and 13 Sequencing Testing

April 2010
Genetic Testing | Changes in Specimen Labeling Requirements | Changes in BNP and ACTH Specimen Collection Requirements

March 2010
Quad Maternal Screen Test (QUAD) | Hemoglobin A1C for the Diagnosis of Diabetes | HIV (OHIV) Serology Testing | Featured Patient Service Center

February 2010
UMass Memorial Laboratories - Health Alliance | Involuntary Weight Loss | Featured Patient Service Centers

January 2010
Celiac Disease | Patient Service Center Locations | Featured Patient Service Center

December 2009
Drugs of Abuse [DOA] Testing in Urine | DNA Sequence analysis for Ellis-van Creveld Syndrome and Weyers Acrofacial Dysostosis | Arthritis | Highlights of the Educational Symposium

November 2009
Specific Immunoglobulin E (IgE) Allergen Tests | Spurious Hyperbilirubinemia Caused by Naproxen | Change in Cytomegalovirus Quantitative Testing | Sequencing Assay for Detecting Pompe Disease Mutations | HBV Quantitation by PCR (COBAS TaqMan) | Enterovirus Detection Assay by Real Time PCR | Featured patient Service Center

September/October 2009
Proteinuria | Evaluation of Pleural Effusions | Insert: Educational Symposium | Featured patient Service Center

August 2009
Changes in Syphilis Testing | Antinuclear Antibody (ANA) Testing Update | Featured patient Service Center

July 2009
Specific Ummunoglobulin E (IgE) Allergen Tests | Spurious Hyperbilirubinemia Caused by Naproxen

June 2009
Fatigue | Genomic Microarray Analysis | Featured Patient Service Center

May 2009
Changes in Epstein-Barr Virus (EBV) and Lyme Serology Test Reports | Sexually Transmitted Diseases

April 2009
The Anemias | Use of Creatinine Output as a Check on the Completeness of 24 Hour Urine Collections | HIV-1 Quantitation and Hepatitis C Virus Quantitation by PCR (COBAS TaqMan) | Changes in Dilute Russell Viper Venom Time | RVP Panel Stability | QuantiFERON-TB Gold in Tube Assay Now Available | Laboratory Supply Distribution Center Updates | New Vacuette Coagulation Tube Labels

March 2009
Thyroid Function Tests | Estimated Average Blood Glucose (eAG): A new way to talk to patients about diabetes management | Laboratory Supply Distribution Center Updates | | Featured Patient Service Center

February 2009
Laboratory Confirmation of Pertussis Infection | Specimen Validity and Drug Testing | New Respiratory Viral Panel Test | Addendum to Changes in Free Testosterone and Bioavailable Testosterone Testing | Special Coagulation Requirements | Changes in H.Pylori, HSV-1 and HSV-2 IgG Serology Test Reports

January 2009
Serum Protein Electrophoresis and Immunofixation | Hypercalcemia | Lab Test Collection Alerts | Featured Patient Service Center

December 2008
Anti-Neutrophil Cytoplasmic Antibody (ANCA) Testing | Changes in IgG Antibodies to Glomerular Basement Membrance (GBM) Testing | Non-Invasive Test for the Diagnosis of Heliobacter Pylori (H. Pylori) Infection (UBT) | Changes in Measles, Mumps, Rubella and Varicella IgG Serology Test Reports | Changes in Free Testosterone and Bioavailable Testosterone Testing | Comprehensive HLA Testing | Labeling Guides for Blood Specimens | Featured Patient Service Center

November 2008
Lab Evaluation for the Jaundiced Patient | Quantitative Urine Chemistry Tests: 24 Hr vs. Random Urine | Patient Service Center Locations in New England | Featured Patient Service Center

October 2008
New Immunoassay Based Fecal Occult Blood Test (FIT) | Sample Preparation for Uric Acid Testing in Patients Receiving Rasburicase (ELITEK) Therapy | New IgG Cased ELISA Assay for Diagnosis of Heparin-induced Thrombocytopenia | Methicillin-Resistant *Stahpylococcus aureus* Detection - Two Choices | Tips for a Successful Coagulation Blod Draw | Featured Patient Service Center

September 2008
UMass Memorial Medical Center Accreditation | VKORC1 Sequencing | Sequencing Assay for Detecting Fabry Disease Mutations | Molecular UGT1A1 DNA Assay | Lab Start Award for "Lab Values/Mission" | Featured Patient Server Center

August 2008
Optimal Level of Vitamin D | Varicella IgG (VARG) Test Tange Changes | Hemoglobin Evaluation (HGBSCR) Test Changes | Lupus Screen Changes | Patient Service Centers in Central Massachusetts | New Patient Service Center - Worcester, MA

July 2008
Laboratory Document Control Center | Malaria Update | Featured Patient Service Center - Enfield, CT

June 2008
Streptococcal Antibody Tests | Changes in CA 27.29 Testing | Reference Range Changes | Featured Patient Service Center - Hartford, CT

April 2008
Human Cardiolipin Antibodies, IgG, IgM and IgA by Enzyme Immunoassay | Reference Range Changes | Phosphorous Assay Interference Alert | New Procedure for Detection of Cytogenetic Aberrations in Plasma Cell Dyscrasia | Rapid Prenatal Flouresecence in Situ Hybridization | Specimen Requirement Changes | New Patient Service Center - Westerly, RI

March 2008
Creatinine Standardization | Changes in Lamotrigene (Lamictal) Testing | Updates to the Lab Test Directory | Special Coagulation Assays | JAK2 Qualitative Assay for Bone Marrows | Hepatitis B Quantitative Testing | Specimen Requirement Changes/Clarifications | Featured Patient Service Center - Marlboro Lakeview

January 2008
Direct Group A Streptococcus Detection, Gen-Probe | Full Throat Culture Screens | Supplies Contact Information | Changes in urine Opiate Confirmation and Quantitation Testing | Updates to the Lab Test Directory | Featured Patient Service Center - Worcester

November 2007
Noninvasive Tests for the Diagnosis of Heliobactor Pylori (H.Pylori) Infection | Changes in Triglyceride Testing | Laboratory Confirmation of Pertussis Infecion | New Patient Service Center - Marlboro | Specimen Submission Form

October 2007
Directly Measured LDL vs. Calculated LDL | Change in Cyclic Citrullinated Peptide (CCP) Antibody Testing | New Test: Hemoglobin S Quantitative | Changes in Oxcarbazepine (Trileptal) Metabolite Testing| Change in C. Difficile Testing | Change in 10-OH Progesterone Testing | Update on Special Coagulation Assays | New Patient Service Center - Attleboro

August 2007
Fractional Excretion of Sodium (FENa) | Changes in Epstein-Barr Virus (EBV) Serology Testing| Changes in Lyme Serology Testing | Testing for Shellfish Allergy | Changes in Varicella-Zoster Serology Testing | Changes in C-Peptide Testing | Update on DVT D-Dimer Assay | New Patient Service Center Opens in Cumberland, Rhode Island

June/July 2007
Change in Cytomegalovirus Quantitative Virus | Consent and History Form Reminders | General Reminders | New Patient Service Center Opens in Raynham | Sample Forms

May 2007
Patient Height Information is Required for Warfarin Dose Guideline Calculation when Requesting the Anti-Coagulation Pharmacogenetic Panel | Examination of Fecal Specimens for Giardia, Cryptosporidium and other Parasites | New Test: Oxycodone and Oxymorphone | Reference Range Changes for Coagulation Testing | Patient Service Center (PSC) Locations | New Patient Service Center Opens

April 2007
Non-HDL Cholesterol as a Predictor of Cardiovascular Disease in Patients with Diabetes | Changes in Therapeutic Drugs Testing Specimen Requirements; RED TOP (No Gel) vs SST (GEL) Tubes | Changes in HIV Serology Testing | New Patient Service Center Opens | Patient Service Center (PSC) Locations

February 2007
Measurement of Ammonia in Blood| Changes in Serum Ketone (ACE or BHY) Testing| Changes in Zinc Protoporphyrin (ZPP) Testing | Clarification Regarding the Anticoagulation Pharmacogenetic Panel

December 2006 - January 2007
Changes in Antinuclear Antibody (ANA) Testing | Recommendations for Ordering D-Dimer Assay | Reference Range Changes | Patient Service Center (PSC) Locations

November 2006
Changes in HCV Genotype Testing | Reference Range Changes | Laboratory Confirmation of Pertussis Infection

October 2006
Changes in Testosterone and Free Testosterone Testing | Changes in Ferritin Testing | Changes in C_Reactive Protein (CRP) Testing | Changes in Measles, Mumps and Rubella IgG Test Reference Changes | Changes in Cytomegalovirus Quantitative Testing | Sample Submission Change for Stone Risk Testing | Changes in Urine Toxicology Screening | Additional Testing Changes | Patient Service Center Move

September 2006
Changes in Maternal Serum Screening | Changes in Testing for *PNH*| Changes in Performing the Ristocetin Cofactor Assay | Changes in Reporting of i-STAT Potassium | Critical Value Changes

August 2006
Changes in Maternal Serum Screening | Recommendations for Use of Molecular Diagnostic Requisition and Genetic Consent Form | Changes in Adrenocorticotropic Hormone Test (ACTH) | Changes in 17 Alpha-Hydroxy Progesterone Resulting | Changes in Hepatitis B Surface Antibody Testing | Chlamydia and Neisseria Gonorrhea Urine Collection | Reference Range Changes | Tube Recall

July 2006
Sputum Culture Specimen Collection | New Test: Protein-Creatinine Ratio | Changes in Lipoprotein-a Testing | Recommendations for Specimen Collection and Processing | Workup for a Patient with Suspected Hemostatic Diathesis | Sedimentation Rate Methodology Change | Reference Range Changes | Critical Value Changes

June 2006
Lyme Disease Testing| Changes in High Sensitivity CRP (hsCRP) Reporting Units | Changes in Alpha-FeteoProtein (AFP) Reporting Units | Changes in Urine Cannabinoids Confirmation Testing | Reference Range Changes | Specimen Requirements Change: LDL Subclasses | New Test: Osmolal Gap | Changes to Platelet Aggregation Studies | Molecular Testing for Genetic Diseases | Hereditary Cancer Risk Assessment and Genetic Testing | Genetic Testing Support Services | Phone System Upgrade Notification | | New Patient Service Center Locations | New Laboratory Report Format

April 2006
Cell Counts on Body Fluids | Absolute CD4+ T Cell Counts by Flow Cytometry | JAK-2 (Janus Kinase-2) Gene Testing | Carrier Screening for Cystic Fibrosis DNA Mutations | New Patient Service Center Locations

March 2006
Changes in Erythropoietin (EPO) Testing | Specimen Requirement and Testing Changes | Quantitative BCR/ABL Replaces Ultraquant® Assay for Bone Marrow Specimens | Therapeutic Drug Monitoring (TDM): Optimal Specimen Collection Times in Relation to Drug Dosing

January/February 2006
Changes in Thyroid Testing Hormone | Change in CA19-9 Testing | Renin Testing Availability | Osmotic Fragility Testing Availability | Paroxysmal Nocturnal Hemoglobinuria (PNH) | Monitoring Minimal Residual Disease (MRD) in Treated CLL Patients | Carrier Screening for Cystic Fibrosis | Cytokines and Growth Factor Assays | Reference Range Changes

December 2005
Urinalysis Methodology Change | Lead Testing Methodology Change | 17-α-Hydroxyprogesterone (17-α-OHP) | Fecal Occult Blood (Guaiac) Testing | Schistocyte Reporting on Peripheral Smears | CPT Code Changes for 2006

October/November 2005
Quantitative BCR/ABL Assay Replaces Ultraquant Assay | Division of Anatomic Pathology Has Moved | New Patient Service Center | Molecular Genetics Test Ordering Changes | Stool Culture Billing Modification | Changes in Drugs of Abuse (DOA) Tests in Urine | Changes in Urine Amylase Testing | Changes in Vitamin B12 Reference Range | New Test: Corticotropin Releasing Hormone (CRH) Stimulation Test | New Test: Growth Hormone Stimulation Test

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Lab Updates

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February 2007

MEASUREMENT OF AMMONIA IN BLOOD

The measurement and interpretation of ammonia, a normal constituent of all body fluids, is challenging. An elevated ammonia level in blood is an indicator of an abnormality in nitrogen homeostasis, most commonly related to liver dysfunction. In excess, ammonia is a potent toxin, principally of central nervous system function. In both acute and chronic settings**,** the prompt measurement of the plasma ammonia level is very important, but the clinical status of a patient's brain function should outweigh the importance of these test results. This is because ammonia levels may not directly correlate with clinical status. When the ammonia level is low, patients seem to be particularly sensitive to small increases in the level. When the ammonia level is elevated, patients seem to exhibit a tolerance to the high level with fewer symptoms. This could explain why symptoms may precede significant rises in ammonia levels and high ammonia plasma levels can still be present when the patient is clearly getting better. In most instances clearly aberrant values cannot be explained, although preanalytical artifacts are believed to account for many of these spurious results.

The major limitations of conventional in vitro blood ammonia measurements are the complexity involved in the proper drawing and handling of the sample and the time allowed between drawing and assaying. Most methods recommend collecting a sample from patients who have fasted for at least 6 hours. Plasma ammonia levels are known to increase with exercise, smoking, GI bleeding, blood transfusions, high protein intake and some medications. Squeezing a ball in the hand for a few minutes has the effect of raising blood ammonia levels to as high as 150 µmol/L. Heparin is the preferred anticoagulant, because it has been shown to reduce red blood cell ammonia production. The patient's arm should be as relaxed as possible, because muscle exertion may increase venous ammonia levels. **The blood sample should be drawn into a chilled, sodium heparinized vacuum tube that is immediately placed on ice. The sample should then be centrifuged and the plasma removed within 15 minutes of draw. It is crucial to keep blood samples cold after collection, because the ammonia concentration of standing blood and plasma increases spontaneously.** Most of this increase has been attributed to the generation and release of ammonia from red blood cells and the deamination of amino acids, particularly glutamine. The use of capillary blood should be avoided, because platelet aggregation and clotting lead to elevated ammonia levels. Measurements should be taken at the same time of day and under the same circumstances, because there is a diurnal variation in blood ammonia levels. The best way to confirm a raised ammonia level is not an artifact is by repeating the measurement

with another blood sample and carefully following the guidelines on the collection, handling, and storage of samples.

Plasma ammonia levels in whole blood samples maintained at 4^{o}C are stable for <1 hour. When promptly separated from blood, plasma ammonia levels are stable at 4^{o}C for 4 hours. We do not recommend, freezing specimens at -20^{0} C. Our internal validation studies showed significant variations in ammonia levels when frozen.

For inpatient and outpatient testing: The required specimen is plasma from a dark green-top (sodium heparin) tube. The specimen should be mixed gently by inversion and placed on ice. The specimen should be transported immediately to the laboratory on ice.

For specimens collected off site: The required specimen is plasma from a dark green-top (sodium heparin) tube. The specimen should be mixed gently by inversion and centrifuged immediately (within 15 minutes) to obtain plasma. The plasma should be transferred to a separate vial and placed on ice. The specimen should be transported on ice. **DO NOT FREEZE**. **You must call for a STAT pickup by contacting Customer Service at 508-334-2863**. Samples must arrive at laboratory within 3 hours after collection.

Do not use block ice or dry ice, as this will freeze the specimen. Hemolyzed specimens and specimens received at ambient temperatures, will not be analyzed, as falsely increased ammonia concentrations may result. Unspun tubes will not be accepted from outside the hospital. If you do not have a centrifuge you must refer the patient to a UMass Memorial Laboratories Patient Service Center. Call Customer Services at 508-334-2863 for the nearest location.

1. Laboratory Medicine Practice Guidelines, NACB, 2000.
2. Barsotti RJ. (2001). The Journal of Pediatrics, 138: S11-S20.

If you require further information or have comment or concerns, please contact:
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CHANGES IN SERUM KETONE (ACE or BHY) TESTING

Serum Ketone testing is generally done with nitroprusside (Acetest) tablets. A 4+ reaction with serum diluted 1:1 is strongly suggestive of ketoacidosis. The nitroprusside method only measures acetoacetic acid and acetone. However, beta-hydroxybutyrate (BHB), the strongest and most prevalent acid in diabetic ketoacidosis (DKA), is not measured by the nitroprusside method.

Direct measurement of BHB in the blood is the preferred method for monitoring DKA[1]. During therapy, BHB is converted to acetoacetic acid, which may lead the clinician to believe that ketosis has worsened. Therefore, assessments of serum ketone levels by the nitroprusside method should not be used as an indicator of response to therapy.

Effective March 12, 2007, serum ketone testing will be performed by BHB testing only. There are no changes in specimen collection requirements (One SST/ Serum). The normal range < 2 mmol/L.

[1] Kitabchi AE, Umpierrez GE, Murphy MB, Barrett EJ, Kreisberg RA, Malone JI, Wall BM. Hyperglycemic crises in diabetes. Diabetes Care 2004 Jan;27(Suppl 1):S94-102

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