

# Lab Updates

June 2008

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# Streptococcal Antibody Tests

**STREPTOCOCCAL INFECTIONS** are caused by bacteria known as Streptococcus. There are several disease-causing strains of streptococci (groups A, B, C, D, and G), which are identified by their behavior, chemistry, and appearance. Each group causes specific types of infections and symptoms.

**Group A streptococci** are the most virulent species for humans and are the cause of strep throat, tonsillitis, wound and skin infections, blood infections, scarlet fever, pneumonia, rheumatic fever, Sydenham's chorea (formerly called St. Vitus' dance), and glomerulonephritis.

Although symptoms may suggest a streptococcal infection, the diagnosis must be confirmed by tests. The best procedure, and one that is used for an acute infection, is to take a sample from the infected area for culture. However, cultures are useless about two to three weeks after initial infection, so the Antistreptolysin O titer (ASO), anti-DNase-B (ADB), and streptozyme screen (STREPT) tests are used to determine if a streptococcal infection is present.

## Streptozyme

The streptozyme test is often used as a screening test for antibodies to the streptococcal antigens NADase, DNase, streptokinase, streptolysin O, and hyaluronidase. This test is most useful in evaluating suspected post-streptococcal disease following *Streptococcus pyogenes* infection, such as rheumatic fever.

Streptozyme has certain advantages over ASO and ADB. It can detect several antibodies in a single assay, it is technically quick and easy, and is unaffected by factors that can produce false-positives in the ASO test. The disadvantages are that, while it detects different antibodies, it does not determine which one has been detected, and is not as sensitive in children as in adults. In fact, borderline antibody elevations, which could be significant in children, may not be detected at all.

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## Antistreptolysin O titer (ASO)

The ASO titer is used to demonstrate the body's reaction to an infection caused by group A beta-hemolytic streptococci. Group A streptococci produce the enzyme streptolysin O, which can destroy (lyse) red blood cells. ASO appears in the blood serum one week to one month after the onset of a strep infection. A high titer is not specific for any type of post streptococcal disease, but it does indicate if a streptococcal infection is or has been present.

Serial ASO testing is often performed to determine the difference between acute or convalescent blood samples. The diagnosis of a previous strep infection is confirmed when serial titers of ASO rise over a period of weeks, and then falls slowly. ASO titers peak during the third week after the onset of acute symptoms of a streptococcal disease; at six months after onset, approximately 30% of patients exhibit abnormal titers. Elevated titers are seen in 80-85% of patients with acute Rheumatic fever and in 95% with acute glomerulonephritis.

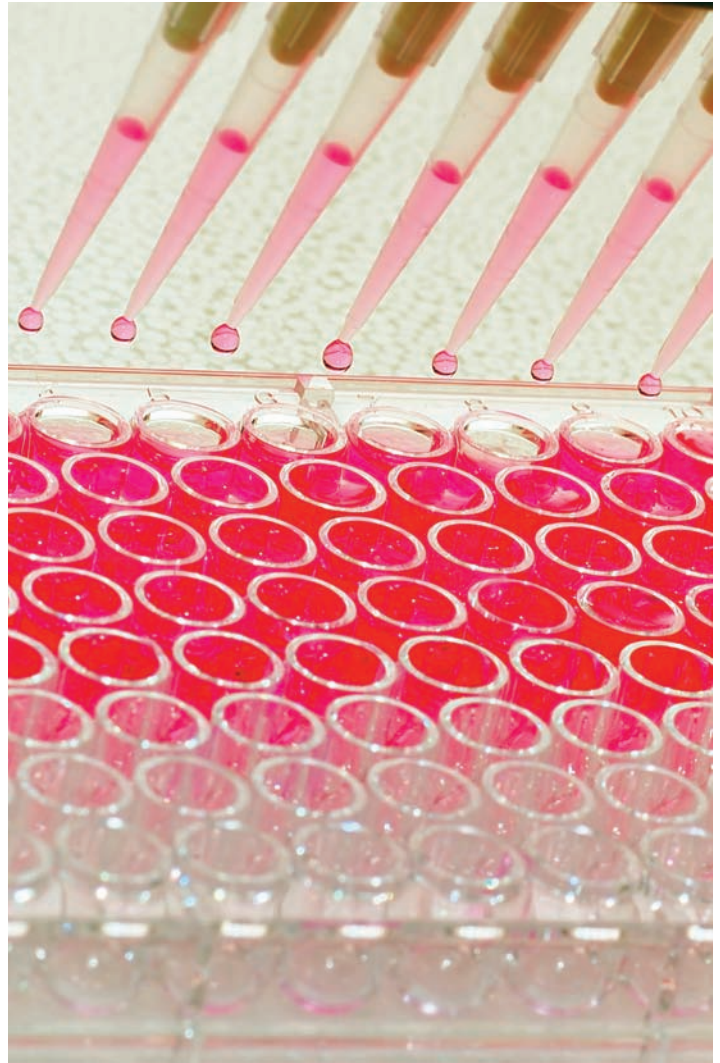
The limitations for this test are false positives within are observed with increased levels of serum beta lipoproteins produced in liver disease, contamination of serum with *Bacillus cereus* or *Pseudomonas* sp. Also these titers are not formed as a result of streptococcal pyoderma.

## Antideoxyribonuclease-B titer (anti-DNase B, or ADB)

Anti-DNase-B, or ADB, also detects antigens produced by group A strep, is elevated in most patients with rheumatic fever and post streptococcal glomerulonephritis. This test is often done concurrently with the ASO titer. When ASO and ADB are performed concurrently, 95% of previous strep infections are detected.

When evaluating patients with acute rheumatic fever, the American Heart Association recommends the ASO titer rather than ADB. Even though the ADB is more sensitive than ASO, its results are too variable. It also should be noted that, while ASO is the recommended test, when ASO and ADB are done together, the combination is better than either ASO or ADB alone. This test has theoretical and technical advantages over ASO. It is more sensitive to streptococcal pyoderma. It is not subjected to false positives due to liver disease and no worries about test invalidation due to oxidation of reagents.

**Effective June 23, 2008**, ASO testing will be performed at UMass Memorial Labs using nephelometry. There are no changes in specimen collection requirements. One SST serum (Gold Top) tube is required.



The new reference range for ASO reporting will be "Less than 116 IU/mL". A two fold increase in the ASO values, using serial analyses, with one to two weeks of the initial result is supportive of a prior streptococcal infection. In the absence of complications or reinfection, the ASO level will usually fall to preinfection activity within six to twelve months. A single ASO analyses may not be meaningful due to the variability of ASO values within the normal population.

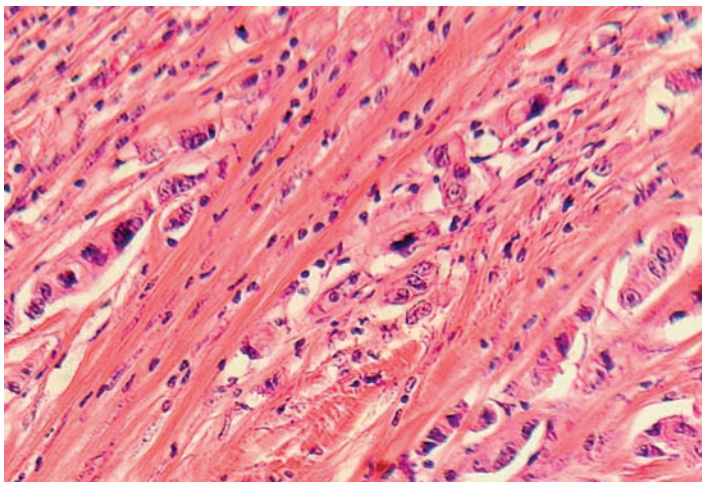
*If you have questions, comments or suggestions, please contact:*

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via email at RaoL@ummhc.org

Ms. R. Ambacher, Manager at 508-334-7316 or  
via email at Ambacher@ummhc.org



## Changes in CA 27.29 Testing



CA 27.29 is a tumor marker useful in the management of patients with metastatic carcinoma of the breast. Serial testing in patients who are clinically free of disease should be used in conjunction with other clinical methods used for the early detection of cancer recurrence. This test is also intended for use as an aid in the management of breast cancer patients with metastatic disease by monitoring the

progression or regression of disease in response to treatment. Patients with confirmed breast carcinoma frequently have CA 27.29 levels within the reference interval. Elevated levels of CA 27.29 can be observed in patients with non-malignant diseases. Therefore, this result cannot be interpreted as absolute evidence of the presence or absence of malignant disease and should always be used in conjunction with other diagnostic procedures, including information from the patient's clinical evaluation.

**Effective June 23, 2008**, CA 27.29 testing will be performed at UMass Memorial labs using chemiluminescent immunoassay. There are no changes in specimen collection requirements. One SST serum (Gold Top) tube. The reference range will be "Less than 38.6 U/mL".

*If you have questions, comments or suggestions, please contact:*

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## New On-Line Laboratory Services Directory



We are pleased to introduce our new on-line laboratory services directory to all of our clients. It contains a comprehensive list of our testing menu/specimen requirements in an easy-to-use alphabetical guide format. In addition, this on-line service presents an overview of the various clinical departments and specialty labs, a list of conveniently located phlebotomy/patient service centers, and copies of our monthly *Lab Updates*.

This new on-line service is available by accessing the following web site: <http://ummlabs.org/LabManual2.asp>.

The home web page is <http://www.ummlabs.org>.

Listed below are a few of the key components now available at your fingertips:

**Lab Services:** Lab Manual/Test Directory and an overview of the various clinical departments and specialty labs

**Customer Service:** List of conveniently located Phlebotomy/Patient Service Centers

**Connectivity:** List of options for IT solutions for various client locations

**Client Area:** Supply order forms and copies of *Lab Updates*

**Please feel free to contact our Customer Service department with any questions or concerns at (800) 476-4431.**

For UMass Memorial employees, the online version of the *Laboratory Reference Manual* is also available in multiple locations on OurNet:

- Patient Care>Hospital Labs>Clinical Programs and Departments>*Laboratory Reference Manual*
- Patient Care> Related Links>*Laboratory Reference Manual*
- Resources>Related Links>*Laboratory Reference Manual*

# Reference Range Changes

Effective June 16, 2008, the reference ranges for the following analytes will change. The new reference ranges for serum are as follows.

Test	Current Reference Range	New Reference Range
<b>Progesterone</b>		
Males	0.10-0.84 ng/mL	0.14-2.06 ng/mL
<b>Estradiol</b>		
Males	20-75 pg/mL	<20-47 pg/mL
Females		
Postmenopausal <sup>1</sup>	20-88 pg/mL	<20-40 pg/mL
Mid Follicular phase <sup>2</sup>	24-114 pg/mL	27-122 pg/mL
Mid Luteal Phase <sup>3</sup>	80-273 pg/mL	49-291 pg/mL
Peri-ovulatory Phase <sup>4</sup>	62-534 pg/mL	95-433 pg/mL
<b>Digoxin<sup>5</sup></b>	0.8-2.0 ng/mL	0.5-1.0 ng/mL

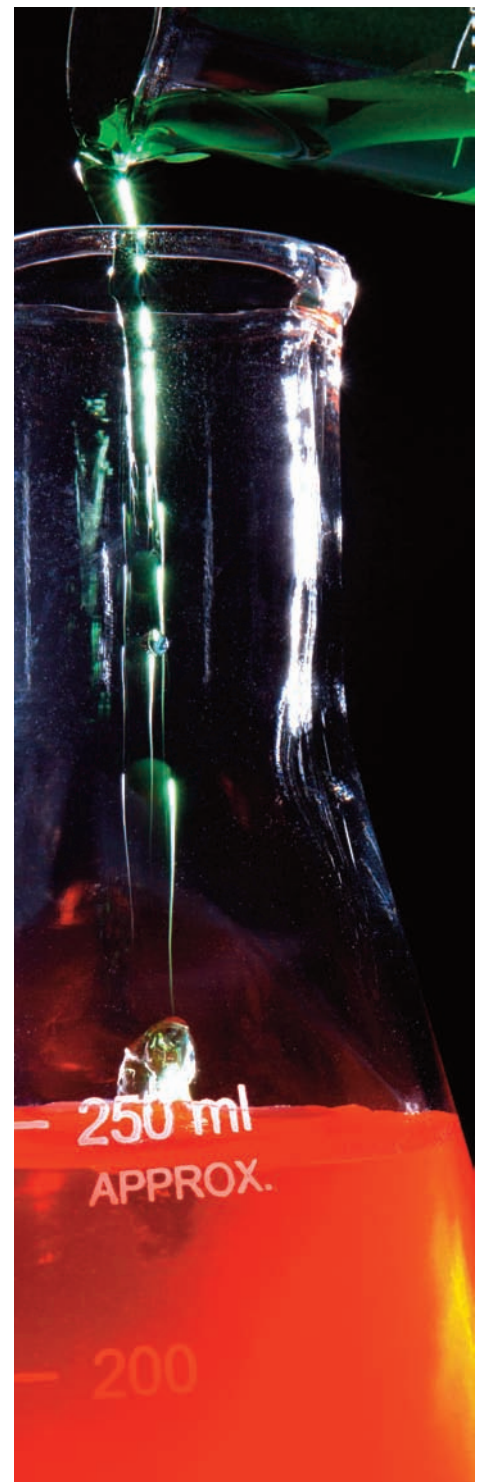
1. Not on hormone therapy.

2. Range represents days -6 to -8 from the hLH peak (day 0).

3. Range represents days +6 to +8 from the hLH peak (day 0).

4. Range represents days -1 from the hLH peak (day 0).

5. Digoxin therapy has long been used to treat patients with heart failure. A widely used reference range for serum digoxin (0.8-2.0 ng/mL) was established to assess toxicity, not effectiveness. Based on recommendations and study findings from *Digitalis Investigation Group Trial*, doses that achieve a concentration of drug in serum in the range of 0.5 to 1.0 ng/mL are suggested.



If you have questions, comments or suggestions, please contact:

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# New Patient Service Center

We are one of the largest laboratory providers in New England

UMass Memorial Laboratories has opened a Patient Service Center (phlebotomy draw station) at 21 Woodland St., Suite 210, Hartford, CT.

The vision of UMass Memorial Laboratories is:

- To be a leading provider of laboratory services throughout New England, meeting the needs of patients and providers in the region, and
- To be one of the top ten academic medical center-based laboratories in the United States



## Hartford PSC

**21 Woodland St., Suite 210, Hartford, CT**

The Hartford PSC is located at 21 Woodland St. Hartford, CT. The hours are Monday through Friday 7:00am-4:00pm, closed 12:15-1:15pm. The phone number at the Hartford PSC is 860-247-0085.

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