

Lab Updates

Put us to the test!™

An archive of *Lab Updates* is posted on Our Net or external web site: <http://www.umassmemoriallabs.org/updates>



February 2011

Inside this issue:

- C-Reactive Protein, High Sensitivity
- C. difficile Real Time PCR Assay Replaces C. Difficile EIA Assay



UMassMemorial

Laboratories

C-Reactive Protein, High-Sensitivity

> Definition

- High-sensitivity C-reactive protein (hs-CRP, or cardiac CRP) is an acute-phase reactant produced by hepatocytes and induced by the release of interleukin 1 and 6.
- It reflects activation of systemic inflammation. Blood levels of CRP are known to rise rapidly from normal baseline levels of to as high as 50 mg/dL as part of the body's non-specific inflammatory response to infection or injury.
- The hs-CRP test is more sensitive than the standard CRP test.
- Normal range: <0.3 mg/dL (see Table 2-24)

> Use

- Performing risk assessment for cardiovascular disease: Cardiac disease is believed to be the end result of interplay between minor changes in the cardiovascular endothelium and the corresponding inflammatory response to these changes.
- hs-CRP is an independent risk factor for cardiovascular disease, stroke, and peripheral vascular disease. It adds to the predictive value of total cholesterol and HDL cholesterol for future events.

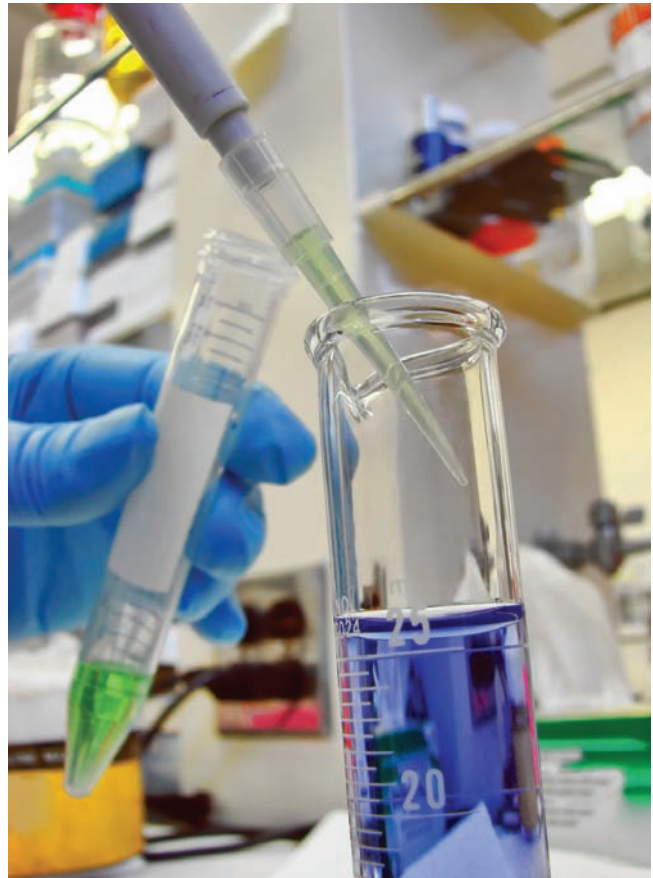


Photo: Kevin Vance

UMass Memorial Medical Center Laboratories

One Biotech Park, Suite 200

365 Plantation Street Worcester, MA 01605-2376

800-476-4431 or 508-334-2863 FAX: 508-334-4210

Email: LabsCS@ummhc.org

L. Michael Snyder, M.D.

Chairman, Dept. of Hospital Laboratories

Professor of Medicine and Pathology

University of Massachusetts Medical School

Dr. L.V. Rao

Senior Director, Clinical Lab Operations

Director, Core Labs & Immunology

Medical Center customer liaison

Betsy Harder

Senior Director, Lab Outreach Program

Non-Medical Center customer liaison

- hs-CRP may be useful as an independent marker of prognosis for recurrent events in patients with stable coronary disease or acute coronary syndrome. Recent evidence supporting this potential application has shown that high baseline values of CRP in individuals C-Reactive Protein, High-Sensitivity without a history of cardiac disease were associated with an increased incidence of subsequent cardiac events.
- Determining risk of hypotension: hs-CRP has been reported as a risk factor for hypotension.

► Interpretation

- hs-CRP appears within 24–48 hours, peaks at 72 hours, and becomes negative after 7 days; it correlates with peak CK-MB levels, but the CRP peak occurs 1–3 days later.
- Failure of CRP to return to normal indicates tissue damage in the heart or elsewhere. The absence of a CRP increase raises the question of necrosis in prior 2–10 days. CRP is usually normal in patients with unstable angina in the absence of tissue necrosis and a normal troponin T (<0.1 ng/mL).
- Peak hs-CRP correlates with peak CK-MB following AMI. CRP may remain increased for at least 3 months following AMI.

Increased In

- Acute or chronic inflammatory change
- Tissue injury or necrosis
- Ischemia or infarction of other tissues
- Infections, inflammation, tissue injury, or necrosis (possible)
- Metabolic syndrome
- Elevated blood pressure
- Malignant (but not benign) tumors, especially breast, lung, and GI tract
- Pancreatitis
- Postsurgery
- Burns, trauma
- Leukemia: fever, blast crisis, or cytotoxic drugs
- Cigarette smoking
- Hormone therapy, estrogen, and progesterone

Decreased In

- Exercise and weight loss
- Moderate alcohol consumption
- Drugs (e.g., statins, fibrates, niacin)

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

Dr. L. Michael Snyder, Chairman of Hospital Laboratories
at 508-442-9280

Cardiovascular Risk Classification By C-Reactive Protein (CRP)*

Risk Level	CRP (mg/L)
Low	1.0
Average	1.0–3.0
High	3.0

TABLE 2-24

*Cardiovascular disease risk assessment guidelines for CRP recommended by the CDC and the American Heart Association (CDC/AHA).

Source: Pearson TA, Mensah GA, Alexander RW, et al. Markers of inflammation and cardiovascular disease. Application to clinical and public health practice. A Statement for Healthcare Professionals From the Centers for Disease Control and Prevention and the American Heart Association. *Circulation*. 2003;107:499–511.

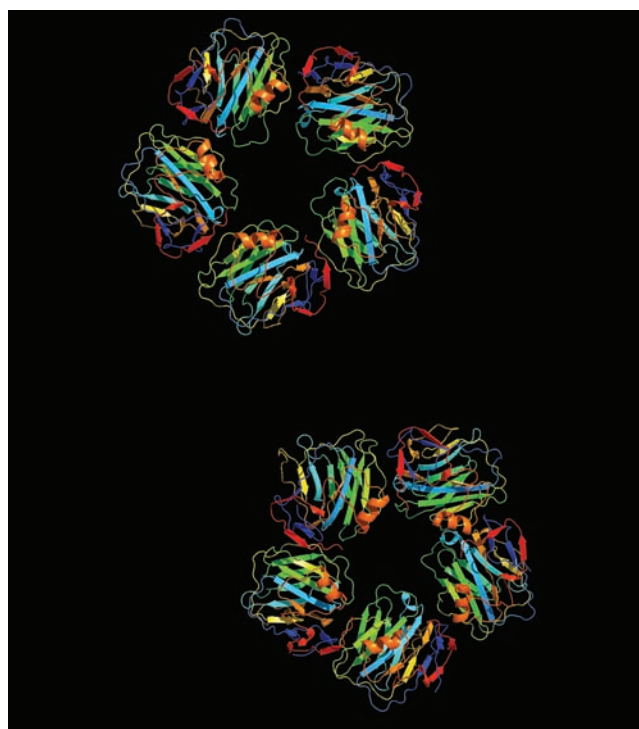
► Limitations

- Race and gender differences affect CRP levels. One study indicates that black patients have higher levels than white patients and women have higher levels than men.

► Suggested Readings

Khera A, McGuire DK., Murphy, et al. Race and gender differences in C-reactive protein levels. *J Am Coll Cardiol*. 2005;46: 464–469. Pearson TA, George A, Mensah R, et al. Markers of inflammation and cardiovascular disease.

Application to clinical and public health practice. A Statement for healthcare professionals from the Centers for Disease Control and Prevention and the American Heart Association. *Circulation*. 2003;107:499–511.



Providing a higher level of service. If you don't believe it, put us to the test!™

This publication is made possible by Kevin Vance, Senior Director, Business Development and Marketing

Real-time PCR Assay Replaces *C. difficile* EIA Assay for UMMMC Inpatients and Outpatients

Effective February 9, 2011, all UMass Memorial Medical Center inpatient and outpatient testing for *C. difficile* will only be performed by PCR (mnemonic CDIFFPCR) using the BD-GeneOhm™ *C. diff* real-time PCR assay. The *C. diff* EIA assay will no longer be available for UMMMC inpatient or outpatient testing. For outreach clients, the PCR test (CDIFF-PCR) will be offered in addition to the EIA test (CDIFF).

The stool for CDIFFPCR testing must be sent in a separate cup if other stool tests are also ordered. Testing will be run twice daily Monday–Friday and once daily on weekends. Results from the morning run will be available around 1PM. Results from the second run, (samples having reached the laboratory by noon), will have results reported in late afternoon.

Only patients with diarrhea should be tested for *C. difficile*. Samples need to be liquid or soft (take the shape of the container) and collected in a clean container with a secure lid, labeled, and sent to the laboratory as soon as possible. The orders will be cancelled for hard stool (“moon rocks”) specimen.

Specimens should be kept between 2°C–25°C during transport. Storage is permitted for up to 5 days at 2–8 °C or room temperature (15–25 °C) up to 48 hours before testing.

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

- Dr. Marzena Galdzicka at 508-856-4384 or via email at Marzena.Galdzicka@umassmed.edu
- Dr. Edward Ginns at 508-856-8134, or via email at Edward.Ginns@umassmed.edu



Available March 2, 2011

Cystic Fibrosis CF100 Plus Panel

An extended CF100 plus panel for Cystic Fibrosis CFTR gene mutation screening will be available starting March 2, 2011 in the UMass Memorial Molecular Diagnostics Laboratory. This test will be offered in addition to the Invader CFTR InPlex panel (Hologic) that screens for 41 CFTR mutations.