

# LABORATORY SERVICES AND CONSULTATIONS LIMITED

Delivering the highest quality, comprehensive, preventative and diagnostic laboratory services to our clients.

24<sup>th</sup> February 2011

Dear Clients,

Laboratory Services and Consultations Limited presents a replacement test for Cardiac Panel and a new addition of Lipase test to our local services. We are proud to announce that the Shortness of Breath Profiler (SOB) will be provided at no additional cost and so the charge will remain at \$250.00. Lipase will be provided at the cost of \$25.00

## LIPASE

Serum Lipase is recognized as an important indicator for the diagnosis, and therapeutic monitoring of pancreatic disease. Serum Lipase is found to be elevated in acute pancreatic or obstructive pancreatic duct. The half-life of pancreatic lipase is longer than that of pancreatic amylase, making it a very reliable marker of pancreatic disease. Our method is specific for pancreatic lipase and is ideally suited to run with total amylase, which measures both pancreatic and salivary type amylase.

## Shortness of Breath Profiler

The Shortness of Breath Profiler (SOB) has replaced our Cardiac Panel. The SOB provides quantitative information on three primary cardiac necrosis markers (CKMB, Troponin I, Myoglobin), plus brain-type natriuretic peptide (BNP) and D-dimer.

SOB panel allows for the rapid, simultaneous assessment of shortness of breath patients for acute coronary syndrome and heart failure.

SOB panel allows for the rapid assessment and evaluation of patients suspected of having disseminated intravascular coagulation and thromboembolic events including pulmonary embolism.

We have provided some additional information on the SOB. We look forward to better patient care with the provision of these new additions to our services.



DR Stephen King



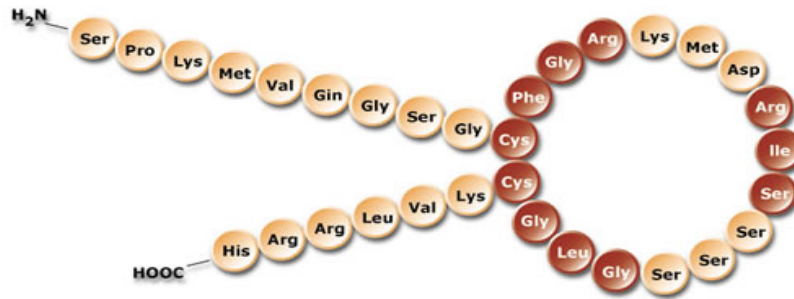
### Islandwide Locations

Rodney Bay Medical Center Tel: 458-0447 | Fax: 458-0447  
Gablewoods Mall, Sunny Acres Tel: 451-8688 | Fax: 451-8687  
Tapion Hospital, Castries Tel: 459-2200 | Fax: 459-2207  
EMCARE, Mongiraud Tel: 458-4178 | Fax 451-6156  
Blue Coral Medical Centre Tel: 452-5768 | Fax: 452-5768  
Bridge St. Soufriere Tel: 457-1146 | Fax 457-1146  
Beanfield Vieux Fort Tel: 454-3858 | Fax 454-3288

## THE POWER OF FIVE MARKERS

- **CK-MB** the historical “gold standard” remains a frequently ordered marker. Its presence, however, is not specific to damaged heart muscle. CK-MB usually rises within the first four to six hours after AMI onset, but remains elevated for only a short period of time.
- **Myoglobin** is not specific to the heart muscle, but is highly sensitive and has been shown to be useful in ruling-out AMI. It is the earliest marker to rise in cases of AMI (<2 hours) and also usually drops first. Myoglobin is under-utilized in the U.S., but is used more frequently in Europe.
- **Troponin I and troponin I complexes** are highly specific to the heart muscle and has recently emerged as a valued marker with widespread acceptance. Troponin is currently the most frequently ordered marker. It is not an “early” marker but stays elevated longer than other markers. Because troponin stays in a patient’s system for up to one week, it is also useful for retrospective diagnosis of AMI. Elevated Troponin I levels also convey prognostic information and have been shown to identify patients with increased risk of death.
- **BNP** is a naturally occurring protein in the body, that when elevated is an indicator of congestive heart failure. When the heart is unable to pump blood efficiently, BNP is produced to ease its workload. Testing BNP levels aids in the diagnosis and assessment of heart failure severity, and risk stratification in patients with acute coronary syndromes. Research suggests that BNP has a number of physiologic effects, which work in concert on the vessels, heart and kidney to decrease the fluid load on the heart, thus allowing the heart to function better, improving cardiac performance.
- **D-dimer** is a protein arising directly from the body’s natural mechanism to break down blood clots. Elevated levels of D-dimer in a patient’s blood are indicative of abnormal rates of clotting. Published studies suggest the absence of circulating D-dimer can aid in the diagnosis of disseminated intravascular coagulation and thromboembolic events including pulmonary embolism (PE).

## BNP Defined



BNP, or B-type Natriuretic Peptide, also referred to as brain natriuretic peptide, was first identified in 1988.

- BNP and atrial natriuretic peptide, (ANP), act as a dual natriuretic system in regulating blood pressure and fluid balance.
- Studies have demonstrated that the heart is a major source of circulating BNP.
- BNP is secreted from membrane granules in the heart ventricles and is a cardiac hormone released from the heart in response to ventricular volume expansion and pressure overload.
- BNP is activated by ventricular distension due to increased intracardiac pressure.
- BNP is an excellent hormonal marker of ventricular systolic and diastolic dysfunction.

### Clinical Significance of BNP

B-type natriuretic peptide (BNP) levels are related to the severity of signs and symptoms of heart failure.

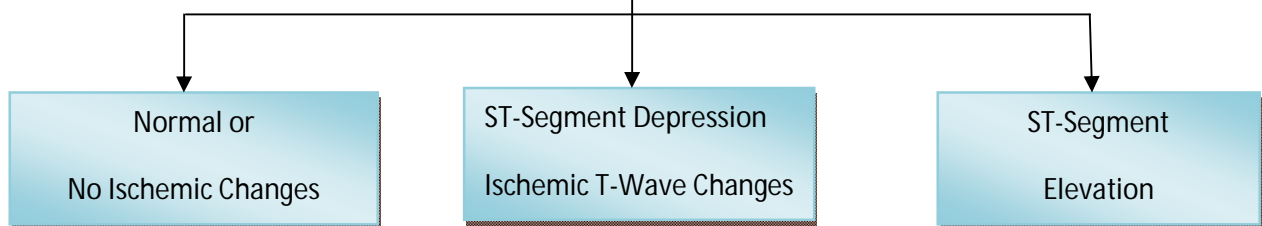
- BNP levels differentiate COPD and heart failure facilitating early patient entry into the appropriate care pathway.
- BNP concentrations, at presentation, have been able to accurately reflect final diagnosis.
- In combination with the history and physical examination, BNP concentrations provide independent indication of ventricular function without use of other invasive or expensive diagnostic tests.
- Circulating BNP concentrations increase with severity of heart failure.
- Correlation exists between BNP concentrations and left ventricular end diastolic pressure.
- Inverse correlation exists between BNP levels and left ventricular function following acute myocardial infarction.
- Elevated BNP concentrations are associated with raised pulmonary wedge pressures, reduced ventricular systolic and diastolic function, left ventricular hypertrophy, and myocardial infarction.

# Protocol for the use of BNP

Evidence-based algorithm for measurement and clinical use of Natriuretic Peptides in **NSTE-ACS**

**Chest Pain or Shortness of Breath: Acute Coronary Syndromes (ACS) Considered**

**12-Lead Electrocardiogram**



Troponin, CK-MB (-), AMI Ruled Out

Troponin, CK-MB (+), AMI Confirmed



No ACS

- \*CT
- \*Angiography
- \*Stress imaging
- \*Outpatient risk factor modification (with specialist advice)

**Moderate Risk**

- \*Usual unstable angina/non-ST elevation AMI/ST elevation AMI care
- \*Expect favorable outcome

**High Risk**

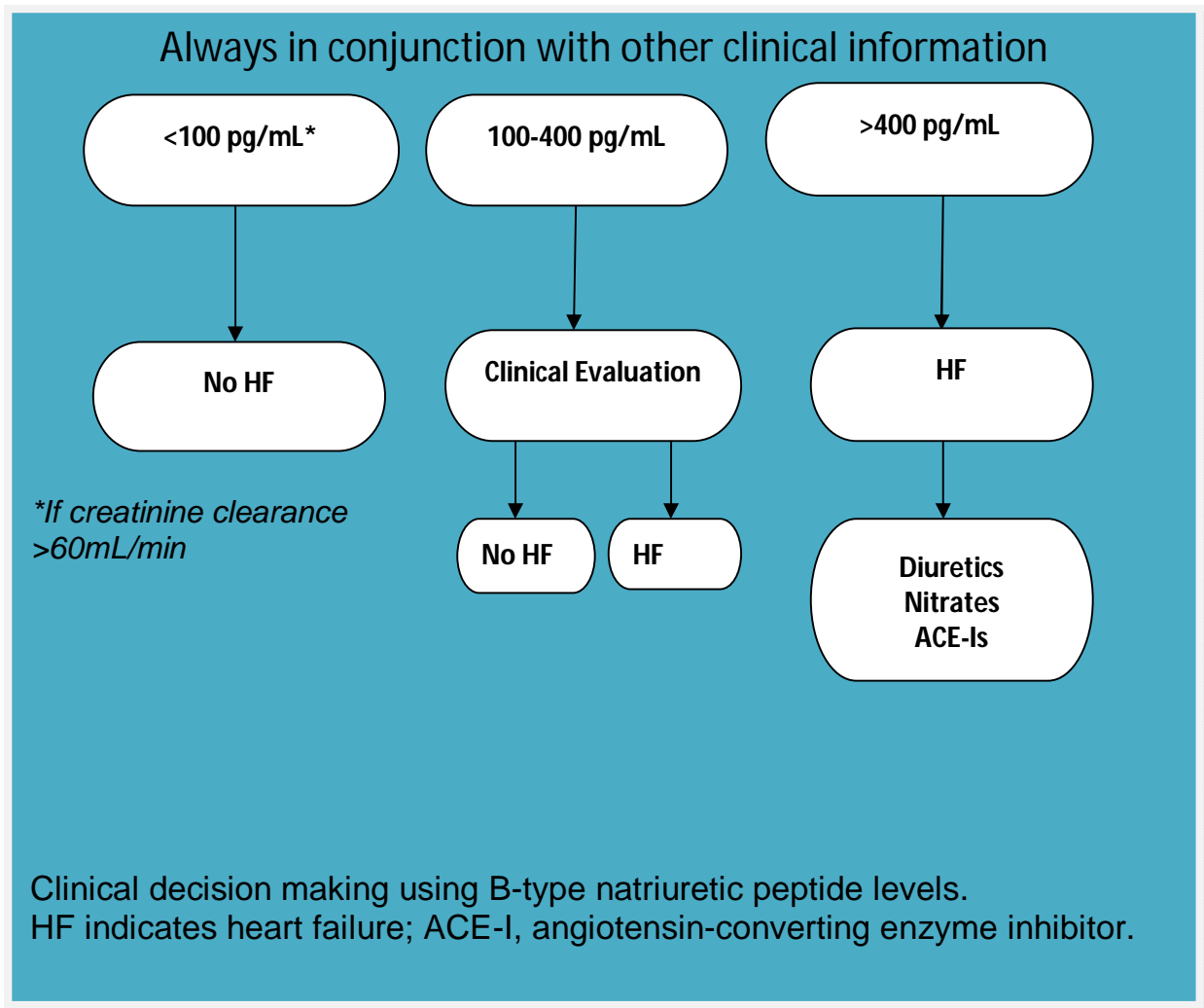
- Higher TMI/GRACE risk score
- \*Proximal LAD culprit
- \*Plaque rupture
- \*Older
- \*Preexisting LV dysfunction
- \*Late HF or death
- \*Chronic Kidney Disease
- vBNP in 6-12 wks, 6-12 months

**VERY HIGH RISK**

- \*Features as listed as high risk
- \* Left main or 3-vessel disease
- \* Large ischemic zone
- \* anticipate complicated PCI
- \*No reflow
- \*Shock
- \*New LV dysfunction
- \*Late HF or death
- \*In Hospital death
- vBNP in 6-12 wks, 6-12 months

# Protocol for the use of BNP

## Algorithm for use of BNP testing in a Hospital Based Emergency Room



### Reference

1. W. Frank Peacock, MD; Christian Mueller, MD; Salvatore DiSomma, MD; Alan Maisel, MD.

"Emergency Department Perspectives on B-Type Natriuretic Peptide Utility". *Congestive Heart Failure Supplement*, July-August 2008, Vol. 14, Issue 4, Supplement 1, 17-20.