

CLINICAL UTILITY OF BNP TESTING

B-type natriuretic peptide(BNP) is a part of a family of hormones that function to regulate blood pressure, electrolyte balance and fluid volume. BNP is secreted from the ventricles in response to pressure overload. Measurement of BNP in blood has been shown valuable in differentiating CHF(congestive heart failure) from other causes of dyspnea. This is of special importance in the emergency setting where symptoms and physical exam are not sensitive enough to make an accurate diagnosis.

Why Measure BNP?

- BNP(B-type natriuretic peptide) levels differentiate chronic obstructive pulmonary disease (COPD) and CHF, facilitating early patient entry into appropriate care pathway
- BNP is an excellent hormonal marker of ventricular systolic and diastolic dysfunction
- In combination with physical examination, blood BNP concentrations represent an assessment of ventricular function without the use of other invasive or expensive diagnostic tests
- Circulating BNP concentrations increase with severity of CHF

- Positive correlation exists between blood BNP concentrations and left ventricular end diastolic pressure
- Inverse correlation exists between BNP levels and left ventricular function following AMI
- BNP measurement has shown to be useful in both diagnosis and staging of CHF. ♦

AVERA MCKENNAN NAMED CAP "BEST PERFORMER"

The laboratory at Avera McKennan Hospital & University Health Center has been named a "Best Performer" by the College of American Pathologists. This award has been received due to Avera McKennan's participation in an ongoing Quality Assurance study of blood culture contamination rates. The contamination rate at Avera McKennan has consistently been below the average contamination rate in the group of compared hospitals.

Avera McKennan laboratory has also been reaccredited by CAP based on the results of a recent on-site inspection. ♦

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CONTRACT MANAGEMENT: IS IT RIGHT FOR YOU?

The Avera Laboratory Network prides itself on its ability to be flexible when working with clients. We recognize that our clients are not all alike and have situations unique to their facility. There is one scenario that seems to stand out as a common one among facilities though, and that is an issue of staffing.

With it becoming harder and harder to find applicants for laboratory positions, laboratorians and their managers are having to take on more and more tasks and hours. There is a solution, and it can be customized to fit your specific needs.

Contract Management is an arrangement where your facility contracts for management services from another entity. The Avera Laboratory Network has been in the business of contract management with a variety of facility types for quite some time.

With Contract Management, a team of representatives from ALN comes to your facility and meets with your administrative team to define the needs and goals of your facility. A survey of the laboratory would be conducted, and from that a proposal and detailed outline of services would be presented to you for your review. Contract Management works in three phases, with the first phase being the survey and proposal, the second phase is the implementation phase, and the third phase the mentoring or stabilization phase. Timeframe for each phase is based upon individual need and assessment.

Some facilities find it more economical to contract out for these types of services, while others may utilize it to get through a difficult period. Whatever your specific needs may be, we are certain that ALN can provide you with knowledge, expertise, a fresh perspective, and access to state of the art technology. Contact ALN today for more information. ♦

CLIENT SERVICE SPOTLIGHT



Illraye McDonald is a histology technologist at Avera Sacred Heart Hospital in Yankton. She has been employed at the hospital for 41 years. Her educational background includes graduation from Yankton High School (her hometown) and one year of on-the-job training before

becoming ASCP certified. Some of her daily tasks include assisting the pathologists, preparing specimens and slides, and typing pathology reports.

She has been married to her husband, Duane, for 38 years. They have three children: Jeff (wife Ann Marie), Michelle (fiance Shawn), and Jason. They also have three grandchildren: Trevor, 10, and 6-year-old twins Caitlin and Courtney. Illraye says her hobbies don't include anything specific, but she enjoys boating and working in the yard and spending time with her family. Her favorite parts of her job are the people she works with and turning out quality hematoxylin-eosin (H&E) preps for interpretation by the pathologists. As she reflects on her career, she feels that the time has gone quite fast and she says "I'm beginning to look forward to retirement, which will include some travelling." ♦

Avera Laboratory Network *Lab News* is published every other month to provide the latest updates on services from labs of the Avera Laboratory Network.

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HS-CRP NOW MEDICARE REIMBURSABLE

The Centers for Medicare and Medicaid Services has created 10 new clinical laboratory test codes for the 2002 Medicare Clinical Laboratory Fee Schedule which became effective January 1, 2002. On August 6, 2001, CMS held a public meeting to hear recommendations on the assignment of payment levels for the new 2002 codes. Over 70 speakers from laboratories, manufacturers, medical societies, and the press attended the forum. The new codes address medical conditions such as colorectal cancer, breast cancer, hepatitis C, influenza, prenatal and newborn health, and coronary heart disease. The meeting served as a prototype for complying with a requirement of the Benefits Improvement and Protection Act of December 2000 to incorporate more input from the public about payment for new clinical lab tests.

One of the new codes is CPT 86141 for high-sensitivity C reactive protein. CRP is a protein produced by the liver in response to inflammation. Reference ranges for CRP are 0.3-1.0 mg/dl. The hs-CRP assay measures much lower concentrations than the traditional CRP used to monitor and diagnose autoimmune and inflammatory diseases.

It has long been known that fatty plaques building along the vessel walls cause cardiovascular disease. When a plaque is loosened and breaks away, it can block the artery and cause a heart attack. It has recently been accepted that inflammation of vessel walls causes the plaques to break away. Studies have shown that hs-CRP levels above 0.28 mg/dl are considered elevated and individuals are more prone to heart disease and stroke complications.

While some physicians are reluctant to use the hs-CRP for cardiovascular screening, there have been several large studies supporting its use. One study was presented in the New England Journal of Medicine in March of 2000. Paul M. Ridker, MD, associate professor of medicine at Harvard School of Medicine in Boston led the study. The study drew participants from a pool of 28,263 post-menopausal women. Before then, most studies of heart disease excluded women as subjects even though heart disease kills 1 out of 2 women. Baseline blood samples were taken from all the women and they were followed for 3 years. For each woman in the study who experienced a cardiovascular event during the follow-up period, two control subjects of the same age (within 1 year) and smoking status (smoker vs. non-

smoker) were chosen. The result was 122 test subjects and 244 control subjects. The blood samples were thawed and tested for twelve plasma variables including hs-CRP, serum amyloid A, interleukin-6, total cholesterol, HDL, LDL, homocysteine, and certain lipoproteins. Women who had cardiovascular events had a median hs-CRP level of 0.42 mg/dl, while those free of cardiovascular events had a median hs-CRP level of 0.28. It was found that the upper quartile of women with the highest hs-CRP concentrations were 4.4 times more likely to have had heart-related problems than the quartile with the lowest levels. They also concluded that hs-CRP was almost twice as good a predictor of risk of heart disease than the gold standard, LDL. This finding is important since statistics show that half of all heart attacks in the U.S. occur in people with normal cholesterol levels.

There are also studies published which describe ways to reduce hs-CRP levels. Exercise is an important element to help reduce the risk of heart disease. A study in Kuopio, Finland demonstrates that exercise lowers hs-CRP concentrations.

The DNASCO (DNA Polymorphism and Carotid Atherosclerosis) study, a six year randomized, controlled trial researched the effects exercise has on risk factors. The study focused on 128 men aged 50-60 years with a follow-up period of five years. The men were divided into two groups: one group was prescribed low to moderate exercise with an individual training program, and the other group was allowed to choose whether to exercise or not. The men in the structured exercise group reduced their hs-CRP by 16%, while those in the other group reduced their level by only 2%.

Researchers from UT Southwestern Medical Center at Dallas have discovered that a high dose (1,200 I.U.) of the antioxidant vitamin E taken daily for three months reduces the concentration of hs-CRP. The five-month study divided 75 people into three groups: those with Type II diabetes and heart disease, those with only diabetes, and a normal control group with neither condition. They concluded that vitamin E reduced hs-CRP levels by 30% in all three groups.

There is also a growing body of evidence that statins, a class of drugs used to lower cholesterol, can reduce hs-CRP levels also.

Hs-CRP is a widely available, commercial, standardized test. Now that it is a Medicare reimbursable clinical laboratory test, it will hopefully become an important cardiovascular disease screening tool, especially in those individuals with normal cholesterol readings. ♦

CASE STUDY:

We received a request from a local public healthcare clinic to perform a sickle cell screening procedure on a 54 year old African-American male. This patient presented at the clinic with complaints of oliguria and dysuria. The sickle screen test was positive and hemoglobin electrophoresis was performed to confirm this screening test. The patient's peripheral blood smear demonstrated red cells that were normocytic and normochromic with no anisocytosis and the patient had a normal CBC. Electrolytes, a chemistry panel and a PSA were also ordered. Alkaline and acid electrophoresis were performed and there were no abnormal hemoglobin bands demonstrated. Hemoglobin A was present but there was no Hemoglobin S identified. The sickle screen was repeated and was again positive. Upon investigating the possible causes of a false positive sickle screen test, the kit stated the following limitations:

- A. Severe anemia can cause false negatives. If the hemoglobin is <8 g/dL, double the sample volume used in testing.
- B. Patients with multiple myeloma, cryoglobulinemia, and other dysglobulinemias may give false positives. Wash the patient red blood cells with physiologic saline to minimize these problems.
- C. Elevated Hemoglobin F can cause false negative results. Do not use this test for infants under 6 months of age.
- D. Recent transfusion can cause false positive or false negative results.
- E. Some rare hemoglobins variants such as Hemoglobin C Harlem or C Georgetown may give a positive reaction.
- F. This test is a screening procedure only. All positive or questionable results should be further evaluated with hemoglobin electrophoresis.

The patient's red blood cells were washed with normal saline and the sickle screen was negative. Based on this information, the most likely explanation of the false positive sickle screen would be multiple myeloma, cryoglobulinemia or some other dysglobulinemia. The patient's chemistry panel showed a markedly increased total protein of 9.0 g/dL (Normal: 6.4-8.3 g/dL), an increased globulin of 5.0 g/dL (Normal: 1.5-4.5 g/dL) and a decreased albumin/globulin ratio of 0.7 (Normal 0.9-1.5). His electrolytes, kidney and liver function tests were normal. The patient is a transient and there has been no follow-up.

This case study demonstrates the importance of further evaluation of screening procedures and of closely reading product inserts. ♦

CONSULTANTS: A TEAM APPROACH

The Avera Laboratory Network provides technical consultation support to organizations as requested. These types of services can offer valuable support to your facility.

Consultants can analyze issues from a broader perspective, provide objective assessments, and develop solutions based on past experience with similar scenarios or facility types. When you combine this expertise with the in-house expertise and knowledge you have of your own facility, the results can be extremely rewarding.

Making a team of your in-house staff and your consultant gives you the best of both worlds. Contact ALN today to get started on a consultative program. ♦

EDITOR'S NOTE

Salute to National Medical Laboratory Week: April 14-20, 2002.

Laboratory Professionals: Quality Care Through Quality Testing

This is the 27th Anniversary Year of National Medical Laboratory Week. The celebration of NMLW is to increase awareness for the profession and to recognize and give credit to the dedicated practitioners of clinical laboratory science.

Often laboratory professionals go unnoticed by the general public, as well as by the institutions that employ them. It is necessary that laboratorians come together to promote our profession and the importance we bear on quality healthcare. It is our responsibility to ensure the public is aware of the critical role we have in their medical care and our dedication to quality and competency. It is important to unite and promote our purpose and our profession.

The Avera Laboratory Network is proud to recognize National Medical Laboratory Week. Our gratitude and appreciation is extended to all laboratory professionals. ♦

- Lori Murray

THE MONTH OF APRIL IS NATIONAL HUMOR MONTH

This month focuses on the therapeutic value and vital need for humor in healthcare.

The Benefits Of Laughter Are No Joke

Cultures as diverse as the ancient Greeks and the Zuni Indians in New Mexico have integrated humor and healing for centuries, but only in recent decades has the American medical community recognized the therapeutic value of humor. Read on to see why many physicians are taking laughter seriously as a complement to the natural healing process.



Humor And The Immune System

Your state of mind can't be examined under a microscope, but feelings and attitudes play an undeniable role in your overall well-being. While emotional and physical stress can wear down your ability to fend off illness, psychoneuroimmunologists (who study how your psychological state and nervous system affect your immune system) suggest that laughter can help bolster resistance.

To test this phenomenon, scientists at the Loma Linda (Calif.) University School of Medicine showed 10 medical students a 60-minute humorous video. Although no one has yet scientifically proven that laughter promotes faster healing, the Loma Linda scientists found that laughing caused:

- An increase in activated T cells and natural killer cells, which attack infected or foreign cells.
- A rise in certain immunoglobulins that help fight infections.
- Slightly boosted endorphin levels.
- The release of natural painkillers into the bloodstream by the pituitary gland.
- Suppressed levels of epinephrine, a so-called stress hormone.

Their results suggest that humor turns up the immune system, even noting that just the expectation of being amused has the same effect in some cases.

Just What The Doctor Ordered

In addition to boosting the immune system, laughter has been linked to other physiological systems as well.

- When you laugh heartily, your blood pressure

and heart rate rise slightly, then rebound. In fact, just twenty seconds of laughter can double your heart rate for three to five minutes - the equivalent of jumping on your exercise bike for a few minutes.

- Pain perception is often reduced after exposure to comedy. Humor releases endorphins that provide more potent pain relief than equivalent amounts of morphine.
- By anticipating a punch line, the two hemispheres of your brain are forced to coordinate, possibly increasing alertness. As the left hemisphere works on the verbal content of the joke, the right figures out why it's funny (or not!).
- Laughter reduces conflict and anxiety. Stressed-out people with a strong sense of humor tend to be less depressed and anxious than their more serious counterparts. A daily dose of humor may eliminate some of the stress that contributes to heart disease and other conditions.

How To Inject Small Doses Of Humor

Everyone is born with a sense of humor, or at least the potential to develop one. To enhance your life with laughter, simply surround yourself with humor that appeals to you. Keep a book of cartoons in a desk drawer for comic relief during stressful moments, and try to see the humorous side of negative situations. Write down amusing things that happen to you or your children so that you can enjoy the observations over and over again.

To cheer up someone in the hospital, send funny books, cartoons or buttons instead of flowers.

No matter what makes you laugh, it's indisputable that humor lifts the spirits - and you can start with a ready smile.

FOOD FOR THOUGHT: According to humor guru William Fry, M.D., the average child laughs some 300 times a day by the time he or she reaches kindergarten. The typical adult, on the other hand, laughs just 17 times a day. ♦



TIDBITS:

Change in OB Panel offering:

Effective April 1, 2002 the Avera Laboratory Network will no longer offer OB Profiles without CBC's. The OB Profile with CBC will be the only OB Profile offered. The Obstetrics Profile which is defined by all federally funded programs includes the following tests:

CBC, hepatitis B surface Antigen, rubella antibody, syphilis testing (VDRL, RPR, ART) antibody screen, ABO, and Rh.

In order to be in compliance all of these tests must be completed as a profile and billed as one unit. A facility currently performing the CBC in-house and referring the remainder of the testing to a reference laboratory is not in compliance with federally funded programs to include both Medicare and Medicaid. Please refer your questions to the client service department at your service center, or your consulting technologist.

Complete Insurance information required on requisition:

When requesting testing to be billed to an insurance company the following documentation must be on the requisition:

- Complete name of the insurance company
- Address of insurance company
- Insurance policy number
- Subscriber number
- Relationship of patient to subscriber
- Name of the Plan
- Group number

The Magic's a Brewing for Clinical Laboratory Science

Mark your calendars for **Oct 23-25, 2002** for the 2002 Tri-State Meeting.

Great program planned with special events to include a costume party. This conference will be held in Sioux Falls, SD. More details to come!

MICROALBUMIN

Diabetes is a very common cause of kidney failure. Studies have shown that identifying diabetics in the very early stages of kidney disease (microalbuminuria) helps patients and doctors adjust treatment. Having better control over the disease and its complications, such as high blood pressure, the progression of diabetic kidney disease can be slowed or prevented.

The National Kidney Foundation recommends that Type II diabetics under the age of 70 and Type I diabetics over the age of 12 be screened annually for microalbuminuria. Microalbumin testing may also be ordered when a person is first diagnosed with diabetes.

Just what is the difference between albumin, microalbumin and prealbumin? Albumin is protein that is present in high amounts in the blood. When kidneys are functioning properly, no albumin is allowed to leak into the urine. As the slow process of decline to kidney failure begins, small changes in the blood-filtering parts of the kidney begin to allow very small amounts of albumin to leak through. Albumin testing is more often associated with liver or kidney disease, or to learn if the body is absorbing enough amino acids. Microalbumin is not a test for smaller molecules of albumin. It tests for a small amount of albumin in the urine and may indicate the risk of developing kidney disease. Urine is tested to see if the kidneys are leaking albumin, even in small amounts. If albumin is not found, this is good news and means the kidneys are working well. Microalbuminuria is not specific for diabetes though. It may also be associated with hypertension, some lipid abnormalities and several immune disorders. Elevated results may also be caused by rigorous exercise, blood in the urine, urinary tract infections, dehydration, and some drugs. Recent studies have also shown that abnormal microalbumin results in patients with Type II diabetes have an elevated risk of developing heart and blood vessel complications. The prealbumin test measures a protein that reflects nutritional status, particularly before and after surgery, or if hospitalized and getting nutritional supplements.

Testing for microalbumin is on urine, random or a 24-hr urine collection. Moderately increased microalbumin levels in urine indicate a person is in one of the early phases of developing kidney disease. Very high levels are an indication that kidney disease is present in a more severe form. In most cases test results are reported as numerical values. Reference ranges may vary by patient's age, sex as well as instrumentation. Microalbumin can be reported alone, or as a ratio with creatinine. In the 24 hour specimen it is reported as microalbumin excreted per day. ♦