

CENTER STAGE

Avera Laboratory Network Adds Services

On Nov. 13, 2010, the Avera Laboratory Network took over the long-distance courier operations for Avera McKennan Regional Laboratory. This completes a laboratory courier standardization trend that began in 2003 and now includes all four main Avera Laboratory Network service centers. Three of the four network service centers still operate their own “in-town” couriers for added coverage of local clients. At Avera Sacred Heart Hospital in Yankton, the Avera Laboratory Network handles all the courier duties.

John Kangas, Business Development representative for the Avera PACE Courier Services, manages this logistics program for the network,

which now has 28 employees and 13 Toyota Matrix vehicles on 13 routes that travel in five states (Nebraska, Iowa, Minnesota, South Dakota, North Dakota).

In addition, the network contracts with more than 15 partners for a variety of system-wide transport services. Sub-contractors are used in some areas and share obligations to a variety of businesses both laboratory and not. The little white station wagons often are filled with a variety of cargo, but timely delivery of laboratory samples is the primary mission.

The couriers cover about 3,000 miles a day and will run an estimated one-million miles in the coming year.

Network and contracted couriers are on the road seven days a week, 6 a.m. to midnight, Monday through Friday with weekend services varying by region.

Most of the routes run very tight schedules with relays. Delays and bad weather can have a domino effect. The crews do their best to keep clients informed of delays.

If you have a question or an interest in contracting for courier services, please call or text John Kangas at (605) 261-8981 or e-mail at john.kangas@avera.org.

Avera Laboratory Network “Lab Links” is published quarterly to provide information of interest from labs of the Avera Laboratory Network. Questions may be directed to your Avera Laboratory Network representative.

Sioux Falls, SD 57108
3900 W Avera Drive

Avera St. Luke's Hospital, Aberdeen
Avera Queen of Peace Health Services, Mitchell
Avera McKennan Regional Lab, Sioux Falls
Avera Sacred Heart Hospital, Yankton

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Lab Links

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Regional Response. Personal Results.

EARLY-ONSET GROUP B STREPTOCOCCAL PREVENTION

Group B Streptococcus (GBS) (also known as Streptococcus agalactiae, Strep B and group B Strep) is a spherical, gram-positive bacteria characterized by the presence of the Group B Lancefield antigen, which gives it the name Group B Streptococcus.

GBS can cause serious illness and sometimes death, especially in newborn infants, the elderly and patients with compromised immune systems. GBS is also a prominent veterinary pathogen that causes bovine mastitis, an inflammation of the udder, in dairy cattle.

While GBS was first reported as a pathogen in 1938, it did not become a pathogen of major clinical significance in the United States until the 1970s. GBS became the most common cause of sepsis and meningitis in infants younger than three months of age in the United States.

GBS maternal colonization studies show that between 10 – 30 percent of women are colonized with GBS, and rates are higher among African Americans. GBS colonization in the gastrointestinal and genital tracts of women can come and go over months and is asymptomatic, which means it does not result in

symptoms and is not harmful in non-pregnant women. However, GBS colonization can become a serious complication in pregnant women and can cause early-onset GBS disease in infants. Centers for Disease Control and Prevention (CDC) early-onset GBS disease prevention guidelines state that a clinical sample must be collected from pregnant women at 35 – 37 weeks of gestation. If the culture is positive, the pregnant mother is treated with intrapartum antibiotic prophylaxis.

Laboratories play a critical role in the success of universal screening. The CDC has detailed and updated instructions on specimen collection, culture processing and susceptibility testing. A laboratory with strong abilities to culture for GBS reliably and consistently is fundamental to decreasing early-onset GBS. It is interesting and important to note that most cases of early-onset GBS now occur in women who were negative for GBS on prenatal screenings. This may be due to multiple factors. To prevent as many cases as able, it is important to optimize specimen collection and processing procedures to minimize errors as much as possible.

Recommendations for prenatal GBS cultures are:

- Collect a vaginal-rectal swab. Laboratories can be an important checkpoint for clinicians regarding appropriate specimen collection, particularly if they provide feedback on specimens that were not appropriate or did not arrive in adequate condition. During prenatal GBS screenings, every effort should be made to optimize the yield from the cultures, which includes culturing both vagina and rectum at the appropriate time. Failing to culture both sites decreases the culture yield dramatically. The specimen should come from the lower third of the vagina, and the rectal swab should pass through the anal sphincter. Use either a single swab or two swabs; if two are used, both can go into single selective broth culture. Do not collect the specimen using a speculum. CDC guidelines recommend collecting cultures at 35 – 37 weeks of gestation, when the accuracy of the test should be best.
- Since some preterm deliveries will occur before the results of the late-gestation culture are available, an empiric

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REGIONAL SERVICE CENTER SPOTLIGHT



Each quarter, one of our regional service centers is featured in "Regional Spotlight." In this issue, we share information on the Avera Sacred Heart Hospital Laboratory.

Avera Creighton Hospital and Avera Medical Group Creighton in Creighton, Neb., and Avera Medical Group Verdigré in Verdigré, Neb., are the newest clients for Avera Laboratory Network at the Avera Sacred Heart Regional Laboratory. All three started using Avera Laboratory Network services Sept. 1, 2010.

Avera Sacred Heart Hospital recently started in-house molecular testing. Avera Sacred Heart Hospital is performing Clostridia Difficile testing by polymerase chain reaction (PCR). The test has a sensitivity of 93.5 percent and a specificity of 94 percent. The improvement in accuracy eliminates the need for serial testing. MRSA screening also is available. The turn-around time for this PCR testing is approximately 90 minutes from when the specimen is received at Avera Sacred Heart Hospital.

The Avera Sacred Heart Regional Laboratory would like to introduce their consultant staff (from left to right):

- Miranda Medricky, MT (ASCP)
- Natalie Lamers, MT (ASCP)
- Michelle Friesen, MT (ASCP)

Avera Sacred Heart
Hospital Regional
Laboratory



GOOD NEWS FOR CLINICAL PATHOLOGY LABORATORIES: CMS OFFICIALS INTEND TO RESCIND RULE REQUIRING PHYSICIAN SIGNATURES

Clinical laboratories and pathology groups welcomed the news when the Centers for Medicare & Medicaid Services (CMS) announced it will take steps to rescind the physician signature final rule before its scheduled implementation on April 1, 2011.

The final rule as written by CMS required that the ordering physician's signature be on all paper requisitions for medical laboratory tests ordered on behalf of Medicare

patients. Physician groups, health care groups and the clinical laboratory industry were all in agreement that if this rule would have been implemented, it would have been an extreme burden on providers and clinical laboratories, and had potential to harm beneficiaries due to hindering their access to timely laboratory services. "Lab Links" will keep you informed of any further developments in regards to this rule.

SAVE THE DATES!

ASCLS-SD Spring Symposium — April 15, 2011, Sioux Falls, S.D.
Avera McKennan Hospital & University Health Center

ASCLS Region V Fall Symposium — Oct. 13 – 14, 2011, Fargo, N.D.

ASCLS-SD & CLMA Fall Collaborative Conference — Nov. 3 – 4, 2011, Mitchell, S.D.

GROUP B STREPTOCOCCAL PREVENTION

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approach is recommended for preterm deliveries without culture results. Guidelines suggest intrapartum antibiotics for preterm deliveries (unless a culture was already obtained and known to be negative for GBS). The recommended GBS intrapartum antibiotic prophylaxis agents is:

- * Penicillin (PCN), to which virtually all GBS isolates are susceptible. If a woman is PCN-allergic but isn't at-risk for anaphylaxis, she should receive cefazolin, to which virtually all GBS isolates also are susceptible. Women who have a high risk for anaphylaxis should have further tests done to determine if they should take clindamycin or vancomycin.
- Prenatal specimen swabs should be put into nonnutritive transport medium. In this medium, the specimens may remain viable for up to four days, however, results are best when processed within 24-hours and when specimens are refrigerated in the time before processing.
- Specimens should be labeled clearly and identify that they are for GBS culture. If susceptibility testing is required for clindamycin and erythromycin resistance, the label should state this.
- When the swabs arrive at the laboratory, remove swabs from transport medium and inoculate into appropriate enrichment broth medium. The recommendations now permit use of pigmented enrichment (chromogenic) broth as well as non-pigmented broth.
- Incubate for 18 to 24 hours. Enrichment is a critical step for consistent, reliable detection of GBS. Studies have shown that around 50 percent of women will have false negative culture results if their samples are not enriched for 18 to 24 hours in media.

- In addition to inoculation into broth, some laboratories may choose to directly plate the swab onto an agar plate. This is allowed, and a positive result for direct plating should be reported as positive. If the direct plate is negative for GBS, then the enrichment broth that was incubated for 18 to 24 hours should be tested directly or subcultured to an appropriate agar plate and further tested.

After the subculture to identify GBS, inspect plates for evidence of GBS and look for the following characteristics:

- Gray to whitish-gray surrounded by narrow zone of beta hemolysis on blood agar plates. (Note: The hemolysis can be difficult to observe, so typical colonies without hemolysis also should be further tested.)
- If you look at an agar plate with growth and hemolytic activity of GBS and group A streptococci (GAS). You can see that the colonies of both bacteria appear about the same color and size, but the degree of hemolytic activity is very different.
- The GAS has more hemolytic activity than the GBS. Experienced microbiologists use these traits to identify the two types of bacteria.

Additional tests should be performed on selected colony from agar to determine if GBS is present. A Gram stain, the presence of typical appearing Gram-positive cocci in pairs and short chains, will show in the sample. GBS will be catalase negative when tested with 3-percent hydrogen peroxide.

If the laboratory is not able to identify GBS by the Lancefield grouping procedure, then presumptive identification of GBS can be made by the CAMP (Christie, Atkinson, Munch, Peterson) test or hippurate test. GBS does produce CAMP factor, so therefore would have a positive

zone of enhanced hemolytic activity. With the hippurate test, GBS are able to hydrolyze hippurate (i.e. hippurate positive). With this rapid test hydrolyze hippurate employs ninhydrin as the indicator, which detects glycine, an end product of hippurate hydrolysis, and therefore the development of a deep purple signifies a positive reaction.

The most accurate way to identify GBS is to demonstrate that the bacteria in question have the Lancefield group B antigen on the surface on the bacteria. A slide agglutination test can be used to identify the group B antigens of *S. agalactiae*. Other identifications for GBS can be made using various streptococcal grouping latex agglutination tests or direct tests for GBS detection. The following methods are supported for direct testing:

- DNA probe (i.e. Accuprobe)
- Latex agglutination test
- Nucleic acid amplification test (polymerase chain reaction or PCR)

PCR prenatal samples should be conducted only on enriched samples. As many of you know, there has been a great deal of interest in PCR testing for GBS, and numerous commercial methods for PCR testing now are available. Unfortunately, PCR testing for GBS is currently only appropriately sensitive and specific if the sample is inoculated and incubated in selective enrichment broth for 18 to 24 hours.

In the past, bacteriuria reporting in the laboratory has searched for very low colony counts on GBS in urine from women of reproductive age. The guidelines now have decreased the reporting burden on laboratories by requiring that only cultures with a colony count of greater than or equal to 10⁴ cfu/mL be reported as GBS positive. This changed after an extensive review on the amount of bacteriuria and associated risk for GBS disease.