



IN THE LAB

A quarterly newsletter for healthcare providers from Bozeman Deaconess Laboratory Services



Bozeman Deaconess
LABORATORY SERVICES

APRIL ISSUE — 2014

SPOTLIGHT ON MICROBIOLOGY

New Blood Culture Tests Available Soon

Bozeman Deaconess Hospital will soon offer the Verigene Gram-Positive (BC-GP) and Gram-Negative (BC-GN) blood culture tests, two FDA-cleared rapid molecular assays that simultaneously detect and identify infectious pathogens and antibiotic resistance markers directly from positive blood cultures. Collectively, the tests will detect the following:

Bacterial Genera and Species

Acinetobacter spp.	Staphylococcus spp.
Citrobacter spp.	Staphylococcus aureus
Enterobacter spp.	Staphylococcus epidermidis
Enterococcus faecalis	Staphylococcus
Enterococcus faecium	lugdunensis
Escherichia coli	Streptococcus spp.
Listeria spp.	Streptococcus pneumoniae
Klebsiella oxytoca	Streptococcus pyogenes
Klebsiella pneumoniae	Streptococcus agalactiae
Proteus spp.	Streptococcus anginosus
Pseudomonas aeruginosa	group

Resistance Markers

CTX-M (blaCTX-M)	mecA gene (methicillin resistance)
IMP (blaIMP)	vanA and vanB genes (vancomycin resistance)
KPC (blaKPC)	
NDM (blaNDM)	
VIM (blaVIM)	
OXA (blaOXA)	

Verigene results will be reported within three hours of gram staining, shortening the time to result by nearly two days for greater than 90% of gram-positive and gram-negative blood cultures, based on clinical specimen performance data from the manufacturer. Studies show that

rapid identification of bacteria and resistance markers from positive blood cultures has been associated with improved patient outcomes, cost savings and reduced length of stay.

Additionally, the ability to detect and report the nucleic acid resistance markers will allow changes to more appropriate antibiotics much sooner. Initially, only blood cultures which are growing gram positive organisms will be tested, with gram negatives soon to follow.

Pending FDA approval, we hope to offer this technology for the rapid detection of common bacterial pathogens in stool specimens. Also pending FDA approval is the use of this technology for viral pathogen detection in stool and respiratory specimens.



The Verigene Nanosphere will be used at Bozeman Deaconess Laboratory Services for some blood culture tests.

UPDATES

A New Point of Care Competency Program for a New Year

By Deena Davis, MLS, POCC

2014 brings a number of new innovations and technology to Bozeman Deaconess Laboratory Services, including a new online competency program for the Point of Care department. The Joint Commission and the College of American Pathology (CAP), two of BDHS' accrediting bodies, both require two forms of competency assessment annually for all BDHS staff who perform Point of Care testing and twice a year for all new staff. Our two forms are a hands-on competency and a written quiz. The hands-on training is done during competency fairs held throughout the year, and in the past, the paper quizzes were given at the same time. This system is coming to an end.

Written competency quizzes for Point of Care testing are now available online at medtraining.org. The competency includes an overview with details that can be easily forgotten or overlooked in day-to-day operations, and other questions. After answering each question, an explanation of the correct answer will be displayed. An acceptable/passing quiz score is 80% or better. If your score is lower, you will have the option to retake the quiz.

An email will be sent to your BDHS email notifying you of quizzes available, and will include a link that automatically logs you in to your Medtraining account. All assigned quizzes can be found under the My Assignments tab and must be taken and successfully passed by 12/31/14. If this deadline is not met, your Point of Care testing privileges will be revoked until all competencies are successfully completed.

You may be asking why switch to an online program when the paper quizzes were so easy. The primary reason is record keeping. There are well over 500 staff members who perform Point of Care testing. The majority of these employees take more than one test. That results in more than 1,000 sheets of paper every year to be filed, organized and kept for two years according to CAP standards. Our institution is simply growing too large for this kind of paper management when there are more efficient options available to us. Please contact Point of Care at 414-5172 with any questions. Happy quiz taking!

Laboratory Services Extended into Wyoming

A team of Bozeman Deaconess Laboratory Services staff packed up supplies and headed to Powell and Cody in January to provide lab services at a large health fair for Park County, Wyoming, employees.

This project started eight months earlier, when TwoMedicine Health and Financial Fitness approached Laboratory Services and ask them to be involved in the bid process for their health fair. Laboratory Services was one of four companies asked to bid on this project; the other three contenders were seasoned health fair providers.

Yet Bozeman Deaconess Laboratory Services prevailed. After winning the contract, the planning committee went to work refining the services offered and putting the logistic wheels in motion. The initial planning committee consisted of Jerry Crisp, Dianna Chestnut and Marilee Langhor. Not having traveled out of state for a health fair, the logistics seemed daunting, Chestnut said, but with precision planning and adding four more members to the team—Brittany Bartle, Mike Long, Carol Rose and Jamie Tafur—the outcome was successful.

Services offered to the county employees and their spouses included a wide range of laboratory tests, as well as height, weight and blood pressure measurements.



Laboratory team that went to Cody, WY
From left: Jami Tafur, Brittany Bartle, Carol Rose,
Marilee Langhor, Mike Long, Dianna Chestnut

COMING SOON

Medical Laboratory Professionals Week

Medical Laboratory Professionals Week (MLPW) will take place April 20-26, 2014. MLPW provides the profession with a unique opportunity to increase public understanding of and appreciation for clinical and pathology laboratory personnel. MLPW originated in 1975 as National Medical Laboratory Week under the auspices of the American

Society for Medical Technology.

There are approximately 300,000 practitioners of clinical laboratory science in the United States. Since the development of this career group in the 1920s, laboratory professionals have played an increasingly vital role in the diagnosis and prevention of disease. Today, the laboratorian is a key member of a health care team.

SAFETY

Specimen Identification

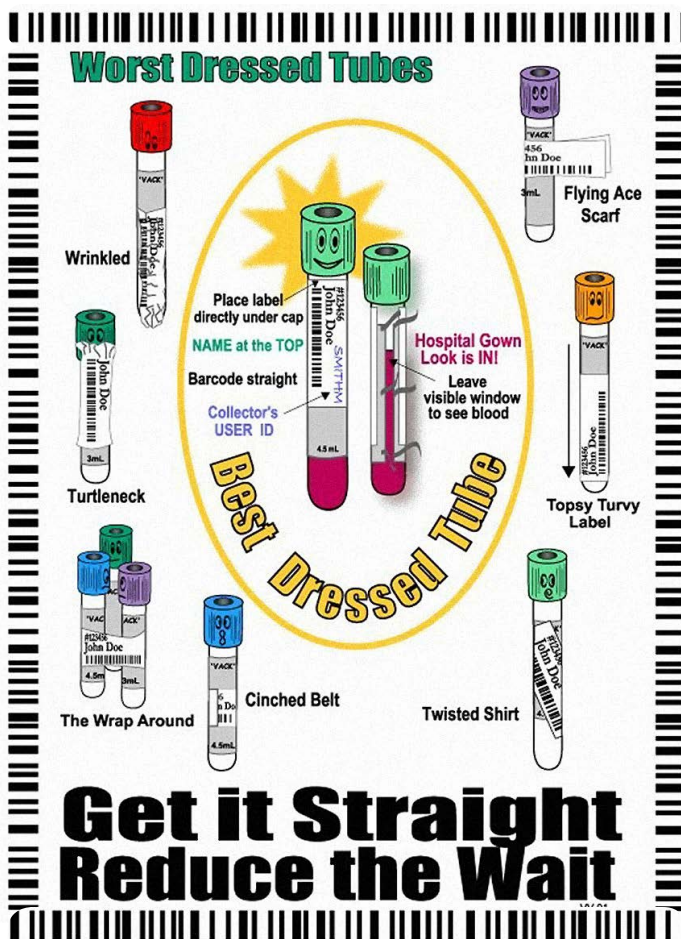
Incorrect or unlabeled specimens compromise patient care and put patient safety at risk.

All specimens received and processed within the Laboratory Services need to have adequate identification, labeled with the correct patient identifiers. The patient name on the lab order must match the patient name on the specimen. The patient identifiers include the patient name and date of birth.

If the specimen is not labeled, the laboratory will discard the specimen and the office will be asked to recollect.

In a very few cases, recollecting the specimen may be impossible but the benefit of performing the test outweighs the risk of misidentification. In such cases the lab will send a "Patient Identification" request form to the collecting agency that will need to be completed and returned to the lab. Blood bank specimens are not relabeled under any circumstances.

Please take the time to make sure that all specimens are correctly labeled before sending them to the lab. We do



**Get it Straight
Reduce the Wait**

not want to delay tests results or treatment, or put patient safety at risk.

Real Life Consequences of Specimen Labeling Errors

Walter Reed National Military Medical Center seeks HIV positive person.

For the past several months, Walter Reed National Military Medical Center has been trying to identify and track

down an individual who is HIV positive but was told that he or she tested negative for the virus due to a mix-up of blood samples.

The military's flagship hospital sent 150 blood samples to a contract laboratory for analysis. One blood sample tested positive for HIV, but it was ascertained that with subsequent testing that the tube was mislabeled with the name of a patient whose follow-up blood test showed no HIV infection.

Walter Reed officials narrowed their search from an initial group of 150 people to 72 people who shared the same blood type as the unknown infected person. In December 2013, the hospital sent those people certified letters asking them to return for new tests. 63 people have responded and 50 of them

have been retested.

This is one example of how specimen labeling errors may literally mean life or death for patients. Hospitals, including BDH, have strict safeguards to ensure the integrity of laboratory specimens to help prevent scenarios like this one. We in the laboratory are diligent when it comes to preventing specimen labeling errors.

DEAR LABBY

The Dear Labby column is featured in each issue and is intended to answer lab questions that others may have wondered about but have never asked. Please submit any lab related questions to: mlong@bdh-boz.com.



Mike Long, BS, (ASCP)
Medical Technologist

Dear Labby,

I'm a mid-level provider and am having trouble understanding the latest antibiogram. Can you help?

Sincerely,
Many Resistant Strains Already

Dear MRSA:

Looking at the attached grid and reading across, the numbers shown are the percent of isolates at Bozeman Deaconess Hospital that are sensitive to the antibiotic in that column. For example, with Escherichia coli, 99% of strains are susceptible to Amikacin, while only 66% of strains were susceptible to Ampicillin and so forth.

E.S.B.L. refers to isolates producing extended spectrum beta lactamase – an enzyme which is a mechanism of

resistance. The gram negative organisms Escherichia Coli, Proteus mirabilis, and both Klebsella pneumoniae and oxytoca can produce this enzyme. If a particular isolate produces this enzyme, it is so noted on the report.

Note that Staph aureus is subdivided into MSSA (methicillin susceptible Staph aureus) and Methicillin Resistant strains.

Also note that Streptococcus pneumoniae is divided into "meningeal

susceptible" and "non-meningeal susceptible." These divisions refer to organisms isolated from blood or CSF (meningeal susceptible) and those isolated from wounds (non-meningeal susceptible).

And, remember if you need help in deciphering a microbiology report, medical technologists are available in the laboratory to help you. For more difficult medical decisions, Dr. Mark Winton is available for consultation.

Bozeman Deaconess Hospital
Susceptibility Antibiogram
January, 2013 - December, 2013

	# of isolates tested	Amikacin	Ampicillin	Ampicillin/Subactam	Aztreonam	Cefazolin	Cefepime	Ceftriaxone	Ciprofloxacin	Clindamycin	Erythromycin	Gentamicin	Imipenem	Meropenem	Levofloxacin	Linezolid	Nitrofurantoin	Oxacillin	Penicillin G	Piperacillin/Tazobactam	Rifampin	Tetracycline	Tobramycin	Trimethoprim/Sulfa	Vancomycin
<i>Escherichia coli</i>	1765	99	66	74	97	94	97	97	85			95	100	100			96*			98			95	82	
<i>Pseudomonas aeruginosa</i>	162	98			80		97		69			86	84	96						97				100	
<i>Klebsiella spp.</i>	390	99	0	88	98	96	98	98	95			95	100	100			36*			99				96	93
<i>Citrobacter spp.</i>	76	100	0	0	89	29	100	89	93			99	100	100			77*							100	93
<i>Proteus spp.</i>	80	100	63	77	80	71	80	80	78			95		100			0			100				96	66
<i>Enterobacter spp.</i>	125	100	0	0	95	0	100	95	97			98	100	100			20*							98	97
<i>E.S.B.L. isolates</i>	48				0	0	0	0				55	100	100										61	
<i>Staphylococcus aureus (MSSA)</i>	511								88	83	75	100				100	#100	100			100	96		98	100
Methicillin Resistant <i>S.aureus</i>	180								33	84	16	100				100	#87	0			97	98		99	100
<i>Staphylococcus coag neg</i>	173								55	63	41	94				100	97*	49			98	82			100
<i>Staphylococcus lugdunensis</i>	31								100	84	84	100						84			100	90			
<i>Enterococcus faecalis</i>	311		97						73*							100	97*					21		0	100
<i>Streptococcus pneumoniae</i>	40									#83	#61		100		#100	100					100	#93		86	100
meningeal susceptible						90														72					
non-meningeal susceptible						97														83					
"viridans" <i>Streptococcus spp.</i>	102						93			82	49					100				81					100

- Values are expressed in % susceptible. Multiple isolates have been excluded. *Indicates for urine use only.

- Shaded areas indicate that the antimicrobial was not tested against the organism, is not appropriate to report, or is a limitation of the test methods used.

- # Data compiled with <30 isolates for this antibiotic. Clinical and Laboratory Standards Institute recommends only species with testing data of >30 isolates be included in Antibiogram compilation.

Isolates not reported for 2013:

VRE-*Enterococcus faecalis* - 1 isolate

VRE-*Enterococcus faecium* - 5 isolates

β-Strep, not Group B with susceptibility data - 28 isolates
















Streptococcus agalactiae with susceptibility data - 15 isolates

Stenotrophomonas maltophilia - 12 isolates

Haemophilus influenzae - 29 isolates

-E.S.B.L.= extended spectrum beta lactamase, a mechanism of resistance

-% Susceptible results for Clindamycin on all *Staphylococcus spp.* have been corrected to (resistant) for those demonstrating inducible resistance

 penicillin	 macrolide	 ansamycin
 β-lactam/β-lactamase inhibitor combination	 aminoglycoside	 tetracycline
 monobactam	 carbapenem	 folate pathway inhibitor
 cephem	 oxazolidinone	 glycopeptide
 fluorquinolone	 nitrofurantoin	
 lincosamide		