



Michigan Department of Community Health Bureau of Laboratories

“Quality Laboratory Science for Healthier People and Communities”

MDCH Bureau of Laboratories Announces Web Portal for Electronic Test Ordering and Results Delivery

The Michigan Department of Community Health, Bureau of Laboratories (MDCH BOL), has instituted a web portal for Electronic Test Ordering and Results Delivery (ETOR). ETOR is an alternate, voluntary method for clients to order laboratory tests and receive test results. Participating clients will be able to log into the web portal and electronically fill out test request forms; print a packing list for submission with samples to the MDCH BOL for testing; track sample progression through the MDCH laboratory; and look up, download, or print pdf copies of final reports. Clients using the web portal will no longer have to hand write or submit test request forms. The information currently collected on the forms will be entered in the web portal and imported into the BOL Laboratory Information Management System (LIMS) upon arrival of the specimen. Clients have the option to continue receiving final reports via fax or hard copy, as they do now. Web portal result delivery will also be available to the client. Upon request, any client may discontinue their fax or hard copy reporting system in favor of receiving only web portal results. Access to the ETOR web portal is through a State of Michigan Single Sign On (SSO) Account. Complete instructions can be found in the ETOR manual at http://www.michigan.gov/documents/mdch/MDCH_Bureau_of_Laboratories_ETOR_End_User_Manual_v12-04-2013_441678_7.pdf?20140207101430

Current tests available through ETOR are: *Chlamydia trachomatis* and *Neisseria gonorrhoeae* Non-Culture, Lead-Filter Paper, Lead-Whole Blood, Syphilis (USR), and *Trichomonas vaginalis* Non-Culture (fee-for-service only).

Pre-paid CT/GC tests can be ordered through ETOR by including the pre-paid form in the shipping box with the samples. The only information needed to be hand written on these pre-paid forms is the patient name.

T. vaginalis testing is on a fee-for-service basis only. Medicaid (other than Plan First) or private insurance information can be entered in the ETOR portal. If billing information is not provided or the patient is not eligible, the submitter will be billed for *T. vaginalis* testing.

Additional tests will be added as they complete their pilot phases. As new tests become available, the menu of tests will be updated in the ETOR manual, linked above.

Please note, at this time, ETOR is available only for specimens submitted to the Lansing laboratory.

Questions may be sent to LIMS_Help@michigan.gov



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MDCH Director's Choice Awards 2013

Each year, James Haveman, Director of the Michigan Department of Community Health, formally recognizes teams and individuals from the department for their outstanding accomplishments. This year's nominees from the Bureau of Laboratories were:

Leader Within Category – An effective leader on a project or in a situation.

Caron Burns, nominated by Eleanor Stanley

James Rudrik, nominated by Sandip Shah

Innovative Solution Category – A creative idea that was implemented in a person's work area, as a direct result of a solution from an individual.

Martha Boehme, nominated by Patty Clark

Passion for Your Career Category – An individual who shows exceptional zeal for daily work and consistently motivates others.

Michael Stagliano, nominated by Bonita Taffe & Matthew Geiger

Sharon Robeson, nominated by Kelly Scott

Martha Boehme received the Director's Choice Award in the Innovative Solution category for her work in procuring a federal grant for antimicrobial susceptibility (AST) testing for Carbapenem-Resistant Enterobacteriaceae (CRE). Although Marty's name was on the nomination and award, this project was a group effort with the Microbiology Section Staff who did the testing for the grant. Ms. Boehme applied for the grant, held two webinars with clinical partners, provided labs with information to assist them in recognizing potential CRE isolates, developed an algorithm for submitting isolates to MDCH, compiled data to satisfy the grant requirements, and wrote all grant reports. Through this grant, the BOL fostered situational awareness of antimicrobial resistance, developed partnerships with clinical laboratories throughout the state, and piloted a new CDC framework for public health surveillance for critical bacterial antimicrobial resistance.

Congratulations to all nominees!



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Bureau Vision

The Bureau of Laboratories is a stronger, more diverse team within an integrated public health system. We utilize advanced technology and innovative leadership to provide comprehensive public health services in our dynamic global community.

Bureau Mission

We are dedicated to continuing leadership in providing quality laboratory science for healthier people and communities through partnerships, communication and technical innovation.

New! Submit Only One Serum Tube for Multiple Tests

Recent LEAN activities and subsequent process improvements implemented in the Bureau of Laboratories (BOL) Virology and DASH Sections now allow for the submission of one pour-off tube containing 2.5 ml of serum for the following assays: hepatitis B surface antigen (HBsAg), hepatitis B antibody (anti-HBs), hepatitis C antibody screen (HCV), HIV (except for anonymous testing*) and syphilis antibody (USR, TP-PA). Due to improved testing methods requiring less specimen volume and streamlined workflow within the Virology Section, submitters need to obtain only one red top or serum separator tube from each patient. Following appropriate specimen processing (centrifugation, aliquoting, etc.), submit one pour-off tube containing 2.5 ml of serum and one completed test requisition form (DCH-0583).

The pour-off tube must be labeled with two unique patient identifiers (i.e., patient full name, date of birth) and filled with a minimum of 2.5 ml serum (just below the top). Please do not overfill, and be sure to tightly secure the cap to avoid leakage or loss of specimen during shipping. If testing includes a request for hepatitis C antibody screen, the specimen must be shipped frozen or on ice packs using kit #8A.

Our goal is to reduce time and cost to our customers by improving workflow and eliminating waste. If you have any questions please call Marty Boehme, Quality Assurance Section Manager, at 517-335-8074.

*Anonymous testing (i.e., without patient name) at BOL is limited to HIV testing ONLY. If an anonymous HIV test is needed on a patient who is also having other serum testing performed, two pour-off tubes and two requisitions are required. One requisition for the anonymous HIV testing and a second requisition providing complete patient information (i.e. name and date of birth) must be provided. The pour-off tubes must be labeled to match the test requisition.

The Value of Serologic Testing Legionella Case Study

William Crafts, BS, MT, ASCP

A 30 year old male presented to a local hospital emergency room with acute renal failure. Intractable nausea and vomiting, abdominal pain, diarrhea, non-productive cough, shortness of breath and chest pain were also noted. The patient was placed on dialysis to ameliorate toxicity issues related to kidney failure. Chest X-ray revealed extensive bilateral pulmonary infiltrate which the physician attributed to renal failure. An echocardiogram showed mobile densities on the tricuspid valve. Preliminary diagnosis was endocarditis and community-acquired pneumonia resulting in renal failure.

A gram stain of right side thoracentesis fluid revealed 0-5 WBC and no organisms. Routine aerobic, anaerobic, and TB cultures were negative. Blood cultures times three were reported as no growth and the Legionella urinary antigen test was negative. Mycoplasma pneumonia IgG antibody was positive and the IgM was negative indicating previous, not current, exposure. Additional serum was referred to the Michigan Department of Community Health (MDCH) Bureau of Laboratories (BOL) for Legionella antibody testing. Legionella hemagglutination testing (HA), which detects IgG, IgM and IgA antibody using sensitized turkey red blood cells, revealed a Legionella maceachernii titer of 1:2048. Titers \geq 1:128 are considered clinically significant for this assay. A phone call was made to the Infectious Disease physician to discuss these unusual findings and to recommend convalescent sera be drawn within 2-4 weeks to perform paired analysis. The patient's antibiotic treatment did not include coverage for Legionella, but based on serologic findings, Levaquin was added to the regimen. Within days the patient's condition improved.

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Testing Continued

The acute sera obtained 9/26/13 (specimen #118) and convalescent sera obtained 10/10/13 (specimen #123) and 11/23/13 (specimen #140), were analyzed in parallel and demonstrated *L. maceachernii* titers of 1:2048, 1:256 and 1:64 respectively. Based on the 8-fold drop in titer and subsequent falling titers following treatment, the acute sera was most likely obtained during peak immunologic response. Unfortunately, since *Legionella* was not initially suspected, thoracentesis fluid and blood cultures were not plated to *Legionella* media. Thoracentesis and whole blood specimens were discarded prior to serologic testing and, hence, PCR analysis or *Legionella* culture could not be performed.

Literature review revealed two previously documented cases of *Legionella maceachernii* infection in humans (1,2). Patients in both cases exhibited right lower lobe pneumonia; however, one patient progressed to acute renal failure within 4 days of hospital admission. Most reported cases of Legionellosis are caused by *Legionella pneumophila* serogroup 1 (Lp1). However, these numbers are misleading because most commercial indirect fluorescent assays only detect antibodies against a limited number of *Legionella pneumophila* serogroups and the urinary antigen test only detects Lp1. In addition, clinicians often empirically treat patients with community-acquired pneumonia, do not submit respiratory specimens for culture, and rarely alert the microbiology laboratory to include *Legionella* media crucial to the isolation of this organism (3). Although Lp1 causes approximately 70% of reported cases, at least 22 species of *Legionella* have been associated with disease in humans (4). According to passive surveillance data, CDC reports the diagnosis of Legionellosis by culture, direct fluorescent antibody, and serologic testing have decreased significantly over the years whereas diagnosis by urine antigen testing increased from 0% to 69% (5). For these reasons, infections due to non-*pneumophila* species are often underdiagnosed and underreported.

Historical analysis of *Legionella* cultures performed on respiratory specimens submitted to BOL from 1998-2013 revealed a total of 11 non-*pneumophila* infections, two of which were caused by *L. maceachernii*. Isolates were confirmed by a variety of conventional identification methods (i.e., culture characteristics, biochemical reactions, fatty acid analysis) and subsequent monoclonal direct fluorescent antibody (DFA) testing. Additionally, retrospective review of serologic HA antibody testing performed at BOL since 2001 documents 18 cases of community-acquired pneumonia due to non-*pneumophila* species; 4 cases were caused by *L. maceachernii* (two patients exhibited titers of 1:256, one with a titer of 1:2048 and one in which paired analysis demonstrated a 4-fold drop in titer). All serologic cases were supported with signs and symptoms (i.e., cough, fever, diarrhea) and radiographic evidence (pulmonary infiltrates) consistent with community-acquired pneumonia.

MDCH is one of the few state laboratories in the country capable of performing DFA and HA testing to identify infections due to 34 species and strains of *Legionella*. DFA and HA testing was developed at BOL in the early 1970s with assistance from the CDC. Rabbits were inoculated with various *Legionella* species and strains, the rabbit blood went through various protein purification steps, then purified through column filtration, and conjugated with FITC to create monoclonal antibodies utilized in the DFA assay. Commercially obtained turkey red blood cells are sensitized with various *Legionella* species and strains and subsequently utilized in the HA assay.

When feasible, health care providers are encouraged to obtain respiratory cultures and acute/convalescent sera from patients exhibiting signs and symptoms of community-acquired pneumonia. Physicians must alert the laboratory to include additional media when Legionellosis is suspected. *Legionella* urinary antigen assays, although diagnostic for Lp1 cannot be used to rule out infections cause by other *Legionella pneumophila* or non-*pneumophila* species. In the absence of serologic testing, this patient may have undergone numerous antimicrobial treatments prior to the abatement of his condition and the causative agent remained unknown. This case also exemplifies the significance of serologic testing to avert the underreporting of community-acquired Legionellosis and the potential for epidemiologic investigation.

Testing Continued

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LabLink is published quarterly by the Michigan Department of Community Health, Bureau of Laboratories, to provide laboratory information to Michigan health professionals and the public health community.

Director, Bureau of Laboratories

Sandip Shah, Ph.D.,
HCLD(ABB)

Editor

Patricia A.
Clark, M.P.H.

Past Issues

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DCH-0096