

Michigan Department of Community Health Bureau of Laboratories 2010 Annual Report





STATE OF MICHIGAN
DEPARTMENT OF COMMUNITY HEALTH
LANSING

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GOVERNOR

OLGA DAZZO
DIRECTOR

Milestones are markers along the road signifying the distance traveled. Figuratively, milestones represent significant events. In 2010, the road signs mostly placed by Michigan's ailing economy pointed the Bureau of Laboratories along a different path than we had been traveling. The redirection was not unpredicted and actions were taken throughout the year to align activities with expected resources. For several years, small to moderate shortfalls in the State budget were accommodated by the BOL with belt tightening and competing for other funding sources. However, those options were already used when a \$1.4 million cut (or 20%) hit in the fiscal year starting October 1, 2010. Additionally, state employees were offered retirement incentives and 19 Bureau of Laboratories employees accepted the offer. Almost 600 years of experience walked out the door over the course of three months, taking with them a wealth of experience and expertise.

Just when the 2009 influenza pandemic started to abate and promises of the long Michigan winter releasing its grip began to appear, a bumper crop of rabies samples started to arrive. The warmer weather also welcomed foodborne and vector-borne testing spikes. But it was State budget issues that occupied my summer and fall.

The upshot of the budget challenges was closure of the Upper Peninsula Regional Laboratory and the loss of general funds to support Mycology and Parasitology. The DCH laboratory is the only laboratory in Michigan that offered this testing. Multiple support positions were also lost.

How does an organization respond to challenges like this?

Winston Churchill said, "If you are going through hell, keep going."

In response to the loss of resources tied to the early retirements and state operating funds, the Bureau of Laboratories employees worked collaboratively to address challenges head on. Our strategies were to 1) continue essential testing services; 2) find creative ways to offer services; and 3) stay excellent.

While the Bureau of Laboratories has trimmed its test menu, essential public health testing is still offered, in most cases without charge to the submitter. Our priorities are testing that results in direct public health intervention, testing that generates data used for formulating public health policy and services that advocate for high quality testing throughout the Michigan laboratory system. Each test and service is evaluated with input by our laboratory system partners on these criteria.

Changes in health care financing and state public policy demanded that the Bureau of Laboratories re-examine its funding options. Fees to recoup the cost of testing and increased application for federal and other sources of non-State funding will be considered in the upcoming year. Additionally, a plan to reorganize the support system for local public health departments to meet the regulatory requirements of CLIA was revamped to re-direct state personnel from a regulatory role to a consultative role.

Finally, the future of the Bureau of Laboratories depends on its continued excellence. Compromising quality in an era of limited resource is not an option. Now is the time to invest in human capital and technology. This year the laboratory acquired technology for 1) pyrosequencing to enable offering an enhanced level of influenza surveillance, 2) 16s sequencing for bacterial identification, 3) tandem mass spectrometers for more efficient and accurate newborn screening, and 4) health informatics development to improve critical public health data reporting.

The public health laboratory environment is dynamic. When the nature of the work is responding to the unpredicted, plasticity and open mindedness is essential. The examinations and changes brought on by the fiscal events of 2010 will position the Bureau of Laboratories for adaptation to an era of health care reform, rapid advances in technology and changes in the laboratory professional workforce. I encourage our partners to join us in determining the course of this journey by engaging in our Laboratory System Advisory Group and advocating for excellence in the public health laboratory system.

Best wishes,



Frances Pouch Downes, Dr.P.H.
Laboratory Director

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

Our 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.

2010 Accomplishments

- The Bureau of Laboratories' Mentor Team received the Director's Choice Award in the "Workforce Planning" category for increasing the visibility of the public health laboratory through monthly tours.
- The Bureau of Laboratories hosted 3 Michigan State University Students for a 5 week Clinical Diagnostic Molecular rotation; 1 Northern Michigan University Student for a 16 week Clinical Microbiology rotation; and 1 Student Intern for 6 weeks.
- The Bureau of Laboratories provided laboratory training for 1 Mozambican Scientist for a 3 week respiratory virus course and TB /TB genotyping training to visiting Chinese scholars.
- The Bureau of Laboratories shared on-line chemical terrorism training materials with the State of Hawaii, allowing tailoring of the material for their training needs.
- To reduce costs, the Bureau of Laboratories centralized HIV serum testing by consolidating testing at the Lansing laboratory.
- The Bureau of Laboratories successfully completed its CLIA Survey.
- The Bureau of Laboratories was awarded funding from the Association of Public Health Labs for an Environmental Health training fellowship.
- The Laboratory Systems Section Manager was nominated for the Charles C. Shepard Laboratory and Methods Science Award for the publication "Antigenic and Genetic characteristics of Swine-origin 2009 A(H1N1) Influenza Viruses Circulating in Humans" published in Science 2009; 325:197-201.
- The Bureau of Laboratories Safety Officer provided on-site accreditation reviews for 16 local health departments.
- The Virology Section introduced pyrosequencing instrumentation to monitor antiviral susceptibility.
- The Virology Section purchased a NucliSENS easyMAG instrument as the final component for influenza testing following CDC's recommendations.
- The Microbiology Section completed its first year of a new five-year TB genotyping contract testing over 5000 isolates from 27 cities and states.
- The Microbiology Section added two new tests to its menu: molecular serotyping of shiga toxin-producing non O157 isolates of *E. coli* (in the past these were sent to CDC with turn around times of up to six months), and 16S sequencing for the identification of bacterial isolates (decreasing the average turn around time from one month to less than two weeks).
- The Microbiology Section's TB Unit has received a contract with the Colorado Department of Wildlife to perform bovine TB detection on Colorado wildlife.
- The Quality Assurance Manager completed a Lean Healthcare Certification Program and will utilize this training to conduct a Lean process throughout the Bureau of Laboratories.
- The Analytical Chemistry & Trace Metals Sections introduced three new methods for emergency response for arsenite, tetramine, and the tetra-nitro methane metabolite, 4-hydroxy-3-nitrophenyl acetic acid (HNPAAC).
- Renovations were completed in the Newborn Screening lab and new high pressure liquid chromatographs and tandem mass spectrometers were installed replacing 10-20 year old equipment.
- Analytical Chemistry & Trace Metals Section Scientists participated in emergency response calls for the Gulf and Enbridge oil spills.
- New Newborn Screening dried blood spot cards with an "opt in" consent form was initiated. This consent allows stored blood spots to be used for anonymous research.
- Michigan NBS Scientific Advisory Committee recommended to MDCH to add Severe Combined Immune Deficiency to the NBS panel starting October 1, 2011. BOL scientists provided important scientific and administrative information in support of this new Federal guideline.

Houghton Branch Laboratory Operations Discontinued

After decades of public service to the residents of Michigan's Upper Peninsula, the Michigan Department of Community Health discontinued operation of its last remaining branch laboratory due to lack of funding. Clinical and bioterrorism testing ceased on October 1, 2010. After this date, all clinical specimens were submitted to the DCH laboratory in Lansing. Water and rabies testing were discontinued on November 19, 2010. Water samples can be submitted to any certified drinking water testing facility. Rabies specimens are tested in the MDCH Lansing laboratory.

A special note of gratitude and admiration is offered to the generations of committed testing personnel and laboratory leaders who provided essential services and public health support to this region of our State.



MDCH Director's Award

The Bureau of Laboratories (BOL) had three teams nominated for the 2010 Director's award in three different categories. Nominees were:

1. The Microbiology Section in the "Above and Beyond" category for participation in the Food Emergency Response Network (FERN). FERN is a national project to improve food safety, improve food testing and to expand food test capacity in the event of a natural or deliberate food contamination outbreak.
2. The Newborn Screening Section in the "Innovative Solution" category for preparation of residual newborn screening specimens for the Michigan BioTrust for Health. The Michigan BioTrust for Health was established to provide residual newborn screening specimens to public health and medical researchers. These specimens are valuable because they contain biological information that may be useful when studying birth defects, chronic disease, or prenatal exposure to infections or toxic substances.
3. The Mentor Team in the "Workforce Planning" category for increasing visibility of the public health laboratory through monthly BOL tours. The Mentor Team is voluntarily contributing towards workforce development in an area where a national crisis is looming with a predicted shortage of 100,000 professional laboratorians by 2012.

Congratulations to these three groups for the exemplary performance that lead to these nominations!

2nd Annual Food Bank Garden

For a second year, the Bureau of Laboratories Vision Priority 6 Team cultivated a food garden on the south lawn of the state laboratory grounds to grow produce for donation to Lansing area food banks. This year's garden produced spring garlic, red and green peppers, tomatoes, and cucumbers that were donated to the Holt Food Bank, Cristo Rey Food Bank, and Lett's Community Center. It was another bountiful harvest!



BOL Staffing Changes

New BOL Infectious Diseases Director

Dr. Sandip Shah was appointed Director of the Division of Infectious Diseases in the Bureau of Laboratories on May 2, 2010.

New Manager for Trace Metals Section

Mark Knottnerus, B.S. was named manager of the Trace Metals Section in the Division of Chemistry & Toxicology effective May 3, 2010.

New Chemical Threat Laboratory Response Coordinator

David Isenga, M.H.S.A., was appointed Chemical Threat (CT) Coordinator for the Bureau of Laboratories on May 17, 2010.

2010 Retirees

Linda Anguiano, DASH
Dale Berry, TB Unit Manager
Gale Bloomer, Virology Lab
Mary Brunet, Houghton Lab
Robbie Bushie, Houghton Lab
Trudie Frick, Bureau Office
Diane Gartung, Chemistry/Tox. Lab
Debra Groh, DASH Unit Manager
Penny Horthon, DASH
Swarup Khuroya, NBS Lab

Anne Kinney, Virology Lab
Sally Lindsay, DASH
Theresa Magnotta, DASH
Bruce Palma, Microbiology Lab
Margo Ross, Lab Support
Richard Scheel, Ph.D., Chemistry/Tox. Lab
Roger Skufca, Houghton Lab
Patricia Wheeler, Houghton Lab
Kathy Wolfe, Virology Lab

Congratulations to all!

Grants Received in 2010

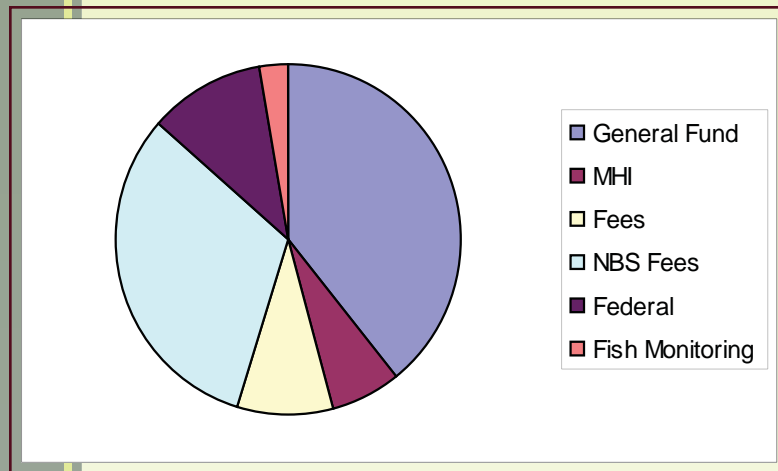
- Food Emergency Response Network (FERN) Cooperative agreement. Funding is shared with the Michigan Department of Agriculture to develop surge capacity for foodborne outbreaks and to develop new rapid methods to detect foodborne organisms: \$190,000.
- Association of Public Health Laboratories (APHL) grant to develop and validate an immunomagnetic separation method for the isolation of *E. coli* O157:H7 from cases of hemolytic uremic syndrome (HUS): \$7000.
- Enteric Research Investigational Network study with Michigan State University. Funding provided by NIH will investigate the impact that four common diarrheal pathogens have on the composition and function of the intestinal microbiome: \$250,000 over 5 years.
- CDC Infrastructure and Interoperability Grant to implement HL7 messaging of influenza results to CDC to enable two additional hospital laboratories to electronically submit reportable disease results to the Michigan Disease Surveillance System (MDSS) via HL7 messaging: \$588,000 over two years.
- APHL Innovations in Quality Public Health Laboratory Practice grant to conduct an advocacy seminar with clinical laboratory managers to increase laboratory leaders skill in effective advocacy and communications: \$15,880.
- APHL Innovations in Quality Public Health Laboratory Practice grant to implement Lean techniques in the Bureau of Labs in order to strengthen our state public health laboratory system: \$19,800.
- CDC EIP-like grant to enhance hospitalized influenza case finding in the Lansing tri-county area: \$220,000.

2010 Challenges

Budget constraints forced the following changes to the Bureau of Laboratories test menu in 2010:

- The Virology Section discontinued viral culture of HSV, VZV, and CMV. Specimen submission for Arbovirus testing was limited to CSF.
- The Microbiology Section discontinued culture of *Borrelia burgdorferi*, identification of anaerobic organisms, and fungal culture from clinical specimens. Submission of O&P specimens for routine testing was limited to local health departments only; clinical laboratories were limited to submitting specimens for identification only; identification of fungal and bacterial isolates was limited to organisms isolated from sterile sites; isolates of yeast and dermatophytes were no longer accepted regardless of source.

FY 2010 Laboratory Funding Sources



Parental Consent Needed to Permit Use of Leftover Newborn Screening Specimens for Research

As required by Michigan law, the MDCH Newborn Screening Laboratory tests heelstick filter paper blood spots, collected from all Michigan newborns, for 49 rare disorders that can cause significant health problems if not detected in time for treatment. More information about newborn screening can be found at <http://michigan.gov/newbornscreening>.

The Michigan BioTrust for Health was established in June 2009 to make leftover newborn screening specimens more useful and available for medical and public health research. Samples from babies collected after May 1, 2010 cannot be used for research without parental consent. After a short pilot phase, MDCH achieved full implementation by all Michigan Birth Hospitals on October 1, 2010.

Additional information about the BioTrust and the parental consent requirement can be found on the BioTrust website at www.michigan.gov/biotrust.

Severe Combined Immune Deficiency to be added to Newborn Screening Panel

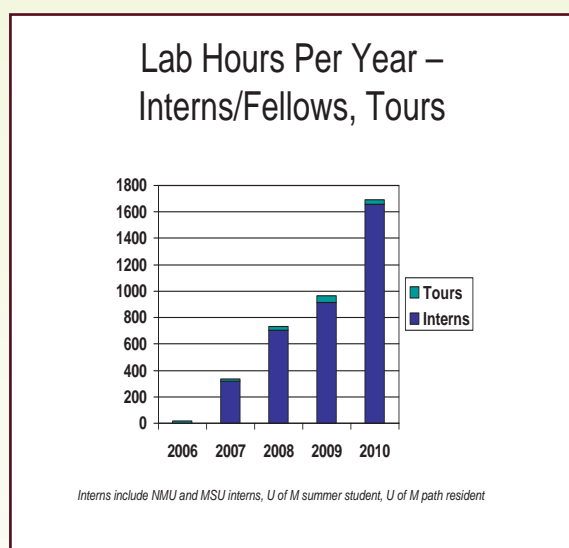
On May 21, 2010, the Secretary of Health and Human Services, Kathleen Sebelius, approved the adding of severe combined immunodeficiency syndrome (SCID) to the core newborn screening (NBS) panel along with other related T cell deficiencies to the secondary panel.

In October, 2010, the Michigan Newborn Screening Quality Assurance Advisory Committee recommended that SCID and related disorders be added to the Michigan newborn screening panel. Their recommendation followed a meeting in which the committee heard from Elizabeth Secord, MD, Children's Hospital of Michigan, Kevin Cavanagh, PhD, MDCH, and others in support of the new federal guidelines.

SCID is the most severe type of primary immunodeficiency. It is a rare and potentially lethal syndrome in which there are profound deficiencies of T and B lymphocyte function and also of natural killer cells and function. The prevalence of this disorder has been estimated to be between 1 in 40,000 and 1 in 100,000 births.

SCID meets the criteria for newborn screening including no symptoms present at birth, severe medical consequences without treatment possibly leading to death, availability of confirmatory tests and successful treatment options, and improved outcome with early intervention.

The addition of SCID and related disorders to the Michigan NBS panel will be effective in October, 2011.

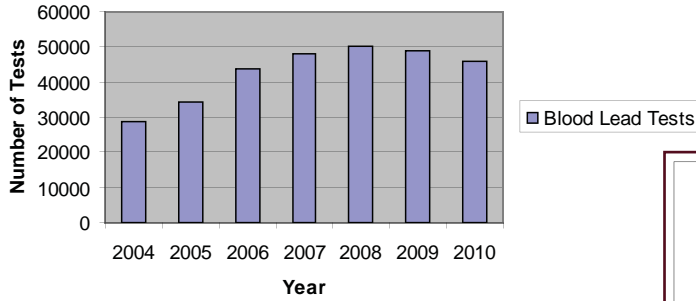


Lab Tours/Trainings

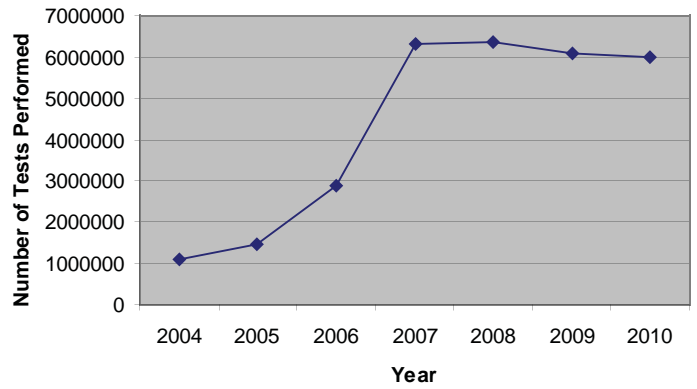
1693 total hours were spent in 2010 on tours (34 hours) and intern trainings (1659 hours). 14 individual tours were given and 5 large group tours ranging in size from 14 to 34 people each.

By The Numbers

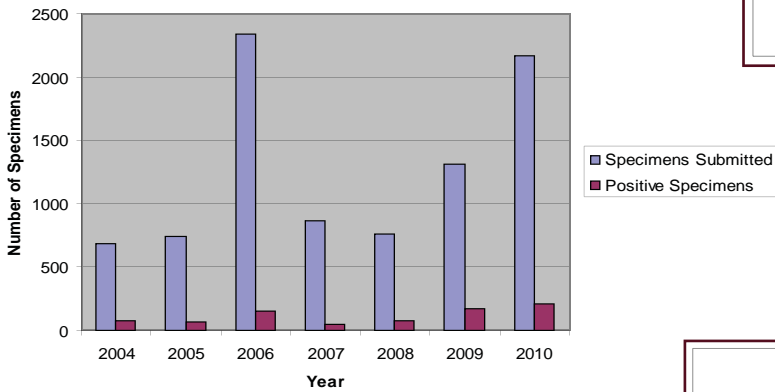
Blood Lead Test Volume



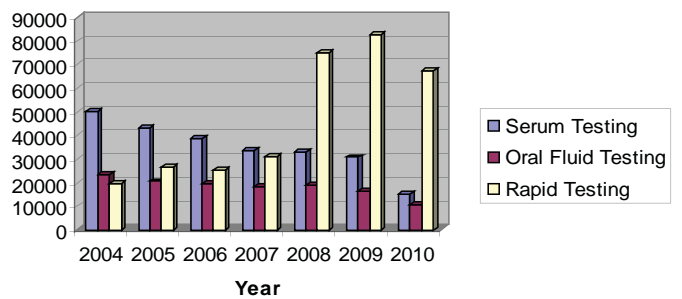
Newborn Screening



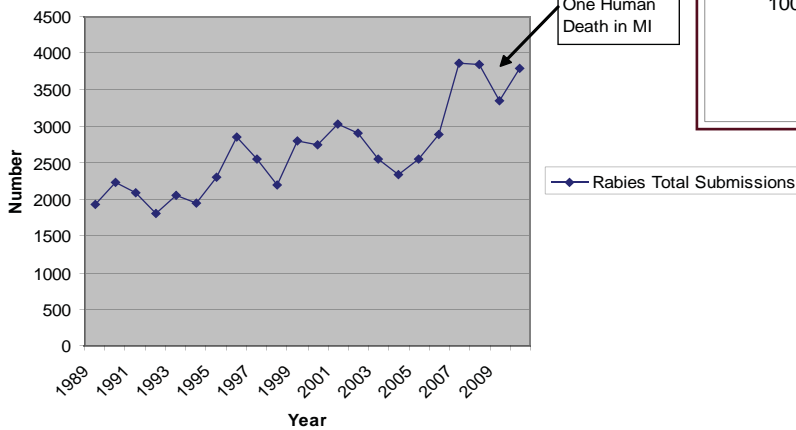
Pertussis



HIV Testing by Specimen Type



Rabies Annual Submissions



2009 Influenza A, H1N1 virus



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