Fiscal Year 2017 Annual Report

Bureau of Laboratories

Michigan Department of Health and Human Services

Bureau of Laboratories

Our Mission:

The Bureau of Laboratories is dedicated to continued leadership in providing quality laboratory science for healthier people and communities through partnerships, communication and technical innovation.

The Bureau of Laboratories is established under the provisions of revised Public Health Code – Act 368 of 1978, Part 96(3333.9601).

Our Vision:

The Bureau of Laboratories is a strong, 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.

Sandip Shah, Ph.D., HCLD(ABB)
Bureau of Laboratory Director

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Accomplishments

The Bureau of Laboratories Newborn Screening program added two Lysosomal Storage Diseases, Pompe and MPS-1 to the testing protocols in August 2017.

The Chemical Response Unit participated in one surge exercise with CDC, testing 500 specimens for Nerve Agent metabolites in both serum and urine in 28 hours.

The Virology Section was designated as one of four National Reference Centers for Confirmatory Testing of the Zika Virus.

Virology also participated in the Global Hepatitis Outbreak and Surveillance Tool (GHOST) project to use whole genome sequence data to track Hepatitis C.

The Microbiology Section was named the National Center for TB Molecular Surveillance which brought in a grant worth over $2.3 million to the State of Michigan.

Microbiology also became a certified ELITE laboratory for the environmental testing of Legionella, becoming ISO 17025 accredited for food testing.

The Bureau of Laboratories along with the Bureau of Epidemiology and Population Health hosted (free) one day Biosafety and Healthcare Preparedness conferences at multiple sites around Michigan. Approximately 250 healthcare professionals registered representing over 100 Michigan facilities.

The Bureau of Laboratories participated in 163 proficiency tests from 9 different providers.

2017 Funding Sources

Legend:
- NBS Fees — 31%
- General Funds — 28%
- Federal Grants — 28%
- MHI — 5%
- Lab fees — 5%
- DEQ — 3%
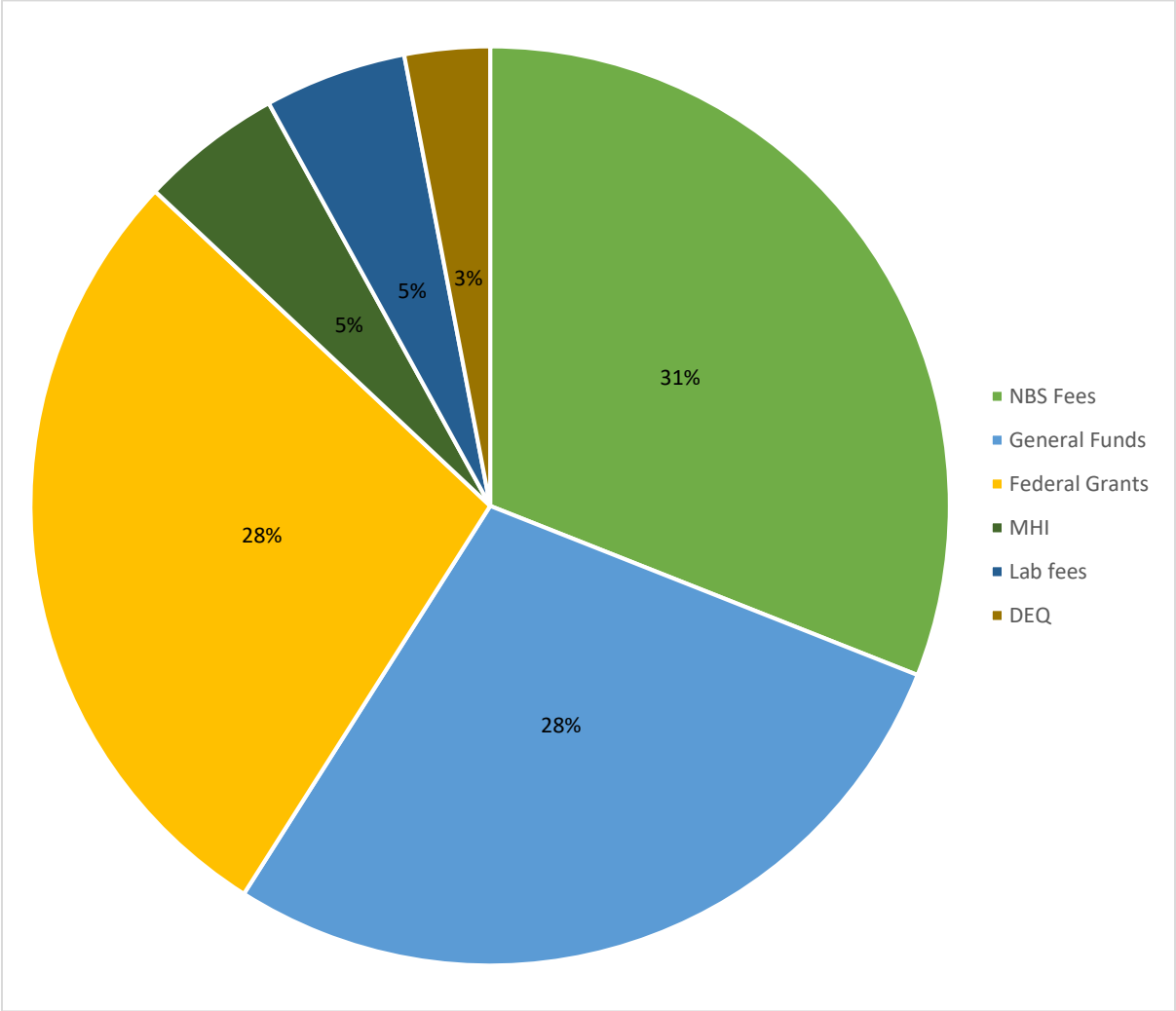
Training and Tours

Biosafety
3 Biosafety Trainings
4 University Biosafety Consultations
7 Ebola Hospital Visits

Bioterrorism Threat Packaging and Shipping Classes
28 Classes held
Certified 264 Participants from 58 Facilities

Chemical Threat Training
16 Classes held
100 Attendees from 15 Hospitals and Public Health Departments

Tours: 30 Hours in Tours and Visitor Meet and Greets.

K-12 Outreach
3 Career Fairs Reaching Approximately 1,215 Students
8 Science Demonstrations with Approximately 915 Students Participating.
Program Utilized 7 Volunteer College Student Interns

Publications and Abstracts

Publications

[Safety and Accuracy of Matrix-Assisted Laser Desorption Ionization-Time of Flight Mass Spectrometry for Identification of Highly Pathogenic Organisms.](#)
Rudrik JT, **Soehnlen** MK, Perry MJ, Sullivan MM, Reiter-Kintz W, Lee PA, Pettit D, Tran A, Swaney E. J Clin Microbiol. 2017 Dec;55(12):3513-3529. doi: 10.1128/JCM.01023-17. Epub 2017 Oct 11.
PMID: 29021156

[Clinical and Bacteriological Characteristics Associated with Clustering of Multidrug-resistant Tuberculosis.](#)
Feng JY, Jarlsberg LG, Salcedo K, Rose J, Janes **M**, Lin SG, Osmond DH, Jost KC, **Soehnlen** MK, Flood J, Graviss EA, Desmond E, Moonan PK, Nahid P, Hopewell PC, Kato-Maeda M. Int J Tuberc Lung Dis. 2017 Jul 1;21(7):766-773. doi: 10.5588/ijtld.16.0510. Epub 2017 May 16.
PMID:28513421

[Insights from the Draft Genome into the Pathogenicity of a Clinical Isolate of *Elizabethkingia meningoseptica* Em3.](#)
Chen S, **Soehnlen** M, Downes FP, Walker ED. Stand Genomic Sci. 2017 Sep 16;12:56. doi: 10.1186/s40793-017-0269-8. eCollection 2017.
PMID:28932346

[Genome Sequence of Elizabethkingia meningoseptica EM1, Isolated from a Patient with a Bloodstream Infection.](#)
Chen S, **Soehnlen** M, Walker ED. Genome Announc. 2016 Oct 27;4(5). pii: e01137-16. doi: 10.1128/genomeA.01137-16.
PMID:27789634

[Overview on Cutoff Determinations and Risk Assessment Methods used in NBS.](#)
 APHL, Eleanor Stanley, MT(ASCP), APHL Newborn Screening Quality Assurance and Quality Control Subcommittee.

Presentations

[Normalization of US Newborn Screening Labs MS/MS Analyte Results and Cutoffs Using the CDC NSQAP Reference Materials.](#) Pickens C. A., Seeterlin M., De Jesus V., Haynes C., Morrissey M., Manning A., Bhakta S., Held P., Petritis K., 66th Meeting of the American Society for Mass Spectrometry, San Diego, CA, June 3-7, 2018

Removing Short-chain Acyl-CoA Dehydrogenase (SCAD) Deficiency and Isobutyryl-CoA Dehydrogenase Deficiency (IBD) from the Newborn Screening Panel: Michigan's Experience. Karasinski K., Kleyn M., Seeterlin M., Conway R., Bach J., 2017 APHL Newborn Screening and Genetics Testing Symposium, New Orleans, LA September 10-13, 2017

A False Negative CPTII Case: Using the (C16+C18:1)/C2 Ratio to Improve both FN & FP Metrics, Seeterlin, MA , E. Stanley, H. Hawkins, 2017 APHL Newborn Screening and Genetics Testing Symposium, New Orleans, LA September 10-13, 2017

Protocols Validated

Twenty-three protocols were validated, and eight new tests were added.

Title of Protocol
Addition to validation of Bruker MALDI-TOF for bacterial identification of Legionella pneumophila
Comparison of exoSAP-it and exoSAP-it Express for 16S Sequencing
Verification of the BioRad BioPlex 2200 Automated Enzyme Immunoassay (EIA) Instrument for the detection of Syphilis and Immune Status antibodies
Verification of the Enterovirus Assay for Genotyping Directly from Primary Specimens
MCR-1 Real-Time PCR Assay Validation
Quanta (PerfeCTA Multiplex qPCR Super Mix with Low ROX) Bridging Study
easyMAG Automated Extraction vs. Qiagen Manual Extraction for Trioplex Assay
Validate use of lower calibration standard for lead in dust wipe testing by ICPAES and ICPMS
Validation of new Variola Virus Real-Time PCR on the ABI 7500
Digital Microfluidic Screening for Lysosomal Storage Disorders using the Baebies Seeker Platform
Validation of a Real-Time PCR to detect Listeria monocytogenes and Listeria species in foods
Antimicrobial Confirmatory Resistance PCR from Stool
Validation and Bridging of Hologic Panther System
Verification for the Biotek ELx800 Reader for Arbovirus Testing
BioFire Film Array 2.0 verification
Analysis of the Nitrogen Mustard Metabolites EDEA and MDEA in Urine by Automated 96-well Plate Solid Phase Extraction High Performance Liquid Chromatography Tandem Mass Spectrometry (SPE-HPLC-MS/MS)

Verification of the BioRad BioPlex 200 (SN LX10017178422) for Arbovirus (WNV, SLE & EEE) Testing
Comparison Study of TRF Ricin Plate Washers
Real-Time Multiplex PCR Assay for Detection of mcr-1 and mcr-2 using the ABI 7500 Fast DX or QuantStudio Dx
RT Polymerase Chain Reaction for the Detection of Cryptosporidium species extracted from fecal specimens
Comparability of 2 AB Verti Thermal Cycler systems (A-SN#299025103 and B - SN#2990235344) for 16S sequencing.
CDC approval to commence diagnostic testing for LRN Rickettsia RT-PCR Assay
Hepatitis A genotyping

2017 By the Numbers

Bureau of Laboratory Services	Approximately 7 million tests were provided to State of Michigan Residents	
Infectious Disease	116,589 specimens with 343,469 tests completed	Serving approximately 70,000 individuals
Newborn Screening	6,539,648 tests completed	Serving 83,089 newborns
Blood Lead/Environmental Lead	21,793 specimens were tested for blood lead and 4,204 samples were tested for environmental lead.	Serving 25,959 individuals and households
Chemistry and Toxicology Division-Fish Testing	1,488 specimens with 72,729 tests completed.	Serving all residents of Michigan through the Eat Safe Fish Guide

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