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Tennessee Department of Health Public Health Laboratory Newsletter

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Commissioner of Health

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INSIDE THIS ISSUE:

Spinal Muscular Atrophy

The Advisory Committee on Heritable Disorders in Newborns and Children recommended and received approval from the Secretary of the U.S. Department of Health and Human Services for Spinal Muscular Atrophy to be added to the Recommended Universal Screening Panel. Currently, Tennessee screens for all 34 core disorders on the RUSP. Spinal Muscular Atrophy is an autosomal recessive disorder [3,4] resulting in loss of muscular control due to deterioration and loss of motor neurons located in the brain and spinal cord[1]. It affects individuals of all ethnic groups, unlike other well-known autosomal recessive disorders, such as sickle cell disease and cystic fibrosis, which have significant differences in occurrence rate among ethnic groups [3,4]. There are several types of SMA; however, the most severe form, if left untreated, will eventually lead to death by age two due to deterioration of the muscles that control breathing and swallowing [2]. The assay detects the absence of exon seven in the SMN1 gene while simultaneously detecting and quantifying the copy number of the SMN2 gene. Newborn screening for SMA affords early detection and treatment of SMA thereby giving these infants the chance of a healthier and productive life. Since the incidence of this disorder has been reported to be between 1:6,000 and 1:10,000 [1] across the United States, it is estimated that Tennessee will detect between 9 and 14 cases annually. The overall prevalence of SMA, of all types and across all ethnic groups, is in the range of 1 per 10,000 individuals; the gene frequency is around 1:100, therefore, approximately one in 50 persons are carriers.[3,4] There are no known health consequences of being a carrier. A person may learn carrier status only if one's

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Increase of Hepatitis A in TN

Hepatitis A is a virus that is excreted from the body through stool and spread through person-to-person contact. As a result of this virus, liver inflammation occurs and can include yellowing of the skin or eyes, abdominal pain, fever, fatigue, dark urine, nausea, vomiting and loss of appetite.

Vaccination is the best way to prevent hepatitis A infection. Since 1995, the rates of hepatitis A have declined as a result of the release of a vaccine for this virus. In 2016, the United States saw approximately 4,000 hepatitis A cases. However, since March 2017, the Centers for Disease Control and Prevention have been assisting several public health entities with hepatitis A outbreaks. TN experienced an

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TN Department of Health

2018 Laboratory Response Network National Meeting

The 2018 Laboratory Response Network National Meeting was held from September 5 – 7, 2018 in Atlanta, Georgia. TDH laboratory staff from Nashville and Knoxville Renee Johnson, Rolinda Eddings, Russell Bowden, Michael McWilliams and George Guirguis (pictured below left to right) and the Shelby County Health Department manager Stephen Gooch and supervisor Jennifer Randle attended the meeting to represent the Tennessee LRN Laboratories.

The Laboratory Response Network is a national security asset that, with its partners:

- Develops, maintains and strengthens the domestic and international network of laboratories.
- Respond quickly to biological and chemical threats and other highly public health emergencies.
- Offers training, rapid testing, timely notification and secure messaging of laboratory results.

Spinal Muscular Atrophy *(Continued from page 1)*

child is affected by SMA or by having the *SMN1* gene sequenced.

SMA is a time critical disorder that requires testing be done and reported by the 5th day of life. It is imperative that the collection be performed at 24 hours and 1 minute and submitted to the lab after allowing it to dry for a minimum of three hours. Testing for SMA requires a single 3.2mm punch of a dried blood spot from a heel stick on the Newborn screening form submitted to the lab. Also, due to an additional test being added, it is imperative that quality and quantity of the blood spots are adequate. Please refer the dotted circles on the newborn screening form as a guide. The tentative start date for completion of the validation and the start of routine screening is March 2020.

Submitted by:
Thomas Childs
Manager, Newborn Screening

References:

1. National Institutes of Health. (2018). Genetics home reference: Spinal muscular atrophy. Retrieved from https://ghr.nlm.nih.gov/condition/spinal-muscular-atrophy.
2. Spinal Muscular Atrophy Foundation. (n.d.). Spinal muscular atrophy: Introduction for SMA families. Retrieved from http://www.smafoundation.org/pdf/SMA-Overview.pdf.
3. Su, Y. N.; Hung, C. C.; Lin, S. Y.; Chen, F. Y.; Chern, J. P. S.; Tsai, C.; Chang, T. S.; Yang, C. C.; Li, H.; Ho, H. N.; Lee, C. N. (2011). Schrijver, Iris, ed. "Carrier Screening for Spinal Muscular Atrophy (SMA) in 107,611 Pregnant Women during the Period 2005–2009: A Prospective Population-Based Cohort Study". *PLoS ONE*. **6** (2): e17067. Bibcode:2011PLoSO...617067S. doi:10.1371/journal.pone.0017067. PMC 3045421 . PMID 21364876.
4. Sugarman, E. A.; Nagan, N.; Zhu, H.; Akmaev, V. R.; Zhou, Z.; Rohlfs, E. M.; Flynn, K.; Hendrickson, B. C.; Scholl, T.; Sirko-Osadsa, D. A.; Allitto, B. A. (2011). "Pan-ethnic carrier screening and prenatal diagnosis for spinal muscular atrophy: Clinical laboratory analysis of >72 400 specimens". *European Journal of Human Genetics.* **20** (1): 27–32. doi:10.1038/ejhg.2011.134. PMC 3234503 . PMID 21811307.

Change in QuantiFERON Test Assay Collection Tubes

On July 1, 2018, Qiagen has discontinued the QuantiFERON-TB Gold or "QFT" test assay. The QFT assay has been replaced with the QuantiFERON-TB Gold Plus or "QFT-Plus" assay. The new assay is a four tube collection system. The collection process will remain the same, however tubes cannot be intermixed between the two assays. Additionally, Qiagen has increased the acceptable range for blood collection on each tube with the new assay.

QFT-Plus uses the same principle test procedure and reliable technology. QFT-Plus is now optimized with innovative tuberculosis-specific antigens that elicit both CD8 and CD4 T cell responses—enabling a more comprehensive assessment of cell-medicated immune response to TB infection.

As of October 15, 2018, TDH Laboratory Services will only perform the four tube, QFT-Plus assay. Please discontinue the use of the QFT tubes by this date. Any patient samples received in the QFT assay tubes will be required to be recollected in QFT-Plus tubes after this date.

Submitted by:
Dorothy Baynham, MT (ASCP)
Manager, Special Microbiology

Increase of Hepatitis A in TN *(Continued from page 1)*

outbreak of hepatitis A virus that meets the CDC/CSTE case definition for acute hepatitis A. According to the CDC website, the clinical description is "an acute illness with a discrete onset of any sign or symptom consistent with acute viral hepatitis (e.g. fever, headache, malaise, anorexia, nausea, vomiting, diarrhea and abdominal pain), and either a) jaundice, or b) elevated serum alanine aminotransferase or aspartate aminotransferase levels."

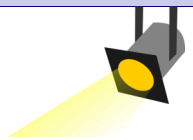
As of 8/9/2018, there have been 140 cases reported in the state of TN with zero deaths. TNHAN has released several alerts of information to healthcare providers and communities about hepatitis A.

The TDH Division of Laboratory Services is now performing Hepatitis A virus testing using PCR and Whole Genome Sequencing methods.

Submitted by:
Linda Thomas, MAFM, BSMT (ASCP)
Manager
Molecular and Sequencing

SPOTLIGHT ON SAFETY

IS MY BLEACH OUTDATED?



What is the shelf life of concentrated Clorox® Bleach?

According to Clorox®. com's Dr. Laundry, "When stored properly, a bottle of bleach has a one year shelf life. Beyond a year, it should be replaced because the sodium hypochlorite begins to rapidly break down into salt and water." "Proper storage" includes a temperature range between 50°F and 70°F away from direct sunlight.

How do I know how old my bleach is?

Clorox® uses a production code to designate where and when every bottle of bleach is manufactured. This code is sometimes partially or entirely worn off the bottle, even upon delivery. In this case, you can also find the code on the outside of the box the bleach comes in. You only need the first seven digits of the code to determine the manufacture date. Follow this key to interpret the production code ***A81421321CA3:***

Plant number	Last 2 digits of year made	Day of year made
A8	14	213

A bleach bottle with this code was manufactured at plant number A8, in the year 2014, on the 213th day of the year. To look up the 213th day of the year, Google "Julian date calendar." In doing so, you will see that the 213th day of the year is August 1st. Therefore, this bottle was manufactured on August 1, 2014 and it will expire on July 31, 2015. It is recommended that once you have interpreted this code, your should write the expiration date in a more recognizable format for clearer communications. For example: "Exp.: 7-31-2015 or 2015-07-31."

What should I do with outdated bleach?

If it still has any bleach smell and / or yellow coloration, there is still "some" active sodium hypochlorite. This can be used at a greater concentration than normal for general cleaning, but it must not be relied upon for disinfection or decontamination of infectious agents. If you plan to discard bleach in this state, you should first dilute it to 10% to protect pipes before dumping down the sewer. Then, chase with copious amounts of water. If there is no bleach smell and it is completely colorless, there is no significant amount of active sodium hypochlorite and the solution should be discarded in the regular sewer. It is still recommended to chase with copious amounts of water after discarding down the sewer.

Submitted by:

Rolinda Eddings, MT(ASCP)

Safety Officer

References:

- *https://www.clorox.com/dr-laundry/clorox-regular-bleach-should-be-replaced-every-year-and-stored-as-directed-for-optimal-performance/*
- *https://www.rjschinner.com/blog/literature/clorox/Clorox_Shelf_Life_10.28.14.pdg*

Linda Thomas earns Foodborne Outbreak Investigator Certification

In 2017, the National Environmental Health Association released a Certified Foodborne Outbreak Investigator credential. An individual that holds a CFOI credential has received training to "perform environmental assessments, identify contributing factors and antecedents and implement control measures to prevent the spread of foodborne illness and protect the public."

In 2016, NEHA, with assistance from the CDC and subject matter experts from around the country, which began to develop a "job task analysis, a defensible assessment, and a credential for foodborne outbreaks." The credential employs health principals in environmental and food safety knowledge in collaboration with partners to assess foodborne illness risks during an outbreak response.

Linda Thomas, TDH Molecular and Sequencing laboratory manager was given the opportunity to sit as a subject matter expert participant to develop eligibility requirements, recommended study references, exam questions and answers, passing score and other credentialing information for the CFOI certification. As recognition of this work, Ms. Thomas received

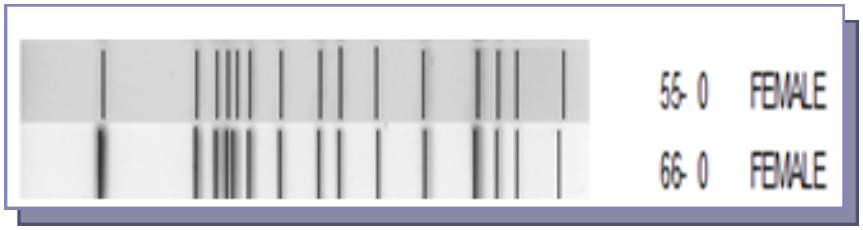
a Certificate of Registration in June of 2018 as a Certified Foodborne Outbreak Investigator.

Reference: www.neha.org

Stenotrophomonas and a new protocol for PFGE

Stenotrophomonas maltophilia is a gram-negative bacillus that can be found in nature and hospital environments. *Stenotrophomonas* can be prevalent colonizers of hospitalized patients and the clinical significance, when found in patient specimens, can be difficult to establish. In 2017, an acute care hospital in western Tennessee isolated a *Stenotrophomonas* species that was believed to be associated with their surgical ICU.

As a result of high volume of community onset positives, Tennessee Department of Health, Division of Laboratory Services was asked to perform pulsed-field gel electrophoresis on isolates for *Stenotrophomonas*. The TDH molecular laboratory section had not previously performed PFGE on this pathogen. The Centers for Disease Control and Prevention was contacted for assistance with *Stenotrophomonas* PFGE protocols.



PFGE Results

Two reference papers were used as a guide to develop a protocol for testing, including correct buffers, enzymes and electrophoresis run conditions. PGFE testing showed that only two patients' results, who were in rooms next to each other in SICU, were indistinguishable. The actual source of the infections was not found. It is believed that the isolates were not representative of a true infection, but rather colonization of these hospitalized patients.

Submitted by:

Linda Thomas, MAFM, BSMT(ASCP),

Manager

Molecular and Sequencing

ANNOUNCEMENTS

New Newborn Screening Laboratory Hours

The Newborn Screening Laboratory is now performing testing seven days per week. Samples may be collected and shipped for weekend testing.

Newborn Screening Laboratory hours:

Monday—Friday: 8:00 a.m.— 4:30 p.m.

Saturday—Sunday: 7:00 a.m.— 3:30 p.m.

Important Reminder: Clinical Submission Requisition Requirements

Please ensure all required fields on laboratory clinical submission requisition forms are completed. Missing information may result in delays in sample testing and/or result reporting or sample rejection.

The most current clinical submission requisition form may be downloaded from the Laboratory Services webpage or directly from:

https://www.tn.gov/content/dam/tn/health/documents/PH-4182.pdf

TDH PUBLIC HEALTH LABORATORY EMPLOYMENT OPPORTUNITIES

To apply or for more information about employment opportunities with the State of Tennessee, visit: https://agency.governmentjobs.com//tennessee/default.cfm

For more information about the many TN state employee benefits, visit: https://www.tn.gov/hr/employees1/benefits.html

The State of Tennessee is an equal opportunity, equal access, affirmative action employer.

EMPLOYEE NEWS

New Employees

Welcome!

JUNE 2018

Shyamali Bhattacharya—PH Lab Scientist 2—Newborn Screening

JULY 2018

Victoria Stone—PH Lab Consultant 2—Molecular Biology

AUGUST 2018

Nathan Hayford—PH Lab Technician 2—Support Services

Ian Jasitt—PH Lab Technician 1—Support Services

Marquetta Phillips—PH Lab Technician 1—Newborn Screening

Heather Streckert—PH Lab Technician 2 — Support Services

SEPTEMBER 2018

Lydia Suttles—PH Lab Technician 2—Newborn Screening

Azsa Morgan—PH Lab Scientist 2—Newborn Screening

Ying Qi—PH Lab Scientist 2—Newborn Screening

OCTOBER 2018

Sarah Short—PH Lab Technician 1—Newborn Screening

Congratulations!

PROMOTIONS

AUGUST 2018

Rhett Milam — PH Lab Technician 2—Support Services

OCTOBER 2018

Keith Morris — PH Lab Scientist 4—Special Microbiology

Craig Edwards—Assistant Director, PH Lab Manager 4—Environmental Laboratory

Linda Carney—PH Lab Technician 3—Serology

RETIREMENTS

JULY 2018

Bill Reimels — Microbiologist 2—Newborn Screening

Bobby Price — Microbiologist 2—Knoxville Regional Laboratory

Tim McCollum — Biologist 3—Aquatic Biology

TDH LABORATORY SERVICES WEBPAGE

https://www.tn.gov/health/health-program-areas/lab.html

Available Resources and Information:

- General Information and Announcements
- Laboratory Services Licensure
- Directory of Services
- Workshops and Continuing Education
- Laboratory Safety
- Past Newsletters
- ***NEW!*** Public Health Laboratory Careers
- ***NEW!*** ARLN

Tennessee Department of Health

Division of Laboratory Services

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The Mission of Laboratory Services is to provide high quality analytical services of medical and environmental testing and to achieve the Mission of the Department of Health.

https://www.tn.gov/health/health-program-areas/lab.html

TN Department of Health

Department of Health. Authorization No. 343472

Website only