



# Tennessee Department of Health Public Health Laboratory Newsletter

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COMMISSIONER OF HEALTH

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## BLOOD PARASITE TESTING

Accurate clinical diagnosis of blood parasitic disease is difficult and requires laboratory confirmation. Demonstration of the diagnostic stages of invading parasites by direct microscopic examination is the most reliable method of establishing a diagnosis of parasitic infections. The Tennessee Medical Laboratory Act requires laboratory directors to submit specimens of suspected or confirmed *Plasmodium species* to the Tennessee Department of Health Laboratory for confirmation and surveillance.

At the State Laboratory blood slides are examined for the presence of blood parasites, identification and speciation by PCR testing is performed. Giemsa-stained or Wright-Giemsa stained thick and thin film slides and a vial of EDTA

whole blood are required for submission. Any patient suspected of having a plasmodium infection should have Giemsa or Wright-Giemsa stained slides reviewed by a trained laboratorian at their facility prior to sending the specimen to the TDOH laboratory or reference laboratory for confirmation testing.

Anticoagulants in the venous blood specimen can interfere with parasite morphology and staining characteristics. This problem can be further compounded by excessive delays prior to making the smears. If a delay of smearing and staining does occur, *Plasmodium* will continue to develop outside of the host body into uncharacteristic forms making identification increasingly difficult.

Any specimen submitted that cannot be identified at the state

level, or via CDC's internet based consultative service, DPDx, will be sent to the CDC for more in depth confirmation testing. This request will be made by DPDx or State of Tennessee laboratory staff only.

On June 15, the State Laboratory will host a blood parasite workshop. This workshop will encompass the proper way to make a thick and thin blood smear, available rapid malaria tests and hands on laboratory experience in identifying the different species of plasmodium and *Babesia*. For more information on the blood parasite workshop, refer to the Training News Section on Page 8.

*Submitted by  
Dorothy Baynham,  
Manager, Special Microbiology*

## NEWBORN SCREENING IN BEGINNING STAGES OF HL7 PROJECT

On Feb 8<sup>th</sup> of this year, Newborn Screening (NBS) had its first official HL7 (Health Level Seven International) meeting with NATUS, our laboratory information system (LIS) vendor. This meeting was the start of exploring requirements for receiving and sending HL7 electronic messages. Our vision with HL7 electronic data transfer is that our providers can electronically send newborn screening sample demographic information, and once all testing is completed, the lab can send our providers the results electronically.

### HL7 Advantages

1. Improved turnaround on results
2. Decreased demographic errors
3. Results in real time
4. Elimination of paper reporting

The US Secretary of Health and Human Services advisory council has issued national recommendations that indicate normal newborn screening results should be reported within 7 days of life and abnormal results within 5 days of life. HL7 electronic data messaging will help the laboratory

*See HL7 page 7*

## VAGINAL SWABS: THE SPECIMEN OF CHOICE FOR CHLAMYDIA (CT) AND GONORRHEA (GC) SCREENING IN WOMEN

Due diligence in specimen collection is of utmost importance in the fight against sexually transmitted infections. In 2012, there were 1.2 million infections reported nationwide due to Chlamydia with TN reporting 32,531 infections due to Chlamydia (5). In the same year, 334,826 cases of gonorrhea were reported in the United States while there were 9,120 cases of gonorrhea reported in TN. Using 2016 date, there has been a slight decline in chlamydia cases; while there has been an increase of cases of gonorrhoeae reported.

The Tennessee Department of Health (TDH) provides transport kits to Tennessee County Health Departments (CHD) for the collection of specimens sent for detection of *Chlamydia trachomatis* (CT) and *Neisseria gonorrhoeae* (GC) utilizing a Nucleic Acid Amplification Test (NAAT). The NAAT employs target capture to aid in the diagnosis of urogenital disease in specimens from symptomatic and asymptomatic individuals. There are three different transport kits available to the CHDs: The **Unisex** swab transport collection kit is used for Endocervical, Urethral (male), Rectal (male/female) and Pharyngeal (male/female) specimens; The **Urine** transport collection kit (male/female); and the **Vaginal** transport collection kit.

Specimen Type	Collection Kit
<b>Endocervical</b> - clinician-collected swab specimens	<b>Unisex</b> swab
<b>Pharyngeal</b> – TDH CLIA regulatory validation for male and female specimens	<b>Unisex</b> swab
<b>Rectal</b> – TDH CLIA regulatory validation for male and female specimens	<b>Unisex</b> swab
<b>Urethral</b> - male swab specimens	<b>Unisex</b> swab
<b>Urine</b> - male and female specimens	<b>Urine collection kit</b>
<b>Vaginal</b> – clinician-collected or patient self-collected swab specimens*	<b>Vaginal</b> swab

**Vaginal swabs are the specimen of choice** when screening for *Chlamydia trachomatis* and *Neisseria gonorrhoeae* when a pelvic examination is not indicated. In addition, vaginal swab specimens are an appropriate sample type, even when a full pelvic exam is being performed (4). Evaluations of vaginal specimens for the detection of chlamydial and gonococcal infections by NAATs found that vaginal swabs are significantly more sensitive than urine collected specimens. Furthermore, vaginally collected specimens, either collected by the patient or the clinician, were found to be as sensitive as or more sensitive than physician collected endocervical swabs (1, 2, and 3).

Updated Centers for Disease Control recommendations now specify that **vaginal swabs are the preferred specimen** for screening women and include the use of rectal and pharyngeal specimens among populations at risk for extragenital tract infections (4). The preferred and optimal urogenital specimen type for men is first catch-urine for the detection of chlamydial and gonococcal infections.

**To be self-collected or not to be..... that is the question.** No statistical difference was found between self-collected vs. clinician collected vaginal swabs. Self-collected swabs are readily accepted by women and may free clinician time at your clinic. Self-collection guides along with **Vaginal** swab collection transport kits are available for the County Health Departments through the Tennessee Department of Health Laboratory Services.

If you have questions about specimen collection, feel free to call the TDH Laboratory at 615-262-6362.



\*The vaginal swab specimen collection kit is not currently FDA cleared for home use.

Submitted by Henrietta Hardin  
Manager, General Bacteriology

- <sup>1</sup> Masek BJ, Arora N, Quinn N, et al. Performance of three nucleic acid amplification tests for detection of *Chlamydia trachomatis* and *Neisseria gonorrhoeae* by use of self-collected vaginal swabs obtained via an Internet-based screening program. *J Clin Microbiol* 2009;47:1663–7.
- <sup>2</sup> Knox J, Tabrizi SN, Miller P, et al. Evaluation of self-collected samples in contrast to practitioner-collected samples for detection of *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, and *Trichomonas vaginalis* by polymerase chain reaction among women living in remote areas. *Sex Transm Dis* 2002;29:647–54.
- <sup>3</sup> Schachter J, Chernesky MA, Willis DE, et al. Vaginal swabs are the specimens of choice when screening for *Chlamydia trachomatis* and *Neisseria gonorrhoeae*: results from a multicenter evaluation of the APTIMA assays for both infections. *Sex Transm Dis* 2005;32:725–8.
- <sup>4</sup> MMWR Recommendations for the Laboratory-Based Detection of *Chlamydia trachomatis* and *Neisseria gonorrhoeae*—2014 March 14, 2014/63(RR02);1-19
- <sup>5</sup> CEDEP Surveillance Reports for MMWR; Select Diseases & Events Reported to TDH Communicable & Environmental Diseases & Emergency Preparedness 2012 through MMWR Week 6 ending February 11, 2017

## VACCINE PREVENTABLE DISEASE HAS A COMEBACK

Since January 1, 2017, Tennessee has seen 14 cases of mumps. Mumps incidences are scattered across the country despite the effective vaccine that has been in use for six decades. Mumps is a viral disease best recognized by puffy cheeks and a swollen jaw. Other symptoms include fever, head and muscle aches, tiredness, loss of appetite and swollen and tender salivary glands. Rare complications include meningitis, inflammation of the brain (encephalitis), hearing loss and swelling or pain in the testicles which can result in sterility. Some of those infected may not show any symptoms, and in others, symptoms may

be so mild, they are not aware they have been infected.

This disease has been plaguing the U.S. in several states, including Tennessee. As of February 25 of this year, the Centers for Disease Control and Prevention states that nearly 1,077 cases of mumps have been reported in the U.S. Last year, the number of reported cases reached 5,311 and that was the highest rate since 2006. Over the past 10 years, there was an average of 1,494 cases of mumps in the U.S. per year. Recently, there have been reported cases in Washington state and Arkansas, as well

as reported cases in Alabama and Tennessee. Between October 2016 and January 27, 2017, Washington state reported 278 cases of mumps. Arkansas reported 2,400 cases from August 2016 to January 5, 2017. Even within Tennessee, two universities have recently seen cases in their student populations.

While there is no direct cure for mumps, most people recover after the disease runs its course. Contracting mumps causes the body to develop immunity to disease, as the vaccination does. Most cases can

See Mumps page 5



## Meet the New Bioterrorism Coordinator

Renee Johnson has recently joined the Tennessee Department of Health as the Laboratory Bioterrorism Coordinator. Prior to coming to Lab Services, she held various positions in the Microbiology Department at St Thomas West including Supervisory and Assistant Section lead roles from 1987-2013. She later went on to join the network laboratory at Centennial Medical Center where she worked from 2013-2015 including serving as Microbiology Supervisor from 2014-2015. From 2015-2017, she served as an IT&S TheraDoc Clinical Product Analyst for HCA Corporate.

Renee earned her Bachelors of Science Degree in Chemistry/Medical Technology from Tennessee Technological University. She attended St.

Thomas School of Medical Technology to obtain her licensure and later went on to obtain her General Supervisor's license. She brings experience, knowledge and a passion for the field of Microbiology and is looking forward to serving as the Laboratory Bioterrorism Coordinator. Renee can be reached at Renee.Johnson@tn.gov or 615-262-6359.



### *Mumps (continued)*

be prevented by immunization. Since the US mumps vaccination program began in 1967, there has been a 99 percent decrease in mumps cases in the United States. Prior to the vaccination, there were approximately 212,000 reported cases in the U.S. The number of cases has steadily declined since the implementation of the vaccine. One dose of the MMR vaccine has a 78 percent success rate, and vaccination of two doses has an 88 percent success rate. The vaccine has an excellent record of few and rare complications or side effects. Immunization not only protects the people who receive the vaccine, but also protects the people with whom they are in contact, through herd or community immunity. Most children are immunized with the measles, mumps and rubella (MMR) vaccine when they are young. Doctors recommend administering the first dose of MMR at 12-15 months of age, and the second dose between four and six years of age. The MMR vaccine is a required immunization for all school children and college students in Tennessee. The only exemptions to this rule are medical (detrimental to the health of the individual) and religious.

Mumps is listed as a Category 1B disease, according to the reportable disease guidance for Tennessee. If mumps is known or suspected, providers need to contact the Tennessee Department of Health division of Communicable

and Environmental Diseases and Emergency Preparedness (CEDEP) no later than the next business day to talk to the epidemiology staff by calling 615-741-7247. The epidemiology staff will need to discuss the patient's symptoms, vaccination status, travel history, contact with sick people, etc. In addition to the call, cases meeting the Council of State and Territorial Epidemiologists criteria must be reported to CEDEP using the PH-1600 form within one week. From there CEDEP will determine if mumps testing is appropriate, in which case a buccal specimen (cheek swab) should be sent to the Virology Department in TDH Laboratory Services. In all cases, CEDEP will determine the appropriate response and protocol. It is also the responsibility of the director of any medical laboratory to submit an isolate or specimen of any positive mumps sample meeting the Tennessee Department of Health 2017 Reportable Disease Guidance for Laboratories. Reportable disease guidance for healthcare providers and laboratories can be found at <https://apps.health.tn.gov/ReportableDiseases/> or <http://www.nvic.org/vaccines-and-diseases/Mumps.aspx>

*Submitted by Savannah Morrow  
Intern, Office of Communications  
and Media Relations*



**Did you  
know?**

*In 2016,  
Newborn  
Screening  
received 95,508  
samples and  
analyzed a total  
of 881,633  
tests.*

## Spotlight on Safety



### Decontamination

- **Decontamination** – The removal or inactivation of biological agents by physical or chemical means.
- **Disinfection** – A procedure, usually chemical, that inactivates viruses or kills vegetative bacteria, but not necessarily resistant forms such as spores.
- **Sanitize** – An agent that reduces the numbers of vegetative bacteria.
- **Sterilize** – The complete elimination or destruction of all forms of life by a chemical or physical means.
- **Disinfection suffixes:**
  - **-cide**—kills (determined by specific testing)
    - Bactericide (germicide) destroys vegetative bacteria only.
    - Tuberculocide destroys *Mycobacterium tuberculosis*.
    - Sporocide destroys spores.
  - **-static**—prohibits growth but may not kill
    - Bacteriostatic prevents growth of vegetative bacteria.
    - Tuberculostatic prohibits growth of *Mycobacterium tuberculosis*.

In the U.S. manufacturers must register disinfectants. The United States Environmental Protection Agency (EPA) maintains 12 lists of chemical disinfectants. The listing is by product, not by active chemical. The link below will allow you to access the EPA website for registered disinfectants.

<https://www.epa.gov/pesticide-registration/selected-epa-registered-disinfectants>

#### Desirable disinfectant characteristics (no one disinfectant possesses all these):

- Broad spectrum
- High efficiency
- Not affected by organic matter
- Non-toxic, non-corrosive, non-flammable
- Odorless, inexpensive
- Environmentally friendly

#### In order to effectively eliminate pathogens it is important to:

- Select the appropriate disinfectant for the agent to be killed or inactivated.
- Use the proper amount of disinfectant and allow sufficient contact time.
- Remember that the physical act of wiping is an important part of disinfection.

#### Remember:

- There is no universal decontamination method for biological materials.
- It is important to know and understand decontamination definitions.
- Disinfection efficacy can be influenced by concentration, contact time, etc.
- Selection of an appropriate decontamination method may be a trade-off (the perfect disinfectant does not exist).

Rolinda Eddings  
Biosafety Officer

The Laboratory Services “Laboratory Safety” webpage is now live. The webpage has many helpful resources for biosafety, including posts, downloads, and links!

The webpage can be found at:

<http://www.tn.gov/health/article/lab-services-safety>

## BIOSAFETY & BIOSECURITY WORKSHOP

**Overview:** Full-day, laboratory safety training workshop including the following topics:

- Hazard Identification and Risk Assessment
- Work Practices and Safety Equipment
- Proper Use of a Biosafety Cabinet
- Decontamination and Spill Clean-Up
- Hazardous Waste Management

**Locations/Dates:**

- May 5, 2017—Nashville, TN
- May 9, 2017—Knoxville, TN
- May 16, 2017—Memphis, TN



**Target Audience:**

Admission preference will be given to laboratory managers, supervisors and personnel who work in clinical laboratories in Tennessee. Limited seats are available for each date. Registration does not guarantee acceptance.

For more information or to download the workshop flyer, please visit  
<https://www.tn.gov/health/article/lab-education>

### *HL7 (continued)*

achieve these national goals. Another advantage to HL7 messaging is the elimination of missing or inaccurate information which occurs periodically when the blood spot card is not completed with necessary or accurate demographics. Missing or incorrect data can delay or prevent reporting of results. Lastly, once full implementation of HL7 result messaging is accomplished, birth hospitals with HL7 messaging capability will be able to receive results in real time as opposed to receiving results by mail.

The next step in the process is a questionnaire that we will be sending shortly to our providers to assess capacity for HL7 messaging. For providers without HL7 capability, we will be designing a remote data entry portal for demographic entry and for retrieval of results. We also want to identify a few hospitals to collaborate with us in the interim to develop our HL7 messaging for newborn screening. If you have questions or to express your interest in your facility participating in the development of HL7 newborn screening messaging, please contact Christine Dorley at [M.Christine.Dorley@tn.gov](mailto:M.Christine.Dorley@tn.gov) or at 615-262-6352.

*Submitted by Hugh Peeples  
Microbiologist 2, Newborn Screening*

## TRAINING NEWS

For more information about Training Opportunities from TDH laboratory Services, please visit the Laboratory Services Continuing Education Page—  
<https://www.tn.gov/health/article/lab-education>

### **2017 A Plan of Action: Bioterrorism Preparedness for Clinical Labs Workshop**

An all-day, wet workshop, this program focuses on practical ASM methods that clinical laboratories use to remain alert for the agents of bioterrorism. Participants learn about surveillance and evaluation procedures that can be integrated into the routine work of the microbiology lab. Procedures for referral of suspect cases to the Laboratory Response Network laboratory are also discussed.

*Admission preference is given to laboratory personnel who work in microbiology laboratories in Tennessee. Limited seats are available for each date.*

**Location:** Nashville, TN

**Dates:**

- Thursday, May 18
- Friday, May 19
- Thursday, September 14
- Friday, September 15

To download the workshop flyer, please visit

[https://www.tn.gov/assets/entities/health/attachments/POA\\_Flyer\\_-\\_2017.pdf](https://www.tn.gov/assets/entities/health/attachments/POA_Flyer_-_2017.pdf)

### **Basic Diagnostic Blood Parasitology: Is it Malaria? Workshop** ENCORE PRESENTATION

The Tennessee Department of Health, Division of Laboratory Services will offer a one day hands on workshop focusing on detection of malaria. The workshop, presented at the Tennessee Public Health Laboratory in Nashville, will instruct participants on how to safely detect and identify malarial organisms using microscopy and rapid tests. Lecture and hands-on exercises will target *Plasmodium* and *Babesia* spp. and appropriate biosafety.

The flyer may be downloaded from:

[https://www.tn.gov/assets/entities/health/attachments/Parasitology\\_Flyer\\_2017\\_2.pdf](https://www.tn.gov/assets/entities/health/attachments/Parasitology_Flyer_2017_2.pdf)

**Registration does not guarantee acceptance.** Participants will be selected according to the applicants' job description, experience and responsibilities. Preference will be given to laboratory supervisors and applicants that did not attend the 2016 Basic Diagnostic Blood Parasitology workshop.

### **2017 TDH Packaging and Shipping Workshops**

Registration is now open. Multiple dates, times and locations are available. Please see the flyer for more information.

[https://www.tn.gov/assets/entities/health/attachments/2017\\_Packaging\\_and\\_Shipping\\_Flyer.pdf](https://www.tn.gov/assets/entities/health/attachments/2017_Packaging_and_Shipping_Flyer.pdf)

## Welcome New Employees!

### January

Misti Harris—Microbiologist 2—Knoxville  
 Sarah Wolgemuth—Newborn Screening  
 Amy Butts—Reporting  
 Cassie Gregory—Newborn Screening  
 Kendra Gluff—Molecular Biology  
 Roniece Haynie—Media Prep  
 Sade Dunn—Molecular Biology  
 Dr. Xiaorong Qian—Molecular Biologist  
 Rick Echols—Administration

### February

Erik Themm—Media Prep  
 Arnessie Laryea—ARLN Core  
 Clarissa Mazariegos—Enterics  
 Auriel Griffith—Reporting  
 Albert Burks—Sequencing  
 Sarah Edwards—ARLN Core  
 Holly Bartlett—Reporting/NBS

### March

Margrette Youssef—Serology  
 Jennifer Rogers—Enterics  
 Stephanie Clarke-Mahoney— Informatics  
 Jason Zolnierz—Procurement

### Congratulations on your promotions!

#### November

Brian Humel  
Procurement Officer 1

#### February

Bryan Mason  
Virology/Serology Manager

Darlene McDuffie  
Lab Tech 2—Reporting

### Congratulations on your retirement!

Sherman Haynes

### School of Public Health Microbiology

### Congratulations Class of 2017!!

Ryan Craven, PhD

Emily Holodnick

Tennessee Department of Health  
 Employment Opportunities may be found at:  
<http://www.tn.gov/hr/topic/employment-opportunities>

# BIOSAFETY

A N Q T T M A N K E O W E S P Q S A K E R L Y D T H S P Y N  
 I O U J N L T T E U T R E J U P V H N S D B A E E U T C H O  
 E M O C X E A L I G G U W V I O S S Y K I N N B O F N V U I  
 H E U S L M M Q S O O V O L I M D O N L V I O I C E M K S T  
 W T Y E Z E F P N A B H L R Q T M R K R B K T M G O O W F A  
 O S F G N J A O I B F K T Y N P C A A A H C Y A X O A L A T  
 C Y M I X E M R N U I E Z A S O Q A C Z E D N A L F L T C R  
 N S R J R I I D R T Q W T R P E I Y O F A O I R Z A H G E O  
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 G Z L M E S I J B D L L A M T O C M S D D D V U A X F I D T  
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 Q N J M V S T R R C K S V P U T R T T N E S O U P A T S W O  
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 K A B Y O W N H S C K V E H D R P E X D I O C S Q O R T A A  
 U B I I E O K S X C O M P R E S S E D G A S K L S P S C S P  
 U O B Y I S A Q P U M E S N E R D O O H E M U F G I H R P E  
 R L E T S K J G D B J E T R N I Q N Z Y Y T H M H U O C E D  
 H G A I S V W U S W D R B G A K B Z B T T U A B L A N N B P  
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 M F X J X D S I B S X E K G W W X I D U E U P K P V U B A P

- BIOHAZARD SYMBOL
- BIOLOGICAL SAFETY CABINET
- BLOODBORNE PATHOGEN
- CENTERS FOR DISEASE CONTROL AND PREVENTION
- CHEMICAL
- COMPRESSED GAS
- DEPARTMENT OF TRANSPORTATION
- ENVIRONMENTAL PROTECTION AGENCY
- ERGONOMICS
- EVACUATION ROUTE
- EYE WASH
- FACE SHIELD
- FIRE DRILL
- FIRE EXTINGUISHER
- FIRST AID KIT
- FUME HOOD
- GLOBAL HARMONIZATION SYSTEM
- HAND HYGIENE
- HAZARDOUS
- INFECTIOUS
- LAB COAT
- NATIONAL FIRE PROTECTION AGENCY
- NUCLEAR REGULATORY COMMISSION
- OSHA
- PERSONAL PROTECTIVE EQUIPMENT
- RADIOACTIVE
- RESPIRATOR
- RISK ASSESSMENT
- SAFETY
- SAFETY DATA SHEET
- SAFETY SHOWER
- SPILL KIT
- TRAINING
- WASTE DISPOSAL

**TENNESSEE DEPARTMENT OF HEALTH  
 DIVISION OF LABORATORY SERVICES**

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[www.tn.gov/health/topic/lab](http://www.tn.gov/health/topic/lab)

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.



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