



▶ TENNESSEE RABIES UPDATE .....2



▶ SPOTLIGHT: YIGZAW BELAY, TUBERCULOSIS ELIMINATION PROGRAM.....3

▶ TOMATOES AND RESTAURANTS .....3



▶ MONKEY BITES AND HERPES B VIRUS .....4

▶ LABORATORY PRACTICES AND SHIGA-TOXIN PRODUCING *ESCHERICHIA COLI* .....4

▶ REPORTING OF NOTIFIABLE DISEASES.....5

# Tennessee *epi-news*

TENNESSEE DEPARTMENT OF HEALTH  
COMMISSIONER SUSAN R. COOPER, MSN, RN

## Raccoon Rabies: An Emerging Threat

Raccoon rabies has been identified in only 10 Tennessee counties since 2003; however, in 2007, raccoons represented 16 % of all rabid animals diagnosed in the state. The Tennessee oral rabies vaccination (ORV) program was launched in 2002 as part of the United States Department of Agriculture (USDA) national program to slow the westward spread of the raccoon variant of rabies. Since then, more than 3 millions doses of rabies vaccine in the form of edible baits have been distributed across 4,444 square miles in 22 eastern Tennessee counties.

The baits are small sachets of rabies vaccine encased in either a square block of compressed fishmeal polymer for hand distribution or fishmeal-coated sachets containing vaccine for aerial distribution. The fishmeal odor and taste entices rac-

coons to eat the bait, releasing the liquid vaccine to bathe the raccoon oropharyngeal area and immunize the raccoon against rabies.

This fall USDA and other agencies including the Tennessee Department of Health and metro health departments in Chattanooga and Sullivan County will distribute vaccine in several places along Tennessee's borders with Georgia, North Carolina, and Virginia. Aerial and hand baiting will occur September 26–October 12 (Figure 1, on page 2).

The other important leg of this raccoon rabies control effort is enhanced surveillance for rabies in eastern Tennessee. Surveillance covering the 22 counties includes testing of wild animals found sick or dead

*(Continued on page 2)*



## Case Report: Rocky Mountain Spotted Fever in an Elderly Man

A white male aged 70 years, with diabetes mellitus and coronary artery disease, was admitted in May 2008, with 2-day history of headaches and fever. The patient had removed 4 non-embedded ticks 3 weeks prior to admission. He complained of headaches, difficulty concentrating, and fever (recorded as 103°F). The patient was able to flex his head forward; no rash was present. Laboratory studies were notable for markedly depressed white cell and platelet counts (WBC=1.9; platelets=151), and mildly elevated transaminases (AST/ALT=86/29), which can signify infection

and possible liver damage due to blood vessel problems. Computed tomography (CT) scan of the head was negative for acute pathology, and the chest x-ray was unrevealing. Concern about tick-borne infection prompted empiric treatment with doxycycline 100mg orally twice a day.

Despite treatment, the fever persisted, and the patient's mental status declined. Under intensive care he was intubated because of increasing respiratory distress and agitation. During days 2–5 after admission, the WBC count dropped to its lowest point

(1.5), platelets fell to 91, transaminases peaked (AST/ALT=265/94), and creatinine, a measure of kidney function, rose to 2.47, indicating possible kidney damage. Analysis of cerebrospinal fluid revealed 0 WBC and 7 RBC, with normal protein and glucose, and the electroencephalogram (EEG) did not show evidence of seizure activity. Antibiotics were broadened to cover typical meningoen- cephalitis pathogens pending further diagnostic testing. The patient slowly improved, with decreasing agitation allowing extubation.

*(Continued on page 2)*

## Raccoon Rabies: An Emerging Threat (continued)

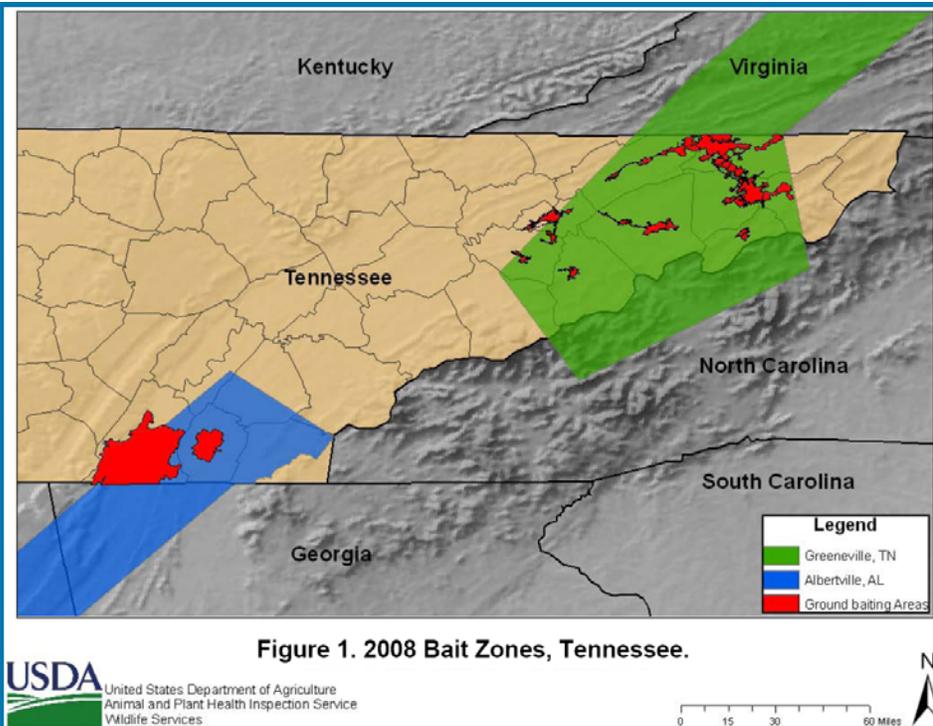


Figure 1. 2008 Bait Zones, Tennessee.

(Continued from page 1)

or removed by nuisance trappers, and raccoons purposely trapped for testing within the bait zones. It is important to remember that animals known to be involved in potential exposure of humans or domestic animals are not tested by USDA but only by the state public health laboratory. Vital to this surveillance work is USDA's use of a field test named dRIT, direct Rapid Immunohistochemistry Test, to allow rapid, portable testing capability.

More information is available by consulting the USDA's rabies website [http://www.aphis.usda.gov/wildlife\\_damage/oral\\_rabies/index.shtml](http://www.aphis.usda.gov/wildlife_damage/oral_rabies/index.shtml), CDC's rabies website or by consulting the Tennessee Department of Health at 615-741-7247. — by *L. Rand Carpenter, DVM* ❖

## Tennessee Rabies Update

In the United States, rabies is predominantly a wildlife disease spread by infected bats, raccoons, and skunks. Exposure of people and pets to these animals often increases in the summer as we spend more time outdoors.

Rabies in humans is rare in the US, with only 3 human cases in 2006, the latest year of data published. The last case in Tennessee was in 2002 in a 13-year-old Franklin County boy with a history of handling a bat found on the ground.

Rabies is transmitted by the bite of an infected animal, or when scratches, cuts, or mucous membranes are exposed to fresh

saliva from a rabid animal. Bat exposure is sometimes difficult to assess, as a bat's tiny teeth may leave no discernible marks. Uncontrolled contact with a bat that tests positive for rabies would be considered exposure to rabies.

Post-exposure treatment for rabies is costly, carries a small risk of adverse reactions, and is made more complicated by vaccine supply restrictions experienced this year. Vaccine supplies should be reserved for thoroughly assessed high-risk situations. Thus, when a person or pet is exposed to a potentially rabid animal, it is preferable to confine and observe or test the animal to determine whether treatment

is necessary. Since PEP is an urgent medical issue but not an emergency, it can often be delayed until clinical observation or rabies testing of the animal is complete. Exposure to an animal that cannot be observed or tested should prompt healthcare providers to seek advice from public health officials and discuss post-exposure treatment options.

Frequently updated information on rabies vaccine issues and guidance on assessment of exposure and treatment can be found at the CDC's rabies website at <http://www.cdc.gov/rabies/>. — by *Alice Green, DVM, MS* ❖

## Case Report: Rocky Mountain Spotted Fever in an Elderly Man (continued)

(Continued from page 1)

Blood values normalized, and patient's fever . He completed 14 days of doxycycline therapy, and was discharged to rehabilitation facility on June 3, 2008 with mild confusion and deconditioning.

Acute serum from May 19 sent for Rocky Mountain Spotted Fever (RMSF) serology

by indirect immunofluorescence assay (IFA), the standard test used by the Centers for Disease Control and Prevention (CDC) was negative. A convalescent sample sent May 30, 2008, had a titer of 1:64, results consistent with acute seroconversion. — by *Karen Bloch, MD, MPH, Vanderbilt University* ❖



## SPOTLIGHT: Yigzaw Belay



Yigzaw Belay, always quick with a warm, friendly greeting, is a familiar face among Tennessee Department of Health employees. He has worked with the Tuberculosis Elimination Program since 2003 and has been a diligent public health worker for over 3 decades, on more than one continent, and in extreme conditions. His experiences have included participating in

global smallpox eradication and surviving a period as a hostage of armed groups in Africa.

Yigzaw was born in Ethiopia (the town of Adigrat in the state of Tigray). During Yigzaw's youth, his parents encouraged an interest in medical work, and as a young man he attended Ethiopia's Addis Ababa University, receiving a degree in Public and Environmental Health in 1972. His first job placed him in a district environmental health office in Afar state, a remote, arid region of Ethiopia. He continued to advance in environmental and public health, eventually serving as a special advisor to the Minister of Health.

It was while working in the smallpox eradication program in the mid-1970s that Yigzaw experienced some of his most rewarding and most challenging times. Being involved in the eradication of smallpox was a thrilling, globally important mission;

however, Ethiopia was going through a period of extreme political violence. Yigzaw was arrested three times during 1975–1985 and once detained in prison for 9 months, despite working as a government health official. It was a frightening time in Ethiopia's modern history, in which even public health workers could be held as political prisoners.

In 1985, Yigzaw left Ethiopia and was granted political asylum in the US. He earned a Master of Science degree in Preventive Medicine and Environmental Health from the University of Iowa and worked as a consultant and Director of Health Promotion, Disease Prevention and Outreach with Access Health Systems prior to coming to TDH. He has continued to be involved in the political life of his native country and has worked closely with Ethiopian community leaders in Nashville and elsewhere in the U.S.

We are thankful that Yigzaw is part of our health department! — by *L. Rand Carpenter, DVM* ❖

## Tomatoes and Restaurants

In recent years, at least 12 *Salmonella* outbreaks involving approximately 2,000 persons in the United States have been associated with tomatoes. Extrapolating to account for the estimated proportion of unreported illness, these outbreaks likely represent approximately 79,600 individual illnesses. (CDC, 2007).

Epidemiologic and environmental investigations of several tomato-related outbreaks have indicated that the contamination of the tomatoes likely occurred at the farm or during processing (CDC, 2007). Additionally, most of the exposures to tomatoes linked to these outbreaks involved restaurants. The Environmental Health Specialist Network (EHS-Net), a multi-state CDC project aimed at preventing environmental factors that contribute to foodborne and waterborne illness and outbreaks, conducted a descriptive study of restaurants' tomato-handling practices.

The study, *Tomato-Handling Practices in Restaurants*, revealed that the majority of restaurants washed their whole tomatoes under running water, which was consistent

with FDA recommendations. Tomatoes were soaked during washing in 18% of observations, which is not recommended by the FDA because pathogens can be transferred from tomato to tomato. When soaking occurred, the tomato-water temperature differential did not meet FDA guidelines in 21% of operations. Additionally, almost a third of soaked tomato batches contained tomatoes with torn or broken skin, increasing the risk of internal contamination.

Many restaurants did not observe cross-contamination prevention precautions. For example 50% did not use a produce-only cutting board, and in a quarter of restaurants, gloves were not used during tomato preparation. Cut tomatoes were held above the recommended maximum temperature in half of surveyed restaurants. Tomatoes were above the maximum recommended storage temperature immediately after cut-



ting in 92% of restaurants surveyed.

Based on information about tomato handling learned during this study, intervention, education, and promotional materials will be designed with the goal of improving tomato handling practices.

For more information about this and other EHS-Net studies, go to <http://www.cdc.gov/nceh/ehs/EHSNet>. — by *Ryan Mason, BS* ❖

## Monkey Bites and Herpes B Virus

Animal bites account for <1% of emergency department visits in the United States. Although reports of bites caused by monkeys are rare, they carry risk of illness. Encounters with certain monkey species carry higher levels of risk and a description of the monkey involved is important for proper assessment. Bites involving New World monkeys (capuchin, squirrel, howler, spider monkeys, and others)



should be treated similarly to other animal bites, including wound care and consideration of the risk of rabies and tetanus. Bites from Old World macaque monkeys require additional attention to the possibility of Herpes B virus.

*Cercopithecine Herpesvirus 1* (Herpes B virus) causes an infection that may lead to fatal meningoencephalitis in humans if untreated. Incubation periods are commonly 2-5 weeks. Herpes B virus is enzootic among Old World primates of the genus *Macaca*. Up to 100% of captive adult macaques have antibodies to Herpes B virus. Infected monkeys can remain asymptomatic carriers throughout life, intermittently shedding virus in body fluids. Infection is typically transmitted by bites, scratches, or expo-

sure to the tissues or secretions of macaques.

All macaques and other monkeys with a history of exposure to macaques should be presumed to be infectious when a bite or scratch occurs. Wounds should be scrubbed for at least 15 minutes with soap or detergent, or, if mucosal surfaces are involved, irrigated for 15 minutes with sterile saline or rapidly flowing water. Symptoms of Herpes B infection in humans include fever, neck stiffness, vesicle development at the site of bites, and rapid, ascending encephalomyelitis; treatment with oral or intravenous acyclovir is indicated. For asymptomatic exposed patients, treatment with oral acyclovir or valacyclovir should be considered. Please consider contacting your local health department for consultation after monkey bite incidents.

Further reading: Jeffrey Cohen, et al, Recommendations for Prevention of and Therapy for Exposure to B Virus (*Cercopithecine Herpesvirus 1*), *Clinical Infectious Disease*, 2002;35; pp. 1191-1203. — by David E. Brumley, DDS, MPH ❖

## Laboratory Practices and Shiga-toxin Producing *Escherichia coli* (STEC)

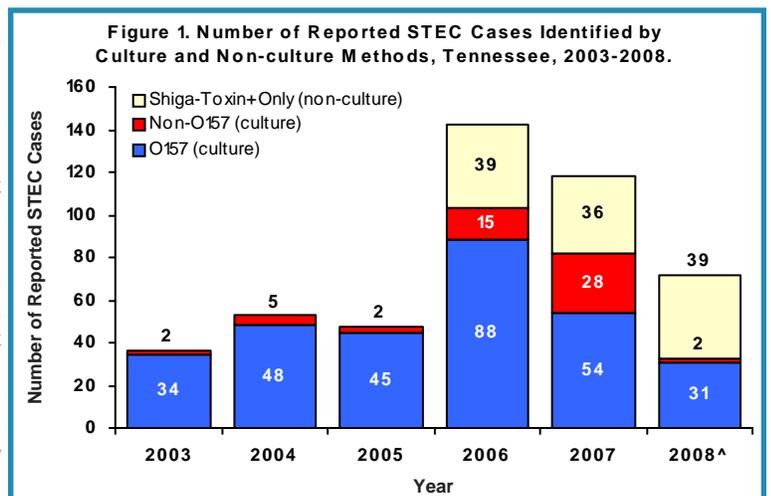
Shiga-toxin producing *Escherichia coli* (STEC) infections are an important cause of enteric disease, and *E. coli* O157 is the most common STEC isolated and reported in the US. Clinical laboratory identification, including traditional bacterial culture and biochemistry methods, play an important role in STEC surveillance and outbreak investigation. In recent years, non-culture-based methods such as EIA and PCR have become available, and at the same time non-O157 STEC infections have been increasingly recognized in Tennessee (Figure 1). All STEC infections became reportable nationwide in 2000.

A 2007 web-based and telephone survey of clinical laboratories in 10 FoodNet\* sites, including Tennessee, helped describe laboratory practices for the identification and reporting of STEC. Of the 135 selected laboratories in Tennessee, 132 responded. 56 of these reported testing on site for *E. coli* O157/STEC.

All but one of these 56 reported using culture-based methods. 9 (16%) used non-culture based methods for *E. coli* O157/STEC identification. Four out of these 9 labs used non-culture-based methods for the identification of non-O157 STEC. A single Tennessee laboratory reported using culture and non-culture methods simultaneously, as recommended by the 2000 CDC guidelines published in MMWR, Vol 55, No 38. All 9 labs in Tennessee using non-culture methods indicated that they send positive specimens for further testing to the state public health laboratory. Eight more clinical labs indicated adding non-culture testing for *E. coli* O157/

STEC in the near future.

Detection and characterization of non-O157 STEC is dependent on clinical laboratories using both culture and non-culture based methods or submitting Shiga-toxin positive specimens to their state public health laboratory for further testing. — by Samir Hanna, MD, MSPH ❖



\* FoodNet is the principal foodborne disease surveillance component of CDC's Emerging Infections Program.

<sup>^</sup>2008 Year-to-date Totals

# Reporting of Notifiable Diseases

In our last issue, we brought attention to the concept to notifiable diseases. In this issue, we will focus on a specific list of isolates that must be sent to the Tennessee state public health laboratory system. In future issues, we will explain further testing and characterization that are done with these isolates and how those results benefit our community.

Directors of hospital and private clinical laboratories across Tennessee are required by state law and health department rules to submit the following culture isolates to the TDH Division of Laboratory Services. Information from these cultures is the basis for surveillance of infectious diseases in Tennessee.

- ▶ *Salmonella* species (including *S. Typhi*)
- ▶ *Shigella* species
- ▶ *Corynebacterium diphtheriae*
- ▶ *Francisella tularensis*
- ▶ *Brucella* species
- ▶ *Mycobacterium* species
- ▶ *Legionella* species

- ▶ *Plasmodium* species
- ▶ *Vibrio* species
- ▶ *Clostridium tetani*
- ▶ *Listeria* species
- ▶ *Listeria monocytogenes*\*
- ▶ *Francisella* species
- ▶ *Yersinia pestis*
- ▶ *Escherichia coli* O157
- ▶ Shiga-like toxin producing *Escherichia coli*
- ▶ non-O157 (STEC)
- ▶ Shiga-like toxin positive stools and/or EIA positive broth for shiga-like toxin
- ▶ *Clostridium botulinum*
- ▶ *Haemophilus influenzae*\*
- ▶ *Neisseria meningitidis*\*
- ▶ *Streptococcus pneumoniae*\*
- ▶ *Streptococcus*, Group A\*\*
- ▶ *Bacillus anthracis*
- ▶ *Burkholderia mallei*
- ▶ *Burkholderia pseudomallei*
- ▶ Vancomycin resistant *Staphylococcus aureus* (VRSA)
- ▶ Vancomycin intermediate *Staphylococcus aureus* (VISA)

All cultures must also be accompanied by pertinent demographic information including, but not limited to:

- ▶ Patient's full name, address (including county), age, and sex
- ▶ Physician (submitter) name and address
- ▶ Anatomic source of culture and specimen collection date.

A normally "sterile site" is defined as blood, cerebrospinal fluid (csf), pleural fluid, peritoneal fluid, pericardial fluid, bone, joint, internal body sites (obtained from surgery/ aspirate from one of the following: lymph node, brain, heart, liver, spleen, vitreous fluid, kidney, pancreas, or ovary).

For more information about notifiable diseases and the state public health laboratory, please visit the following websites:

- <http://health.state.tn.us/CEDS/index.htm>
- <http://health.state.tn.us/Lab/index.htm>

— by Nupur Sashti, MPH ❖

\* Isolated from Sterile sites

\*\* Isolated from necrotizing fasciitis or sterile site

Reported Cases, by Year of Diagnosis, Tennessee, 2004-2008					
Condition	2004	2005	2006	2007	2008*
Chlamydia	22408	23041	25320	26969	19510
Gonorrhea	8475	8619	9687	9584	6207
HIV/AIDS	992	1007	1018	1043	715
Meningococcal Disease	22	28	25	21	17
Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA), invasive	913	1994	2029	1973	1284
Pertussis	167	213	179	74	53
Rocky Mountain Spotted Fever	101	139	260	188	149
<i>Salmonella</i> , non-Typhi	776	820	844	851	501
<i>Shigella</i>	571	507	200	363	543
Syphilis	803	907	1016	1207	847
Tuberculosis (TB)	277	299	277	234	198
Pediatric TB 0-4 yrs	13	10	11	4	9
Pediatric TB 5-15 yrs	5	6	6	7	3
West Nile virus (WNV)	14	18	22	11	8

\* YTD Totals as of September 13, 2008

## Flu happens!

(And we need you to tell us about it.)

Join the  
**Tennessee Sentinel  
Providers Network**

Conducting year-round influenza surveillance including free laboratory testing for selected specimens.

Contact Robb Garman for more info:  
(615) 532-8507  
robb.garman@state.tn.us



## Ready America: Prepare, Plan, Stay Informed

Just like having a working smoke detector in your home, having emergency supply kits will put the tools you may need at your fingertips. Be prepared to improvise and use what you have on hand to make it on your own for **at least three days**. The Tennessee Department of Health's Emergency Preparedness Program encourages Tennesseans to stock at least a two-week supply of food, water, and medicines as a first step in preparedness.

### Recommended Items to Include in a Basic Emergency Supply Kit (<http://www.ready.gov>):

- ▶ Water, one gallon of water per person per day for at least two weeks, for drinking and sanitation
- ▶ Food, at least a two-week supply of non-perishable food
- ▶ Battery-powered or hand crank radio and a NOAA Weather Radio with tone alert and extra batteries for both
- ▶ Flashlight and extra batteries
- ▶ First aid kit, including sterile gloves and dressings, cleansing agents to disinfect, antibiotic and burn ointments, adhesive bandages, eye wash solution, thermometer, prescribed medications and medical supplies
- ▶ Whistle to signal for help
- ▶ Dust mask, to help filter contaminated air, and plastic sheeting and duct tape to shelter-in-place
- ▶ Moist towelettes, garbage bags and plastic ties for personal sanitation
- ▶ Wrench or pliers to turn off utilities
- ▶ Can opener for food (if kit contains canned food)
- ▶ Local maps

**Tennessee Department of Health**  
Communicable and Environmental Disease Services  
425 5th Avenue North  
1st Floor, Cordell Hull Building  
Nashville, Tennessee 37243

RETURN SERVICE REQUESTED

## EDITORIAL STAFF

### Central Office Editorial Staff:

L. Rand Carpenter, DVM  
Darryl Edmisson, MS  
Katie Garman, MPH  
Alice Green, DVM, MS  
L. Amanda Ingram, MPH  
Melissa Kranz, MPH

### Regional Editorial Staff:

David E. Brumley, DDS, MPH  
Mary Lancaster, PhD

For subscription information,  
please contact Darryl Edmisson  
at (800) 404-3006.



Department of Health. Authorization No.  
343227, 36,000 copies. This public  
document was promulgated at a cost of  
\$.28 per copy. 09/08

Presorted  
Standard  
US Postage  
PAID  
Nashville, TN  
Permit #1