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Tennessee *epi-news*

TENNESSEE DEPARTMENT OF HEALTH
COMMISSIONER JOHN J. DREYZEHNER, MD, MPH

HUS and STEC O104:H4

Beginning in May 2011, Robert Koch Institute, the German federal institution responsible for disease control and prevention, together with other federal and state authorities for health and food safety in Germany have been investigating a large outbreak of Shiga toxin-producing *Escherichia coli* O104:H4 (STEC O104:H4) infections. Most infections were reported among people who reside in or had recently visited northern Germany. As of September 2011, Germany and 15 other countries have reported 3,842 cases, including 53 fatalities. Hemolytic uremic syndrome (HUS) –a type of kidney failure that is associated with Shiga toxin-producing *E. coli*– was diagnosed in 855 people, roughly 22%.

There are important differences between

this outbreak and previous large outbreaks of Shiga-toxin producing *E. coli* infection. First, HUS represents nearly a quarter of the reported cases, in contrast to the 5 %–10 % typically seen in outbreaks. Second, approximately 90% of those HUS cases occurred in adults rather than in children, with the majority occurring in women. Third, the implicated pathogen was a non-O157 Shiga toxin-producing *E. coli* strain instead of the more commonly seen Shiga toxin-producing *E. coli* O157:H7. STEC O104:H4 has several genetic factors that



contribute to illness. It combines the virulence properties of two different diarrhea-causing *E. coli* pathotypes: typical enteroaggregative *E. coli*, known for its ability to stick to cells in the intestine, and Shiga

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What is “Meaningful Use” and How Does It Apply to Me?

Much of the current buzz in health care is around electronic health records, Meaningful Use, and federal reimbursement for meeting CMS objectives. CMS is the Centers for Medicare and Medicaid Services and they have defined "Meaningful Use" in the following way: the use of certified electronic health record (EHR) technology for the electronic exchange of health information in a meaningful manner in order to improve the quality of health care. Meaningful Use is a federal initiative and requires that progress be assessed through the use of clinical and interoperability quality measures.

Meaningful Use involves three stages and currently is in Stage 1: Capture and Share data. In order to participate, eligible providers and hospitals must meet 15 mandatory objectives and at least five from a list of 10 optional items, including at least one Public Health objective. The Public Health (PH) objectives include: 1) exchanging immunization registry data; 2) sending electronic laboratory results (ELR); and 3) sending syndromic surveillance information to PH agencies. While eligible providers may only select the immunization registry and syndromic surveillance options, eligible hospitals may select any of

the PH options.

Currently, the Tennessee Department of Health (TDOH) is exchanging immunization registry data and accepting ELR using interoperability standards outlined in the Meaningful Use objectives.

For more information, please visit <http://www.tn.gov/ehealth/meaningfuluse> or contact Erin Holt with TDOH, at erin.holt@tn.gov or 615-741-7247. — by Erin Holt, MPH ❖

HUS and STEC O104:H4 (continued)

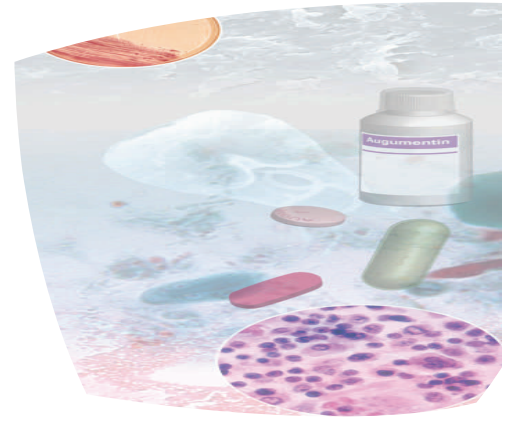
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toxin-producing *E. coli*, known for its ability to make Shiga toxin. These two properties together suggest that the pathogen in the current outbreak is exceptionally virulent. The final important difference in this outbreak is the eight day median incubation period in contrast to the typical three-four day incubation period reported for Shiga toxin-producing *E. coli* O157:H7.

In the United States, six confirmed cases, including one death from STEC O104:H4 infection have been reported. Of these

cases, all but one recently traveled to Germany and the one non-traveler likely acquired infection through close contact with another case.

The Robert Koch Institute has determined that contaminated raw sprouts, produced by a farm in Germany, were the likely source of the outbreak, and public health authorities even recommended that people in Germany not eat raw sprouts of any origin. Trace-back investigations indicated that no sprouts or other food items from the implicated farm have been ex-



ported outside Germany. — by Marcy McMillian, MPH ❖

International Travelers Beware: Measles on European Tour

Sustained measles transmission in the U.S. was interrupted over a decade ago, due largely to high vaccination coverage domestically and in countries commonly visited by U.S. travelers. Measles is a highly contagious viral illness that can lead to serious complications in up to 30% of cases. In 2011, 30 European countries and the US have reported dramatic increases in incidence. France was particularly hard hit, with over 10,000 cases reported during January–April. 89% of U.S. cases have been associated with importation from other countries. For example, of Tennessee's three confirmed cases in 2011, one was imported from France and spread to one contact in Tennessee, and one patient was infected before traveling to the US from India.

Measles is characterized by high fever, cough, and runny nose, followed in one-four days by conjunctivitis and a red rash that spreads from the head to the extremities. White spots on the buccal mucosa, known as Koplik's spots also occur, but may not be recognized easily by all clinicians. Complications can include pneumonia, encephalitis, seizures and death. Up to 90% of susceptible persons develop measles following exposure. A susceptible person can be infected after entering a room as long as two hours after a measles patient leaves, though the virus typically survives less than two hours in air or on

objects. Ill persons can transmit virus as early as five days before rash onset through four days after rash onset. Susceptible contacts may become ill and develop the measles rash up to 18 days after exposure to a case. It is diagnosed by a positive IgM measles antibody titer.

MMR vaccine is safe and highly effective in preventing measles and its complications. MMR vaccine is recommended routinely for all children at age 12–15 months, with a second dose at age four-six years. For adults born in 1957 or later who have no evidence of immunity to measles, one dose of MMR vaccine is routinely recommended; two doses are recommended for certain adults in high-risk groups (e.g., health care personnel, international travelers, or students at post-high school educational institutions). It is essential to vaccinate susceptible travelers to prevent illness and measles importations to the U.S. Exposures might occur in a variety of settings, including airports. All susceptible travelers going outside the U.S. and aged \geq six months are eligible to receive MMR vaccine and should be vaccinated before travel.

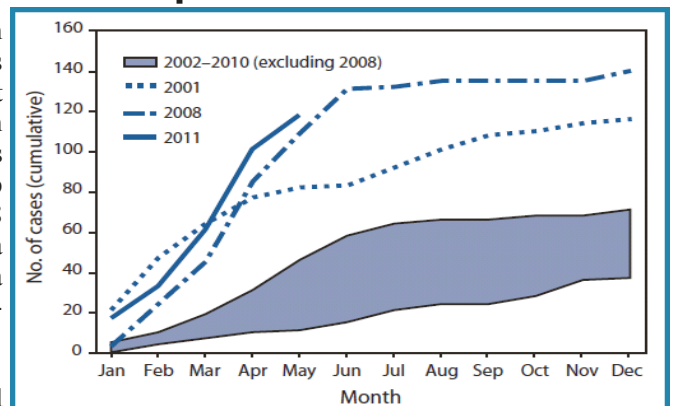


FIGURE. The cumulative number of measles cases reported by month in the U.S. during 2001-2011. During Jan. 1-May 20, 2011, a total of 118 cases were reported, the highest number reported for the same period since 1996. — Source: *MMWR*, May 27, 2011 / 60(20); 666-668.

If you suspect measles illness in a susceptible patient, particularly with a history of recent international travel, isolate the patient using airborne precautions (or place in a private room with the door closed) and immediately contact your local health department for assistance with the measles assessment and possible testing.

Prompt recognition and follow-up of exposed contacts (including vaccination of susceptible contacts within three days of exposure) are essential to minimize the risk of an outbreak. — by Robb Garman, MPH, and Kelly L. Moore, MD, MPH ❖

White-Nose Syndrome in Tennessee Bats

Hibernating bat populations in several states and Canadian provinces are at risk

with the emerging disease of white-nose syndrome (WNS). First appearing in up-

state New York in the winter of 2006-07,

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White-Nose Syndrome in Tennessee Bats (continued)

(Continued from page 2)

the fungus thought to cause WNS has spread southward to Tennessee and westward to Oklahoma. At the end of the 2010-2011 hibernating season, bats with WNS were found in 16 states and four provinces. Currently, 11 cave-hibernating bat species, including four endangered species and subspecies, are affected or at risk. More than half of the 45 bat species in the U.S. depend on hibernation for winter survival.

WNS has killed millions of bats in eastern North America. In some hibernacula, the mortality rate is 90 to 100 percent. As a result, several species of bats that hibernate may become endangered or extinct. Bats, considered to be nature's insecticide, eat tremendous numbers of flying pest insects. The large-scale loss of bat populations is likely to increase the use of chemical pesticides substantially and have long-term effects on agricultural economies and ecosystem integrity. Tennessee participates in WNS surveillance by providing bats for testing in a project sponsored by the Na-

tional Park Service and the Southeastern Cooperative Wildlife Disease Study at the University of Georgia.

Researchers associate WNS with a newly identified fungus (*Geomyces destructans*) that thrives in the cold, humid conditions characteristic of caves and mines used as hibernacula. Bats affected by WNS during winter months may lose fat reserves and exhibit atypical behaviors such as flying outside during the day and clustering near hibernacula entrances. In early 2010, the Tennessee Wildlife Resources Agency (TWRA) received confirmation that two bats hibernating in Worley's Cave in Sullivan County tested positive for the WNS fungus. Additional occurrences have been recorded in caves in Blount, Carter, Fentress, Montgomery, and Van Buren counties.

Scientists believe WNS is spread primarily bat-to-bat, but it is also plausible that fungus may be transferred from infected caves or mines on the clothing, gear, or footwear of humans. In an effort to slow the spread



of WNS among Tennessee's bat population, public access to caves, sinkholes, tunnels, and abandoned mines on state-owned public land has been closed since July 1, 2009.

The Great Smoky Mountains National Park, U.S. Forest Service, Tennessee Valley Authority, and The Nature Conservancy have also closed caves on their lands to public access. — by David E. Brumley, DDS, MPH ❖

Outsmarting the Medication

Since 1985, gonorrhea, a bacterium spread during sexual contact, has become resistant to three classes of medication: tetracycline, penicillin, and quinolones. It alters either itself or the structure of the medication. There are signs of growing resistance to azithromycin, and cephalosporins are the only class of medication remaining to treat gonorrhea with a single, inexpensive injection.

When cephalosporins cease to be effective, an infected patient would need to be hospitalized for treatment with IV antibiotics. Medication resistance in gonorrhea has historically originated in Far East Asia and spreads both west and east. New cephalosporin resistance as close as Norway and Hawaii has been documented. CDC moni-

tors resistant gonorrhea at 28 U.S. sites, and the World Health Organization considers resistance in gonorrhea to be a global concern on the level of multi-drug resistant tuberculosis, typhoid, and malaria.

CDC recommends those infected with gonorrhea be treated concurrently for chlamydia because of high co-infection rates. To mitigate resistance and increase the efficacy of cephalosporin treatment, the CDC additionally recommends that anyone with sexual contact with someone diagnosed with gonorrhea be treated for both infections.

Gonorrhea can cause many complications including infertility, ectopic pregnancy, and sterility, and babies can be infected during birth.

Because of the high number of repeat infections, patients with gonorrhea should be asked to return in three-six months for another test.

Although gonorrhea incidence has been decreasing in the U.S. and TN since the 1980s, TN remains far from meeting the Healthy People 2010 goal of 19.0 cases/100,000 population.

In 2009, TN ranked 13th among states with a case rate of 128.3 cases and Shelby County #7 among metropolitan statistical areas with a case rate of 422.0. — by Laurie Anderson (Revised 04/20/2012) ❖

Norovirus in Congregate Settings

Substantial advances have been made in our understanding of norovirus epidemiology, immunology, diagnostic methods and infection control. CDC recently published *Updated Norovirus Outbreak Management and Disease Prevention Guidelines*. Nevertheless, norovirus remains the leading

cause of acute gastroenteritis in U.S. hospitals, nursing homes, outpatient clinics and emergency departments.

Norovirus can be transmitted by food, water and contaminated environmental surfaces, as well as directly from person to

person. There is no lasting immunity to norovirus; outbreaks can occur in a variety of congregate settings. The potential for seeing multiple routes of transmission within an outbreak further complicate disease prevention efforts.

(Continued on page 4)

ATTACK OF THE NOROVIRUS*

* a group of highly contagious viruses that cause "stomach flu," or gastroenteritis (GAS-tro-en-ter-I-tis)

Repel it by frequently:
 washing your hands with soap + water OR using an alcohol-based hand sanitizer. (especially after toilet visits and before eating and/or preparing food)
AND avoiding sharing food, utensils and drinking containers.

Most individuals recover from norovirus in 1-2 days on their own by treating symptoms and staying hydrated.

Symptoms can begin suddenly, and may include:

- Nausea
- Vomiting
- Diarrhea
- Stomach cramping
- A low-grade fever
- Chills
- Muscle aches
- General sense of tiredness

THE UNIVERSITY OF ARIZONA
CAMPUS HEALTH SERVICE
www.health.arizona.edu

Norovirus in Congregate Settings (continued)

Norovirus and other closely related caliciviruses infect only humans and have a low infectious dose. Appropriate hand hygiene and exclusion/isolation of infected persons are the most practical means of interrupting transmission of the virus and limiting contamination of the environment. Separation of exposed and unexposed well persons might also be useful during outbreaks to help break the cycle of transmission. Ill staff members in food service settings should be excluded during their illness and for 48 hours following resolution of symptoms.

Finally, the use of chemical disinfectants is

one of the key approaches to interrupting norovirus spread via contaminated environmental surfaces. The efficacy of chlorine bleach has been well documented. Particular attention should be given to bathrooms and high-touch surfaces like door knobs and hand rails. For the latest CDC recommendations regarding norovirus outbreak management, see the March 4, 2011 edition of *MMWR*

[CDC. Updated Norovirus Outbreak Management and Disease Prevention Guidelines. *MMWR* 2011;60(RR03):1-15.] — by *Kevin Morris, MPH, MPA* ❖

What Goes Up Must Come Down: TB and an Air Ambulance Pilot

In 2011, a Tennessee air ambulance pilot was diagnosed with culture-confirmed pulmonary tuberculosis.

Because of his close contact with other employees of this Kentucky air ambulance company, patients, and family, as well as a lengthy infectious period, April–December 2010, the investigation was complex.

TB risk assessments were conducted to determine likelihood of exposure and need for testing. TB skin tests were placed, and contacts with positive test results underwent chest x-rays. Employees testing positive were also offered testing by QuantiFERON® Gold (QFT-G , manufactured by Cellestis Limited, Carnegie, Victoria,

Australia).

Forty-eight contacts were tested, including six in the patient’s household, 38 in his workplace, and four in a clinic setting. Six others were identified as contacts but were not tested by TB skin test because of a past positive skin test, and one contact had become clinically ill. There were eight (18.6%) TB skin test conversions, though none among clinic contacts.

The conversion rate was a remarkable 67% for household and 13% for the workplace. Ten contacts are currently on treatment for latent tuberculosis infection.

Collaboration across state lines and with various healthcare entities was critical in



locating, testing, and treating contacts.

Testing demonstrated likely transmission in the household and workplace and points to the need for continued vigilance and education around TB control. — by *Jason Cummins, MPH* ❖

Transportation, Air Pollution, and Public Health

Transportation is the single largest source of air pollution in the Southeast. Two important air pollutants that threaten health are ground-level ozone and fine particle pollution. Ozone forms in the atmosphere, typically on hot, dry summer days. Ozone can irritate and inflame airways, and at high levels can cause shortness of breath, coughing, wheezing, chest tightness, or pain. Particle pollution can be produced year-round. Microscopic fine particles can be breathed deeply into the lungs. People exposed to high levels of particle pollution may experience dyspnea, coughing, chest discomfort, wheezing, and shortness of breath.

The U.S. Environmental Protection Agency (EPA) and the National Highway

EPA DOT Fuel Economy and Environment E85 Flexible-Fuel Vehicle Gasoline-Ethanol (E85)

Fuel Economy
24 MPG
 combined city/hwy 21 29
 4.2 gallons per 100 miles

Large cars range from 14 to 28 mpg. The best vehicle rates 99 MPG. Values are based on gasoline and do not reflect performance and ratings based on E85.

You save \$1,100 in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost \$2,300

Fuel Economy & Greenhouse Gas Rating (to page only) Smog Rating (to page only)
 1 7 10 6 10
 The vehicle emits 271 grams CO₂ per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also creates emissions, some from oil refineries and coal.

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 22 MPG and costs \$12,600 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$3.79 per gallon. This is a fuel-economy estimate. MPGe is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

fuel economy.gov
 Calculate personalized estimates and compare vehicles

Smartphone QR Code

Traffic Safety Administration recently made the biggest change to fuel economy

labels since they were introduced 35 years ago. The redesigned labels provide fuel economy, energy use, fuel costs, and environmental impacts. For the first time, comparable fuel economy and environmental ratings will be available all for vehicles, including gas-electric hybrids and plug-in electric cars. Consumers will have the best information to help save on fuel costs and reduce emissions.

Scientific studies have connected poor air quality to adverse health outcomes and mortality. A UCLA study revealed that the smallest particles from vehicle emissions
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Change in Reportable Diseases Effective January 2012

Reportable diseases are those diseases or conditions described in Tennessee law that are required to be reported to local and state health departments. Descriptions, reporting procedures, patient fact sheets, and other information are contained in the new Tennessee Department of Health communicable disease manual on-line. This can be viewed at the following website: <http://health.state.tn.us/ReportableDiseases/Default.aspx>.

should alert the health department of suspected cases or positive laboratory results for these reportable diseases. The list of approximately 90 reportable diseases is maintained by the Communicable and Environmental Disease Services section, under the authority of the Commissioner of Health. The list is evaluated and updated annually and typically republished each January. The 2012 version contains minor changes to disease names and reporting categories.

As mentioned above, clinical laboratories are required to report positive results and to submit selected culture isolates to the Department of Health Laboratory Services. Public health laboratory surveillance can include confirmation, typing, and/or antibiotic sensitivity testing of culture isolates. Please visit the reportable disease listing at <http://health.state.tn.us/ReportableDiseases/Default.aspx>. — *by Rand Carpenter, DVM* ❖

Healthcare providers and laboratories

Transportation, Air Pollution, and Public Health (continued)

(Continued from page 4)

may be the most damaging, triggering plaque buildup in the arteries, which can lead to heart attack and stroke. Children's Hospital Boston found a strong correlation between adult diabetes and particulate air pollution, even after adjustment for other risk factors, including obesity and ethnicity. According to researchers in Denmark,

long term exposure to low-level air pollution may increase the risk of severe chronic obstructive pulmonary disease, while others are investigating the possible links between traffic exhaust fumes and asthma rates.

Fuel economy and environment labels arrive on 2013 model vehicles. As always, look for ways to minimize trips and keep

your car tuned up and tires inflated properly to reduce your emissions and protect public health.

For more about EPA's labels click: www.epa.gov/fueleconomy. For the daily air quality forecast visit www.cleairtn.org. — *by David M. Borowski, MS* ❖

Reported Cases, by Year of Diagnosis, Tennessee, 2007-2011					
Condition	2007	2008	2009	2010	2011
Chlamydia	26969	27939	29761	27809	30249
Cryptosporidiosis	140	48	82	52	92
Gonorrhea	9584	8754	7933	6974	7453
Meningococcal Disease	21	21	15	13	9
Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA), invasive	1973	1988	1954	1610	1671
Pertussis	74	120	203	226	94
Spotted Fever Rickettsiosis	188	231	187	307	259
<i>Salmonella</i> , non-Typhi	852	923	779	969	996
Shiga-toxin producing <i>E. coli</i> (STEC)	118	113	86	116	104
Syphilis	1207	1271	1316	1130	878
Tuberculosis (TB)	235	282	210	193	156
Pediatric TB 0-4 yrs	4	13	5	11	2
Pediatric TB 5-15 yrs	7	2	6	2	6

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@tn.gov



Top Ten Tips for Driving in Icy Weather

Follow these safe driving tips to get around when it's icy!

- ▶ Decrease your speed and leave room to stop.
- ▶ Brake gently—if your wheels lock, ease up!
- ▶ Turn on your headlights so others can see you.
- ▶ Use low gear to improve traction.
- ▶ Be very careful on bridges and overpasses.
- ▶ Don't pass snowplows or sanding trucks.
- ▶ Don't use cruise control.
- ▶ Be careful in shady spots on the road.
- ▶ Don't pump your brakes if you have anti-lock brakes.
- ▶ If you skid, try to steer in that direction! Don't brake!

Include a "survival kit" in your car in case you get stranded during an ice storm. Ideally, it should contain:

- ▶ A working flashlight with extra batteries
- ▶ Jumper cables
- ▶ Salt or other ice-dissolving substance
- ▶ First aid kit
- ▶ Windshield scraper to remove ice buildup
- ▶ Some non-perishable, high-energy foods like dried fruits, unsalted canned peanuts/hard candy
- ▶ Warm winter clothing like gloves, a knit hat, scarves and extra socks
- ▶ Tow or tire chains if you have them

Remember, **drive slowly, drive safely and arrive successfully!**

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