EPI Update

A Bulletin on Epidemiology and Public Health in Knoxville and Eastern Tennessee

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In This Issue

Air Pollution and Public Health

With the return of summer's hot days, bright sunshine, and sometimes stagnant air comes an increased likelihood of days with reduced air quality. Outdoor air quality has a direct effect on health at the widest level in our community, contributing to respiratory and cardiovascular disease, cancer, and increased mortality. The pollutants which are the widest health threat in our area are ground level ozone and particulate matter less than 2.5 microns in diameter (PM 2.5).

Ozone can irritate the respiratory system, causing coughing, throat irritation or a burning sensation in airways. It can reduce lung function, cause a feeling of chest tightness, wheezing, or shortness of breath. Ozone can aggravate asthma and trigger asthma attacks. People at greater risk from ground-level ozone are people with lung diseases, such as asthma, and children and adults who are active outdoors.

Particulates are microscopic solids or liquid droplets that are so small that they can get deep into the lungs and cause serious health problems. When exposed to these small particles, people with heart or lung diseases and older adults are more at risk of hospital and emergency room visits or, in some cases, even death from heart or lung disease. Even healthy people may experience temporary symptoms from exposure to elevated levels of particulates, which contribute to the "haziness" of summer air. Symptoms may include irritation of the eyes, nose and throat; coughing; phlegm; chest tightness; and shortness of breath. At greatest risk from particle pollution are people with heart or lung disease, older adults, and children (who spend more time outdoors).

The National Institute of Health reported in 2006 on the largest ever study conducted on the link between particulates and hospital admissions for heart- and lung-related illnesses. The study of 11.5 million Medicare enrollees showed that small increases in particulates resulted in increased hospital admissions for heart and vascular disease, heart failure, chronic obstructive pulmonary disease, and respiratory infection. A 2002 study by the American Cancer Society found that the number of lung cancer deaths increased 8% for every increase of 10 ug/m^3 in particulates. Other heart- and lung-related causes of death increased 6% for every 10 ug/m^3 increase.

To give the public daily information on current air pollution levels, EPA, state, and local air pollution agencies and other partners have established an Air Quality Index (AQI) that is often included in local weather reports, and which can be accessed from the AirNow website: http://www.airnow.gov. Clinically, when the air quality is “moderate” or “yellow,” as it often is on summer days, physicians should recommend that unusually sensitive people limit prolonged outdoor exertion. When the air quality is “unhealthy for sensitive groups” or “orange” (which now happens at most only a few days per summer in East Tennessee) active children and adults, people with respiratory diseases such as asthma, and people with heart disease should limit prolonged outdoor exertion. For those visiting or vacationing in areas with air quality problems, categories of “unhealthy” and “very unhealthy” exist as well, when such precautions would extend to the general population, and those with medical issues should stay indoors. These guidelines are advisable for pets with similar conditions as well.

Actions to address the sources of air pollution are already paying off in reduced ozone levels in the region, although particulates remain more troublesome. Local and state actions taken to improve regional air quality include reduced speed limits and open burning bans, while nationally steps like stricter emission standards for diesel engines and low sulfur diesel fuel have been adopted. The Regional Clean Air Coalition, established by 11 East Tennessee county mayors, has suggestions for how we all can contribute to keeping East Tennessee’s air clean at their website: http://www.etnrcac.org/help.htm.

For additional information on health risks of air pollution, contact: Al Iannacone, Environmental Epidemiologist, at albert.iannacone@knoxcounty.org or 865-215-5242.

If you would like to receive EPI Update via e-mail in PDF format please contact Cindy Lou Sovastion at: cindylou.sovastion@knoxcounty.org

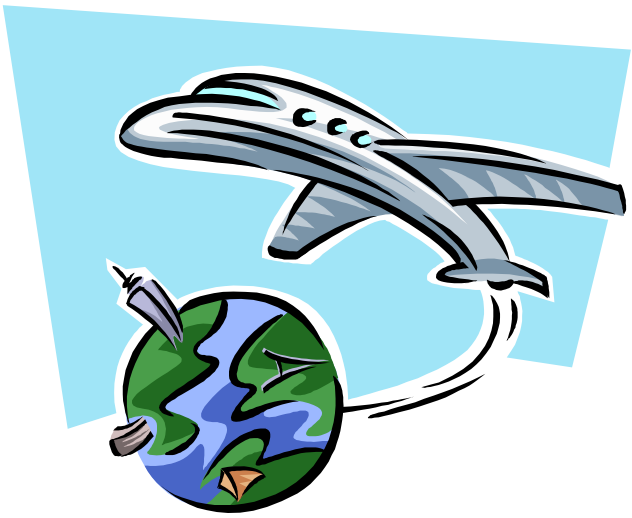
Staying Healthy On the Road, In the Air, and On the Water!

The Centers for Disease Control estimates that approximately 63.5 million residents took trips outside the US in 2005. All persons traveling outside the US are encouraged to consult their health-care provider 4-6 weeks before international travel. At the visit patients should be assessed for risks associated with each destination, immunization updates, and current medication needs. Children, the elderly, pregnant women, and immunocompromised travelers may warrant special consideration. The following is a list of resources for health maintenance and prevention of illness among travelers:

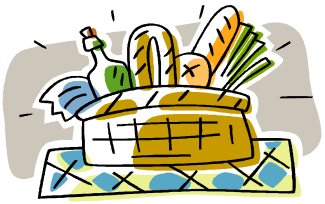
- CDC Travelers' Health website: www.cdc.gov/travel includes information about disease outbreaks, vaccine requirements and recommendations; medications for the prevention and treatment of travel-related problems; recommendations for travel by cruise ship and air; and links to information about specific diseases
- Health Information for International Travel ("The Yellow Book") searchable online version: www.cdc.gov/travel/yb/index.htm
- Malaria Information: http://www.cdc.gov/travel/diseases.htm#malaria or the Malaria Branch Hotline at 770-488-7788
- CDC Yellow Fever Registry: http://www2.ncid.cdc.govv/travel/yellowfever
  From CDC Health Information for International Travel 2008

Locally, Knox County Health Department's Adult Preventive Health/International Travel Clinic can provide much of the same information as well as the requisite immunizations.
Clinic hours : 8:00 AM – 4:30 PM Monday – Friday (last appointment at 3PM)
Phone: 865-215-5071 or 865-215-5072

http://www.knoxcounty.org/health/internatl_travel-vaccinations.php



Food Safety



Keeping food safe during summer cookouts and picnics

Summer is the season for outdoor barbecues and picnics; food related illness can put a damper on those outdoor feasts. Make the most of the fun by making sure your food remains safe. CDC estimates that 76 million Americans get sick from food-related illness every year. More than 300,000 are hospitalized and about 5,000 die each year from foodborne illness. Protect yourself and your friends and family in these ways:

* Always, wash you hands with hot soapy water before and after handling food.

* Cook meat, poultry and seafood thoroughly. Use a meat thermometer to be sure your grilled meats are “done.” Hamburgers should be cooked to 165 ^{o} F, beef roast and steaks to 160 ^{o}F, poultry to 170 ^{o}F and fish cooked to 145 ^{o}F.

* Don’t cross contaminate one food with another. When taking food off the grill, do not put cooked food items back on the same plate that previously held raw food. Wash your hands, utensils and cutting boards after they have been in contact with raw meat or poultry.

* Bacteria can grow quickly at room temperature, so refrigerate leftover foods promptly. “keep cold food items cold and hot food items hot.”

* Wash fruits and vegetables thoroughly to remove all visible dirt.

For more information on food safety visit www.cdc.gov

Rabies Update: What can the Health Department do for you?

During the months of April and May, the Knoxville Regional Laboratory reported 3 dogs (Jefferson, Hamblen, Greene counties) testing positive for the rabies virus. All three dogs were infected with the north central skunk strain of rabies. In the United States, wild animals have replaced the domestic dog as the primary reservoir of rabies because of the effectiveness of vaccination and control programs in domestic animals. All three dogs were unvaccinated and were known to have had an encounter with a skunk in the previous month. Veterinary and animal control staff, as well as the animal’s owners were treated with rabies post-exposure prophylaxis.

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DRUG RESISTANT TB

The recent press regarding Extensively Drug Resistant TB (XDR TB) has brought to the forefront the persistent public health issue of TB and the challenge of TB elimination. Over the last 3 years the rate of decline of TB cases in the United States has slowed. In 2005 the United States saw an all-time low number of active TB cases of 14,097, though that number is encouraging it represents the smallest decline (4%) in a decade. Just over half, 55%, of cases in the US occurred in foreign-born individuals. Tennessee saw an increase in active TB cases for the year 2005 of 7.4%. The largest number of cases in Tennessee was seen in Non-Hispanic Black males. Overall risk factors for TB remain the same, homelessness in the past year, residing in a correctional facility or long term care facility in the last year, any drug abuse in the last year, being HIV positive, and being foreign-born. With the latter showing the largest percent increase from 2004 to 2005, the relative frequency of TB in foreign-born individuals shows a 31% increase. The CDC continues to recommend targeted testing for these groups.

Unfortunately the percentage of TB cases which are either multi-drug resistant TB (MDR TB), defined as resistance to at least isoniazid and rifampin, or XDR TB, defined as resistant to isoniazid and rifampin and at least three of the six main classes of second line drugs* (SLD) is on the rise around the world. According to the CDC between 2000 and 2004 the percentage of MDR TB has gone from 20% of all isolates to 28% of all isolates and XDR TB has gone from 3% of all MDR isolates to 11% of all MDR isolates. Resistance is felt to develop due to either using an inadequate number of drugs to treat TB or patients not completing treatment.

In Tennessee there have to date been no cases of XDR TB. We have however had some cases of MDR TB. There are two classifications of MDR TB. It can either be “initial MDR,” referring to patients whose initial culture demonstrated resistance to isoniazid and rifampin or “acquired MDR,” meaning the patients isolate has developed resistance to both drugs. In 2004 Tennessee had neither initial nor acquired MDR cases. However, in 2005 Tennessee had at least 2 cases of initial MDR, both in the Upper-Cumberland Region. This data is based on 2005 Epidemiological Profile of Reported Tuberculosis in Tennessee published in December 2006. Since that publication Tennessee has seen other MDR cases.

With international travel being so easy it is certainly a public health concern that we will continue to see more MDR TB cases and our first XDR TB case in Tennessee. This brings up 2 pertinent issues: 1) the necessity of patients completing adequate therapy for active TB and 2) the need for TB skin testing for travelers at risk. Your local public health department can assist with both. In addition to the required reporting of ALL active TB cases to your local health department, we can also assist with obtaining medications, if needed. We utilize directly observed therapy to ensure delivery and ingestion of TB meds therefore increasing the completion of therapy. The Travel Clinic at Knox County Health Department is an excellent resource for you or your patients preparing for international travel. In determining if pre and post travel TB testing is necessary.

You may find more information on TB at the following websites.

www.cdc.gov http://health.state.tn.us http://www.knoxcounty.org/health

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The Knoxville Regional Laboratory performs rabies testing on brain tissue of animals submitted through the local health department. Test results are normally available within 24 hours and positive results are immediately telephoned to the local health department and to the agency submitting the specimen.

Medical and veterinary providers can obtain valuable services from the health department. On request the local health departments will assess bite situations and make recommendations on the need for rabies post-exposure prophylaxis and will assist obtaining the HRIG (Human Rabies Immunoglobulin) and rabies vaccine. However, with the exception of Shelby County (Memphis), local health departments do not provide rabies post-exposure prophylaxis and do not stock HRIG or rabies vaccine.

Local health departments do provide the three dose pre-vaccination series and periodic boosters, as well as vaccination titer checks for individuals in high risk occupations, such as veterinarians, animal control workers, and wildlife personnel. Some local health departments provide animal control services that promote vaccinations in domestic animals and can help locate and quarantine animals involved in human or other domestic animal attacks.

What if I'm bitten?

- Don't panic, but don't ignore the bite. Wash the wound thoroughly and vigorously with soap and lots of water.
- Call your physician immediately and explain that you were bitten. Follow the doctor's advice.
- If possible, confine or capture the animal if it can be done safely. If the animal cannot be contained and must be killed to prevent escape, do so without damaging the head.
- Report the bite to the local health department. Prompt and appropriate treatment after being bitten and before disease develops can stop infection and prevent the disease.

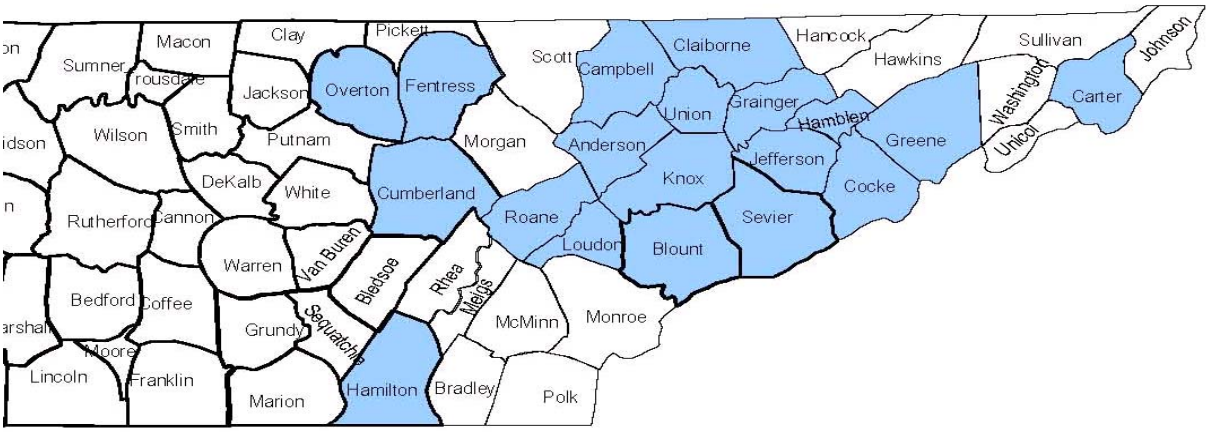
What if my pet is bitten?

- Consult your veterinarian immediately and report the bite to local health department.
- Even if your pet has a current vaccination, it might need to be revaccinated immediately and observed for a period as specified by state law or local ordinance (normally 45 days).
- Pets with expired vaccination or that have never been vaccinated will be evaluated on a case by case basis.

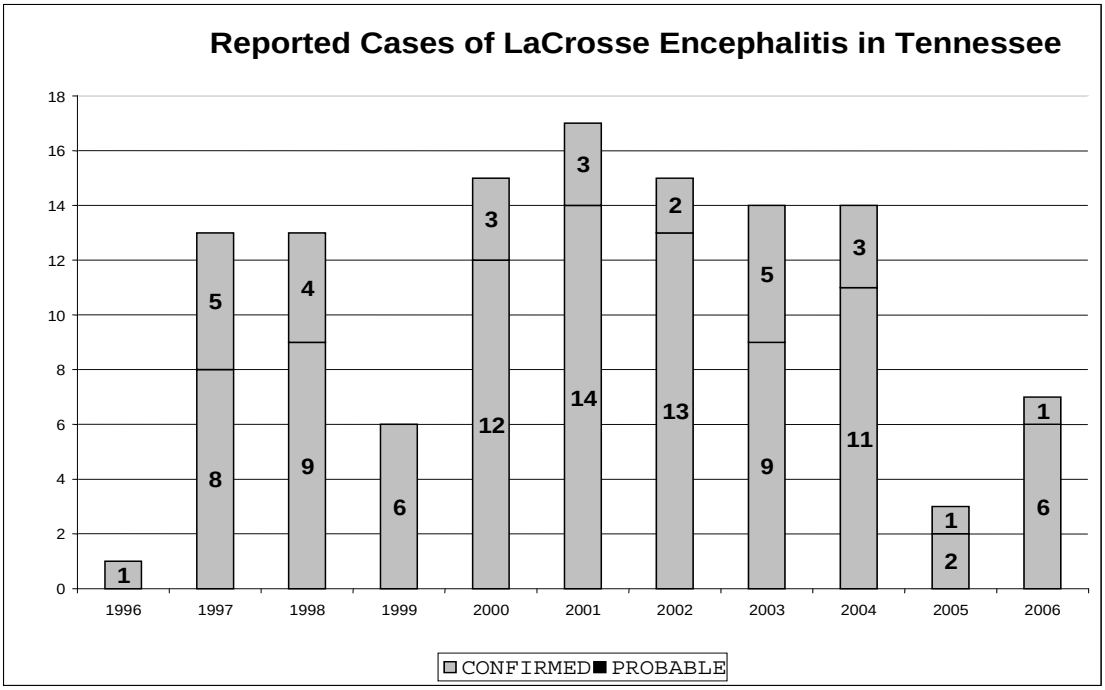
The most important thing you can do to protect your family and your pets is to be sure your pets are currently vaccinated for rabies. Please consult a veterinarian if you are unsure about the vaccination status of your pets.

A Decade of Living with Mosquito-Borne Illnesses in East Tennessee

A first case of LaCrosse encephalitis in East Tennessee was identified in 1996; now a decade (1996-2006) later the number of cases total 118 from 19 different East Tennessee counties where the patient resides (see figure below).



The diagnosis of LaCrosse infection can be confirmed by demonstrating a four-fold change in antibody titers (IgG or IgM) between acute and convalescent sera. The Knoxville Branch Laboratory performs the serologic testing for LaCrosse antibodies free of charge. The occurrence of cases at similar levels over the last 10 years strongly suggests that LaCrosse is endemic; clinicians should therefore be aware of the disease, test for it appropriately, and report all cases to the health department.



The best advise to give patients in order to lower their risk of mosquito borne illness is to avoid mosquito bites by wearing protective clothing, regularly using DEET containing mosquito repellant, and reducing the mosquito population by making certain there is no standing water (such as in old tires and other small containers that collect water) where mosquitoes can lay their eggs.

West Nile Virus

For the 2007 mosquito season, the Tennessee Department of Health will continue to test blue jays and American crows, plus has added the American Robin to our state-wide West Nile virus surveillance efforts this year. There are various reasons for adding robins to our list in Tennessee:

- The majority of birds submitted for testing have been blue jays. This means that we are relying almost exclusively on one species of bird for surveillance in a state that has few mosquito control and surveillance programs. Areas without such programs depend on bird surveillance therefore we need to have a more robust bird surveillance effort.

- Studies from the Connecticut Agricultural Experiment Station in New Haven have shown that Culex pipiens and Culex restuans mosquitoes (primary vectors of West Nile virus) feed predominantly on robins than on any other bird species. Additionally, robins have been shown to amplify the virus very efficiently.

- Illinois added robins to their list of birds for surveillance and found that 1/4 of them tested positive for West Nile virus, showing that they are indeed good indicators of transmission.

- Robins are easily identified by the public.

As with all birds accepted for testing, we stress the following criteria regarding an appropriate specimen: Ensure the bird is a **blue jay, American crow** or **American robin** that is freshly dead. Usually sunken eyes, odor or the presence of fly larvae (maggots) are good indicators that the bird has been dead too long.

Selected Diseases Reported by County, East TN
January - June 2007
Year-to-Date

Disease	Campylobacter	Salmonella	Shigella	Hep A	Hep B	DRSP	Pen Sen Strep	VRE	Chlamydia	Syphilis	Gonorrhea	AIDS/HIV	TB
Knox County													
YTD '07	13	19	2	0	3	9	42	7	861	27	408	6/17	2
YTD '06	17	25	5	0	1	13	39	4	797	26	453	7/13	4
East Tennessee Region													
Anderson	1	9	0	0	0	1	1	2	114	0	51	2/3	0
Blount	0	8	1	2	0	0	5	0	87	0	26	1/1	2
Campbell	0	3	0	0	0	1	0	1	23	0	3	0/0	0
Claiborne	0	1	0	0	0	0	0	0	39	0	4	0/0	0
Cocke	1	2	0	0	0	0	0	0	46	0	12	0/0	1
Grainger	6	1	0	0	1	0	2	0	16	0	1	0/0	2
Hamblen	0	3	0	0	0	0	0	2	108	0	14	1/0	0
Jefferson	1	1	0	0	0	1	4	1	58	0	6	0/0	0
Loudon	1	4	0	0	0	2	2	1	53	0	4	0/0	0
Monroe	0	1	1	0	0	0	5	0	71	1	6	0/1	2
Morgan	0	0	0	0	1	0	3	0	18	0	0	0/0	0
Roane	1	1	0	0	0	0	5	1	33	0	6	0/0	0
Scott	1	1	0	0	2	1	1	0	16	0	0	0/0	0
Sevier	2	5	3	0	1	0	2	0	81	0	3	2/3	0
Union	0	0	0	0	0	1	1	0	4	0	2	0/0	0
YTD '07	14	40	5	2	5	7	31	8	767	1	138	6/8	7
YTD '06	17	28	5	3	7	22	56	3	576	10	122	6/8	3

-- = Unavailable

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A Epidemiology Newsletter
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Animals Tested for Rabies in East TN
January - June 2007

County	Bats	Skunks	Dogs	Cats	Racoons	Foxes
Anderson	2	0	5	4	1	0
Blount	0	2	6	4	2	0
Campbell	0	0	0	2	0	0
Claiborne	0	0	1	2	0	0
Cocke	1	0	1	1	0	0
Grainger	2	0	4	0	4	1
Hamblen	2	0	4	3	2	0
Jefferson	1	4	4	2	2	0
Knox	13	4	53	32	12	5
Loudon	2	2	5	5	0	1
Monroe	1	0	0	1	0	0
Morgan	0	0	0	0	0	0
Roane	1	0	3	5	1	0
Scott	0	0	0	1	0	0
Sevier	1	0	18	15	4	0
Union	0	0	1	1	0	0
Total	24	12	105	77	28	7

Positive Rabies Reported

Date	*County*	*Animal*	*Variant*
Jan-Jun 07'	Hamblen	Dog	NC Skunk
	Jefferson	Dog	NC Skunk
	Jefferson	Skunk	NC Skunk
	Jefferson	Skunk	NC Skunk
	Jefferson	Skunk	NC Skunk
	Knox	Bat	Not typed