Kentucky
Epidemiologic Notes & Reports

CABINET FOR HEALTH SERVICES
DEPARTMENT FOR PUBLIC HEALTH
DIVISION OF EPIDEMIOLOGY
& HEALTH PLANNING

Volume 35 Number 8 August 2000

Kentucky Tuberculosis Status Report 1995 - 1999

Linda Jackson, BA, PHSW

Inside This Issue

INTRODUCTION

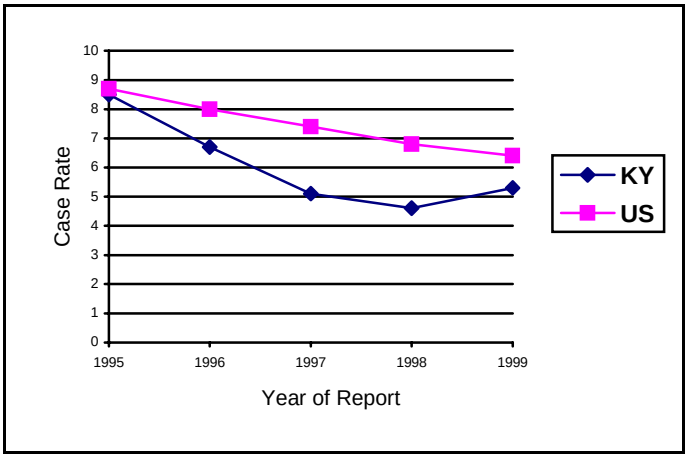
A century ago, Tuberculosis (TB) was among the most feared of diseases. Since the 1940s, antibiotics and improved public health programs helped make "consumption" a curable illness. Now a report by researchers at the Harvard Medical School and the Open Society Institute warns that the disease is poised for its most ominous comeback attempt yet. The biggest problem, the study says, is the rapid spread of strains that are resistant to both of the antibiotics most commonly used to treat the disease.

Drug-resistant TB, which arises when patients stop taking their TB medications before they're completely cured, was identified in 104 countries. In the United States, only one percent of the 18,000 cases of TB reported each year are antibiotic-resistant. But in Russia, where there are an estimated 100,000 TB patients in the prison system alone, up to 30 percent could be resistant. "The scenario we most feared is upon us," says Harvard's Dr. Jim Yong Kim, one of the authors of the report. If improved treatment programs aren't implemented in problem areas, Kim warns, resistant strains could spread around the world. "If we don't treat it now, we'll be in big, big trouble in 10 years. " People travel, says Kim, and their diseases travel with them. "It will reach our shores." In a world without fences, our neighbors' health becomes our own worry.
Thomas Hayden, Newsweek Magazine, November 8, 1999.

In 1995 Kentucky reported 327 TB cases, a decrease of 18 cases from 1994. That year (1995) marked the second consecutive year a decrease was noted in reported cases. Through increased activity and effort in TB control, Kentucky has witnessed a steady decline in its TB case rate, down from 12.4 cases per 100,000 in 1985 to 4.6 cases per 100,000 (179 reported cases) in 1998.

Kentucky reported 209 new (TB) cases during 1999, an increase of 30 cases (14.4%) from 1998. With a statewide case rate of 5.3 per 100,000 population for 1999, Kentucky remains below the 1999 national TB case rate of 6.4 (*Table 1*).

Table 1: Kentucky and the United States Tuberculosis Case Incidence Rates*, 1995-1999



*Case Rate = number of cases per 100,000 Population

DEMOGRAPHICS

•Age

The highest age specific rate in Kentucky (15.8 per 100,000 population) occurred in the 65+ age group

(Continued on page 2)

KENTUCKY TB STATUS REPORT 1995 – 1999

(Continued from page 1)

(*Table 2*). This age-specific rate was higher than the 1998 national rate of 12.8 per 100,000. However, a significant downward trend in the case rate in Kentucky for the 65+ and older population, is occurring.

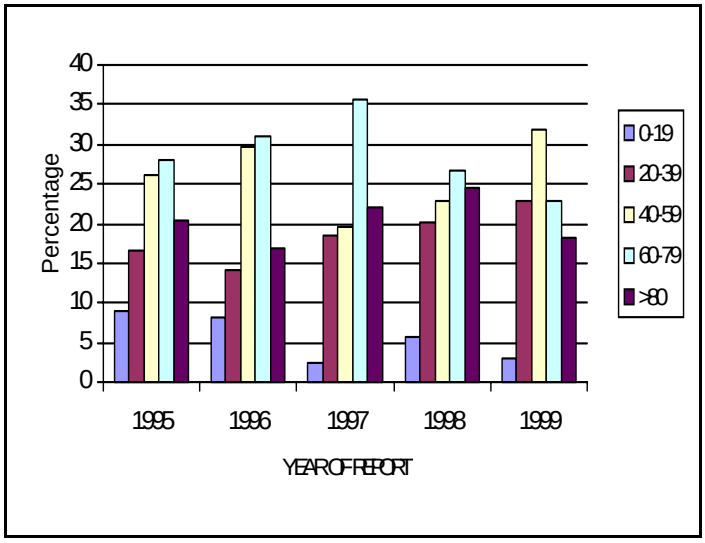
TABLE 2: Kentucky 65 + Age Specific Case Rates, 1995 - 1999

YEAR	1995	1996	1997	1998	1999
CASE RATE	26.3	21.0	19.4	17.2	15.8

The 0-4 age group experienced a case rate of 0.83 per 100,000 for 1999. This is a decrease from 1998 when the case rate was reported as 2.3, and also lower than the 1998 national case rate (3.4 per 100,000) for this age group.

In 1999 reported cases increased in the 25-34 age group, (*Table 3)*. This age group reported 24 cases (4.3 per 100,000) in 1999 compared to 22 (3.9 per 100,000) for 1998, an increase of 8.3 percent. Kentucky's morbidity in these patients may be the result of factors prevalent in this age group, such as homelessness, alcohol or other drug abuse, plus the influx of migrant workers.

Table 3: Tuberculosis by Age Group Distribution, Kentucky, 1995-1999



•Gender

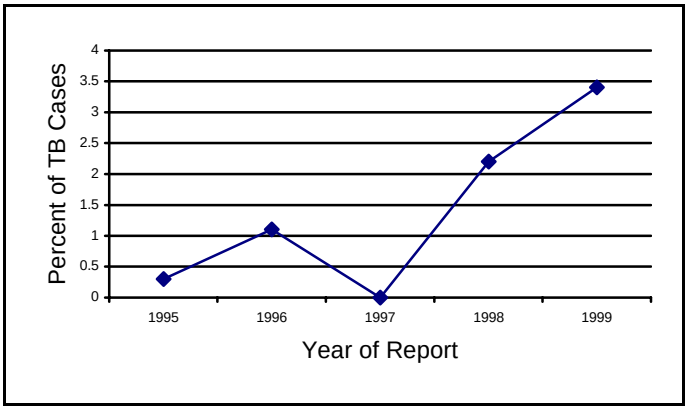
In 1999, Kentucky had a 70/30 male to female tuberculosis case ratio, which is slightly higher than the case ratio for 1998 (65/35). For 1999, the number of reported cases among males was 147, and the number of female cases was 62.

• Race And Ethnicity

The number of cases classified as non-white, non-Hispanic, increased from 32 cases in 1998 to 38 in 1999. Further analysis revealed a continued disproportionate impact from the non-white, non-Hispanic, tuberculosis case rate (13.48 per 100,000) which is 64% higher than the tuberculosis case rate of the white, Indian, Alaskan, or Asian population (4.8 per 100,000).

Kentucky reported an increase of TB cases among the Hispanic population in 1999 when nine Hispanic cases (4.3%) were reported compared to four cases (2.2%) in 1998. Also increasing in 1999 were the number of TB patients who were migrant workers and those persons who are foreign-born. In 1999, there were seven (3.4%) cases who were migrant workers (*Table 4*) and 21 (10.1%) who were foreign-born residents (*Table 5).* Hispanic workers from the East Coast Migrant Stream and the Midwest Migrant Stream converge in Kentucky to work on numerous farms. The migrant population poses many health issues that are new to local health departments. Language and cultural barriers create difficulties in communication between the health care worker and the migrant workers. Many migrant workers are unaware of local health department services that are available. To address this problem, the Kentucky TB Control Program has provided TB literature in Spanish to all health departments, funded the use of interpreters in areas with large Hispanic populations, and s funded some outreach workers to attend Spanish language and sensitivity classes.

Table 4: Tuberculosis in Migrant Workers, Kentucky, 1995-1999



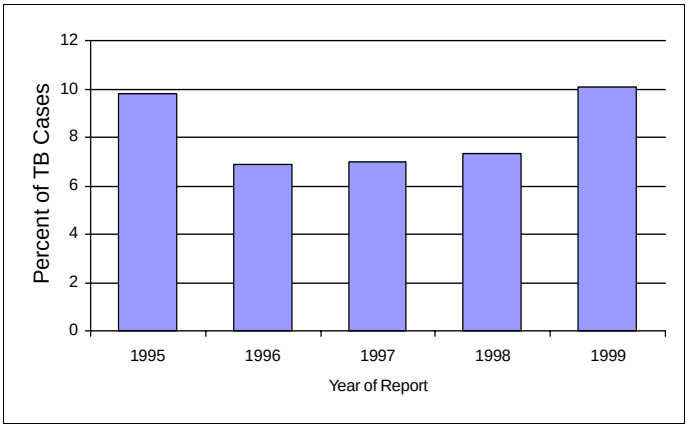
Case Rates per 100,000 population

(Continued on page 3)

KENTUCKY TB STATUS REPORT 1995 – 1999

(Continued from page 2)

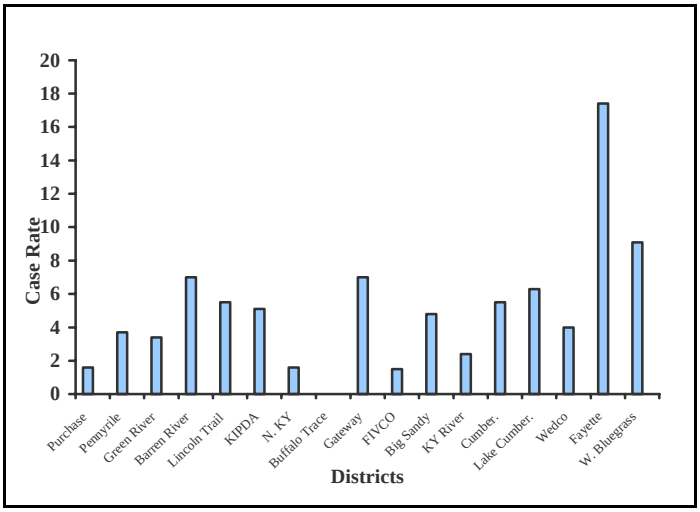
Table 5: Tuberculosis in the Foreign Born, Kentucky, 1995-1999



- **Geographic Distribution**

Distribution of Kentucky's TB cases for 1999 is presented by region in (*Table 6).* Fayette County recorded the highest county TB case rate (17.4 per 100,000) for 1999. The Lexington-Fayette County Health Department serves Fayette County, which is an independent county health department within the state health department system. Both the county and state TB Program have done an analysis of Fayette County's high case rate. No one factor was identified as the cause.

Table 6: Tuberculosis District Case Rates, Kentucky 1999



RISK FACTORS

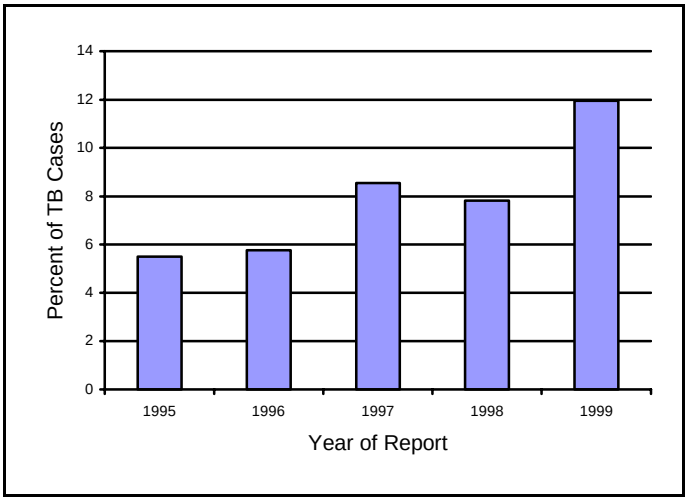
- **Human Immunodeficiency Virus (HIV)**

The Centers for Disease Control and Prevention (CDC) reports that infection with HIV has contributed to recent national increases in TB. In 1999, Kentucky, local health departments reported seven TB patients with a positive HIV test. The TB Program does an annual case comparison with the HIV Program to see if there are any TB cases that have been reported to be HIV positive.

- **Homelessness**

CDC also has identified homelessness as a risk factor for TB. The 1999 Kentucky data indicate 25 TB cases (12.0%) were identified as homeless. This is an increase from 1998 when there were 14 cases (7.8%) of the reported TB cases). In Kentucky there is a reported increase in the number of TB patients identified as homeless (*Table 7).* To successfully treat these TB cases, every effort is made to assist the patient to obtain housing and food .

Table 7: Reported Tuberculosis in the Homeless, Kentucky, 1995-1999



TREATMENT

The Kentucky TB Control Program continues to promote the CDC recommendation for the universal application of an initial four-drug regimen Isomiazid (INH), Rifampin (RIF), Pyrazinamide (PZA), and Ethambutol (EMB), or Streptomycin (SM).

- **Drug Resistance**

One of the most serious aspects of the TB problem has been the emergence of multi-drug resistant TB (MDR-TB). In response, the state TB Control Program monitors all TB drug susceptibility reports submitted by the local health departments. In 1999, the local health departments reported 147 drug susceptibility tests on initial isolates (70% of the cases). Of those tested, 13 (8.8%) were resistant to at least one first-line anti-TB

(Continued on page 4)

KENTUCKY TB STATUS REPORT 1995 – 1999

(Continued from page 3)

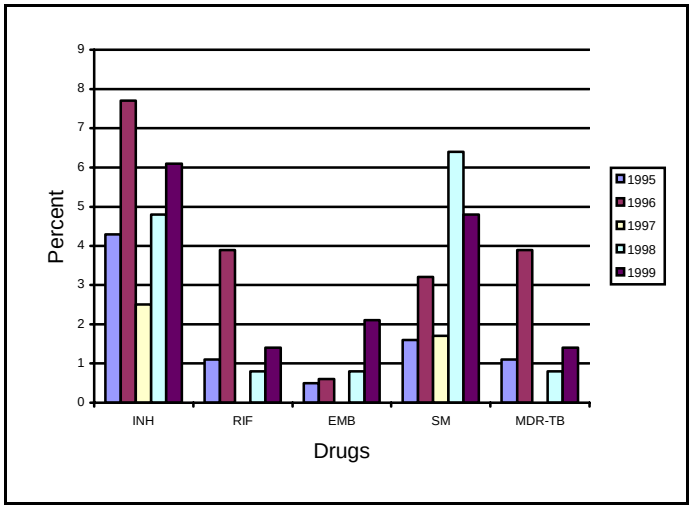
drug. There were two (1.4-%) culture-positive cases reported with resistance to both INH and RIF. A comparative analysis of the initial drug susceptibility studies reported to TB Control during 1995-1999 may be found in (*Table 8). List A* below reveals selected individual drug resistance for Kentucky during 1999.

List A:

INH 6.1%	RIF 1.4%
EMB 2.1%	SM 4.8%

Note: The Kentucky Public Health State Laboratory does not routinely test PZA

Table 8: Reported Resistant Tuberculosis–Initial Isolates, Kentucky, 1995-1999



MDR-TB = Resistant to at least INH & RIF
1995 n=213, 1996 n=150, 1997 n=134, 1998 n=124, 1999 n=147

- **Directly Observed Therapy**

Preventing the emergence of drug resistance and ensuring the completion of therapy are the two main goals of the Directly Observed Therapy (DOT) program. The state TB Control Program currently allocates funds provided by CDC to place 22.3 full time equivalent outreach staff (nurses, outreach workers, etc.) in local health departments throughout the state. These positions are intended to serve the community by performing numerous functions in the field, including delivering and observing therapy for patients, conducting contact investigations, assisting in screening programs and providing TB education services. For 1999, 100 cases have completed therapy so far. Of those, the local health departments provided DOT to 77% of the TB cases.

- **Inpatient Care**

The Kentucky TB Control Program administers an Inpatient Care Funds Program to ensure the treatment of the indigent and drug resistant patients. For FY 1999, the state program provided inpatient care for nine TB patients

CURRENT TB SCREENING AND PREVENTION ACTIVITIES

TB screening and related prevention activities are important for the elimination of TB, and the Kentucky TB Control Program will continue to emphasize these areas.

The Kentucky TB Control Program requires, by regulations, that all long-term care staff and residents be skin tested annually. If the facility does not employ medical personnel, the local health department may do the testing.

In an attempt to mitigate the problem of TB within the homeless population, the Kentucky TB Program encourages local health departments to expand their screening efforts within this population group. With the assistance of local TB control staff, the homeless shelters in Kentucky's larger cities provide TB skin testing to their residents. Incentives such as food and housing, are provided by the local health departments
(with state and federal funds) to improve compliance by recalcitrant, homeless TB patients.

- **Training Programs**

The Kentucky TB Control Program held several successful training seminars, including a three-day statewide TB management seminar for physicians and nurses, entitled *TB Management Seminar* and *The TB Program Update* to county and district TB staff.

CONCLUSION

Kentucky's TB Control Program activities are focused on achieving the following objectives:

- All individuals, who are infected, with TB disease, must be rendered and maintained non infectious
- All individuals, who are infected, without TB disease, must remain non infectious
- All individuals who are not infected must remain not infected.

When these objectives are achieved, the program's goal, the elimination of TB as a public health problem, will be attained. The TB Control Program wants to control and eliminate TB by increasing community education and ensuring acceptable medical practices.

(Continued on page 5)

Update on Arboviral Encephalitis

Sue K Billings, DVM, MSPH

During the mosquito season, physicians need to be vigilant for mosquito-borne diseases, and request the necessary laboratory tests.
Please report all suspected cases of viral encephalitis immediately.

The outbreak of West Nile virus encephalitis in the New York City area in August 1999 has heightened the awareness of health care professionals to the possibilities of new infectious disease threats. Laboratory confirmed human and equine cases are the only indicators currently in place in Kentucky for recognition of these viruses. Kentucky has had no active mosquito surveillance on a statewide basis for many years. Rudimentary steps had begun to renew this needed surveillance before the outbreak in New York, but due to lack of personnel and resources it will take time to fully initiate. Mosquito surveillance provides information on mosquito species, density, location and viral infection. This information triggers the appropriate public health control measures to prevent human exposures to these viruses. Equine surveillance is useful because clinical cases in horses often precede cases in humans and provide for increased public awareness.

Along with mosquito surveillance, the Kentucky Department of Fish and Wildlife are following up reports of bird die-offs, a form of surveillance specific for the West Nile virus that killed thousands of birds in New York.

The Centers for Disease Control and Prevention (CDC) has requested all states in migratory bird fly zones to step up their surveillance activities for mosquito-borne diseases. **The Kentucky Department for Public Health, Division of Epidemiology and Health Planning is requesting that physicians and veterinarians submit laboratory samples for arboviral testing on all viral encephalitis cases.**

Arboviruses or arthropod-borne viruses are a group of viruses that are transmitted between vertebrate hosts by blood-feeding arthropod vectors, such as mosquitoes, ticks, flies, and midges. The arboviruses that cause encephalitis are members either of the *Togaviridae, Flaviviridae,* or *Bunyaviridae* families. These arboviruses are zoonotic maintaining a complex transmission cycle between non-human vertebrate hosts and arthropod vectors. Humans and domestic animals (e.g. horses) can develop clinical disease but usually are dead-end hosts, because they do not develop a viremia capable of contributing to the transmission cycle. Most human infections are asymptomatic or produce a flu-like syndrome, however they may produce detectable serum antibodies. Clinical illness in humans may have an insidious or sudden onset with fever, headache, myalgia, malaise and sometimes prostration. Encephalitis with neurologic sequelae or a fatal outcome may ensue, but this occurs in only a small proportion of infected people.

Arboviral encephalitides have a global distribution. The arboviral encephalitides that have been recognized in Kentucky are St. Louis encephalitis (SLE), LaCrosse encephalitis (LAC), and eastern equine encephalitis (EEE). Other arboviral agents of encephalitis in the United States include western equine encephalitis (WEE), Venezuelan equine encephalitis (VEE), West Nile virus (WNV), other California group viruses, and Powassan virus.

LaCrosse Encephalitis

LAC, a bunyavirus, is part of the California group and was first recognized in 1963 in LaCrosse, Wisconsin. Chipmunks and squirrels are the vertebrate reservoirs of the virus and the vector is the treehole mosquito, *Aedes triseriatus.* This virus is maintained over winter through vertical transmission in the mosquito. LAC encephalitis occurs more frequently in children under 16 years of age. Forty-nine cases were reported in the United States in 1999. There have been eight confirmed cases in Kentucky from 1996 through 1999. Four occurred in Leslie County and the other four also occurred in the eastern section of the state. Death from LAC encephalitis happens in less than 1% of the clinical cases. Some cases are not reported because physicians do not request the specific tests for identification of the LAC virus.

St. Louis Encephalitis

SLE is a flavivirus that is maintained in a mosquito-bird-mosquito cycle, with amplification by birds and *Culex* mosquitoes. In the Midwest, *Culex pipiens pipiens and Culex pipiens quinquefasciatus* are the principal vectors. The first recognized outbreak of SLE occurred in St. Louis, Missouri in 1933. The last confirmed case in Kentucky was in 1977. Four cases were reported in the United States in 1999. Less than 1% of

SLE infections in humans are clinically evident and most go undiagnosed. Encephalitis that progresses to coma and death is more common in the elderly with a case-fatality ratio of 5-15%.

Eastern Equine Encephalitis

EEE is an alphavirus (*Togaviridae*) with wild birds as the vertebrate reservoir and amplifying host. In the natural cycle of EEE *Culiseta melanura* is the mosquito vector maintaining the virus in swampy areas. This virus escapes the enzootic foci in swamp areas either in birds or bridge vectors such as *Aedes sollicitans, Coquillettidia perturbans, Aedes atlanticus, Culex nigripalpus, Culex perturbans, Culex quinquefasciatus* and *Aedes vexans.* These mosquito species feed on both birds and mammals, and may transmit the virus and the disease to people, horses, puppies, emus and other birds. Human cases are often preceded by cases in horses. Clinical cases in humans are severe with case-mortality rates near 50%. EEE was first recognized in the 1930's and currently occurs only sporadically in the nation. No confirmed human cases are recorded in Kentucky. Four confirmed human cases occurred in 1999, 2 cases in Florida and 2 cases in Louisiana.

Western Equine Encephalitis

WEE is an alphavirus that causes encephalitis in horses and humans, mainly west of the Mississippi River in the United States. It is cycled between passerine birds and primarily *Culex tarsalis*, a species of mosquito associated with irrigated farm land and stream drainages. This virus has been isolated from a variety of mammal and mosquito species. WEE usually causes a milder disease than EEE, however children under 1 year old are affected more severely than adults are. The mortality rate is about 3%. One probable case was reported in the United States in 1999, the first reported case since 1994.

West Nile Virus

WNV is a flavivirus related serologically to SLE. The natural transmission cycle is between birds and principally *Culex* species of mosquitoes. *Aedes, Anopheles* and other species can transmit WNV. Bird deaths from WNV have not been documented in countries where WNV is normally found, Africa, Europe, the Middle East and western Asia. WNV usually produces an asymptomatic or mild disease in humans. However in the 1999 New York outbreak there were 62 clinical human cases with 7 fatalities and thousands of bird deaths. WNV had never been identified in this country before August 1999 and how or when it entered is still undetermined.

Physicians

A. Laboratory submissions for human specimens.

1. **Use proper storage and packaging.**
   - CSF-Send two tubes (if possible) without preservative, containing at least 1 cc each. Keep specimens frozen, preferably on dry ice or in a -70^{o} C freezer. Do not send or store at room temperature.
   - Sera – Centrifuge, separate from clots, dispense into two sterile tubes (at least 2 cc each) for transport, and refrigerate (do not freeze). Serum antibody tests require acute and convalescent samples for proper interpretation.
1. **Label specimens with patient's name, specimen type, and date of collection (essential to interpreting serological findings).**
2. **Complete a laboratory submission form.** For additional information call 502-564-4446.

B. **Report suspected cases of viral encephalitis and aseptic meningitis.**
Report on EPID 200 form to the Division of Epidemiology and Health Planning, Frankfort, KY.
For additional information call 502-564-3418 or 1-888-9REPORT.

Veterinarians

A. Please submit serology samples on equine encephalitis cases to the animal disease diagnostic laboratories. Questions on submissions should be directed to the University of Kentucky Livestock Disease Diagnostic Center or the Murray State University – Breathitt Veterinary Center.
B. Please submit equines for autopsy if they die from a neurologic disease that may be of viral origin.
C. Please submit ratites (emu, ostrich, and rhea) for autopsy if they die from neurologic disease.

Dead Bird Surveillance

Because crows and other wild birds may carry WNV enhanced surveillance is requested.
Three agencies are coordinating this surveillance; the Kentucky Department for Public Health (KDPH), the USDA Animal Plant and Health Inspection Service (APHIS) and the Kentucky Department of Fish and Wildlife (KDFW).

- To report dead birds contact Department of Fish and Wildlife at 1-800-858-1549, ext. 352
- Prompt reporting is necessary; provide number of birds, type of birds, location and condition. Only those dead 24 hours or less will be suitable for testing.
- Questions on this surveillance may be directed to: DFW, Danny Watson, 1-800-858-1549, ext.352, KDPH, Dr. Sue Billings, 502-564-3418, ext 4027, or APHIS, Dr. Barry Meade, 502-227-9651.

KENTUCKY TB STATUS REPORT 1995-1999

(Continued from page 4)

The expanding homeless population, growing numbers of people with impaired immune responses, growing culturally diverse population, and decreased public awareness of the risks of TB has created a need for increased health education and preventive services.

The key to a successful TB Control Program is a strong alliance with public and private service providers caring for and screening individuals for TB. This requires ongoing education, feedback, and a service oriented approach. Services are needed to enhance and promote community and family awareness, communication and education on TB. In efforts to reach these objective the TB Control Program has implemented the TB Elimination Advisory Committee. The committee makes recommendations regarding strategies to enhance Kentucky's efforts to control and eliminate TB.

Tuberculosis Program Notes:

TB UPDATE SEMINAR

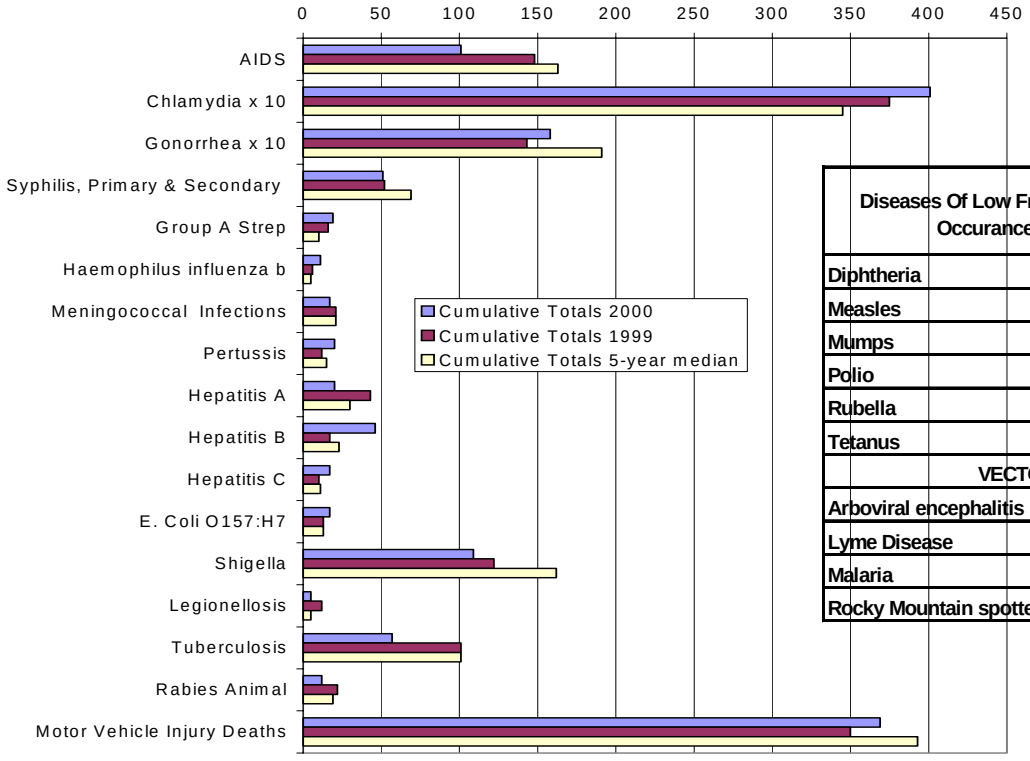
September 6 – 8, 2000

Jenny Wiley State Park

Sponsored by:
Kentucky Tuberculosis Control Program
And
American Lung Association

For more information contact:
Kentucky TB Control Program (502) 564-4276

CASES OF SELECTED REPORTABLE DISEASES IN KENTUCKY, YEAR TO DATE (YTD) THROUGH JUNE 2000



Diseases Of Low Frequency Occurance	2000 YTD	1999 Annual Totals
Diphtheria	0	0
Measles	0	2
Mumps	0	0
Polio	0	0
Rubella	1	0
Tetanus	1	0
VECTOR-BORNE DISEASES		
Arboviral encephalitis	0	1 LAC
Lyme Disease	2	19
Malaria	5	7
Rocky Mountain spotted fever	0	3

Disease numbers reflect only those cases which meet the CDC surveillance definition.
Contributed by: Patricia Beeler, Surveillance and Health Data Branch.

KENTUCKY EPIDEMIOLOGIC NOTES & REPORTS
Printed With State Funds
by the
COMMONWEALTH OF KENTUCKY
CABINET FOR HEALTH SERVICES
DEPARTMENT FOR PUBLIC HEALTH
275 EAST MAIN STREET
FRANKFORT, KENTUCKY 40621

Kentucky Epidemiologic Notes and Reports, a monthly publication, is available without charge to subscribers. Although materials may be reproduced without permission, we appreciate acknowledgement. For more information call 502-564-3418.

Rice C. Leach, MD, Commissioner,
Department for Public Health
Glyn G. Caldwell, MD, State Epidemiologist, and Director,
Division of Epidemiology & Health Planning
Linda Fritz Vanorio, RN, BSN Editor
Beverly Bevill, Managing Editor

RETURN SERVICE REQUESTED

BULK RATE
U.S. Postage Paid
Lexington, KY
Permit No. 1

ANNOUNCEMENTS

The Division of Epidemiology and Health Planning, Communicable Disease Branch is pleased to announce the appointment of Barry Wainscott, MD, MPH as Communicable Disease Branch Manager. Dr. Wainscott has joined the division after 20 years of public health experience largely in state and local health departments. He received his MD from the University of Louisville and MPH degree in epidemiology from the University of California – Berkeley. He also holds Board Certification in Preventive Medicine and Public Health.

NEW
1998 KENTUCKY VITAL STATISTICS REPORT

A bound hardcopy of this report is available from the Surveillance and Health Data Branch for $10 plus $2.50 for shipping and handling.

For more information contact:
Surveillance and Health Data Branch (502) 564-2757 or by email: **healthdata@mail.state.ky.us**
Select tables from the 1998 Vital Statistics Report is also available in PDF format on the Department for Public Health's Web Site at: **http://publichealth.state.ky.us/data-warehouse.htm#Vital Statistics**

September is National Pediculosis (Head Lice) Prevention Month

This is to focus attention on the endemic state of head lice among children...that pediculosis is a common problem and to raise awareness for implementation of comprehensive prevention programs.

Back-to-School is an excellent time to educate parents, children and the community about head lice.

For more information contact your health care provider, local health department or the following web pages:
http://publichealth.state.ky.us/head_lice.htm
http://www.headlice.org/publications/10steps.html