Kentucky Epidemiologic Notes & Reports

Cabinet for Health and Family Services
Department for Public Health
Division of Epidemiology and Health Planning

Volume 42 Number 5 June/July 2007

Building Epidemiologic Capacity in Kentucky

Efforts underway to increase state's public health epidemiologic capacity

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Epidemiology is the study of the distribution and causes of disease or other health-related events in populations and the application of this study to the control of health problems. Thus, epidemiologic capacity is the ability to effectively study and control disease, or in applied terminology, the ability to identify, investigate, control, and prevent public health problems.

The Division of Epidemiology and Health Planning at the Kentucky Department for Public Health (KDPH) recently embarked on a unique effort to increase Kentucky's epidemiologic, or "epi" capacity. The effort was named "Building Epi Capacity in Kentucky" (BECKY). BECKY began in November 2005, with the first of a series of meetings aimed at brainstorming real ideas about how epi capacity could be increased in Kentucky if faced with budget constraints and reduction in work staff at the state and local health department levels.

To accomplish this, approximately 100 epidemiologists and public health officials/staff from across the state were invited to Frankfort for a full-day working meeting. The invitees included: all state and local health department epidemiologists and Regional Epidemiologists; representatives from the state university schools of public health (both epidemiologists and program administrators); local health department administration; public health preparedness coordinators and training coordinators; State Laboratory staff; hospital infection control professionals; the Kentucky Hospital Association; and the Kentucky Department of Agriculture.

Of the 100 invitees, 68 attended the first meeting. After introductions and brief reports on the state of public health epidemiology in Kentucky, participants were grouped in the morning session into "like" groups – regional epidemiologists, state epidemiologists, state administrators, university personnel, hospital personnel, health department administrators, and "miscellaneous". The groups were asked to answer six questions, including:

- "What specific areas of improvement does your agency/institution need with respect to epidemiology?"
- "What are the top three things that would help you improve your epidemiologic capacity?"
- "What resources can you offer to other epidemiologists in the state?"

The afternoon session consisted of splitting out into small groups again, but this time with mixed, multidisciplinary groups. The afternoon groups were asked to "think big" and to identify the major needs in Kentucky for epi capacity building, to prioritize those needs, to think of creative strategies to meet those needs, and finally to identify key collaborations that could be established to strengthen the epidemiologic capabilities of Kentucky. Another reporting session was held and all the ideas compiled. The last hour of the meeting was spent narrowing down all the thoughts and ideas into priorities that could be tackled by the group over the next year.

The first BECKY meeting was very successful (six priorities were identified along with volunteers for workgroups to begin addressing these issues). The priorities included:

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1) Evaluating baseline epi capacity in Kentucky;

2) Beginning a process to standardize epidemiology personnel, including regional epidemiologists, the Epi Rapid Responder Program, state level epidemiologists, Public Health Preparedness Coordinators, and Preparedness Trainers;

3) Building collaborations between the state's four university schools of public health and public health agencies (a consistent theme in every small group, morning and afternoon);

4) Beginning a mentoring process for epidemiologists and other public health professionals in the state;

5) Building on other networks for collaboration to bring non-communicable disease epidemiology into the overall capacity-building process;

6) Improving deficiencies in the electronic Disease Surveillance Module (DSM), the surveillance mechanism used in Kentucky to report all reportable diseases.

Since that time, BECKY work has focused on addressing these priorities. A second meeting was held in March, 2006 to report progress and solicit further ideas. This meeting was notable for the following two achievements: 1) The meeting was held with videoconferencing capabilities to several sites across the state, allowing participants to avoid costly travel to Frankfort; 2) A Food Collection Procedures training was held in conjunction with the meeting, with training targeting field epidemiologists and environmental health staff, many of whom attended the BECKY meeting. The meeting also utilized videoconferencing, which allowed statewide training without duplicating travel or time commitment and increased epi capacity "on-the-spot" by adding to the training of field investigation staff at local health departments. Combining future trainings with BECKY meetings was also recommended.

Much progress has been made since the inception of the BECKY effort in addressing the six identified priorities. Assessment of the baseline epidemiologic capacity was facilitated by a national survey executed by the Council of State and Territorial Epidemiologists (CSTE) in 2006*, which KDPH modified and used to collect additional information on epidemiologists and their capabilities. As part of this, KDPH teamed with a local health department and a University of Kentucky Master of Public Health (MPH) student to gather, enter, analyze, and report the results of this survey, thus giving needed experience to both the student and the health department Regional Epidemiologist and other staff. The findings will be used to compare to future assessments to gauge the state's progress in increasing epidemiologic capacity. The MPH student involved recently accepted a position as a Regional Epidemiologist in a newly established region in central Kentucky-a sign of progress in bringing Kentucky college graduates into the public health system.

The Epi Rapid Responder Team (ERRT) program, an initiative to train local health department teams in basic epidemiology and outbreak investigation techniques that had lost steam in recent years, has also been revitalized. An ERRT Administrative Committee was formed in 2006, the program standardized with training and membership requirements, and two trainings and one annual conference have been conducted. In the same vein, the Public Health Preparedness Branch has created basic job descriptions for Regional Epidemiologists, Public Health Preparedness and Training Coordinators, thereby standardizing these roles for the first time to benefit the local health departments.

Collaboration with the four universities that offer public health coursework (University of Kentucky, University of Louisville, Eastern Kentucky University, and Western Kentucky University) began immediately after the first BECKY meeting. KDPH staff began providing guest lecturers and fill-in class instructors at two of the universities and the universities have begun soliciting more involvement by public health epidemiologists and administrators in their planning and policy sessions. Discussions are beginning with the universities regarding development of certificate programs for public health workers to increase their professional quali-

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fications and capabilities on the job. Additionally, a KDPH Training Branch staff member has been assigned initial duties to coordinate internships and other student activities at the department. This will allow for a uniform approach to providing students with quality internship opportunities at KDPH and should increase the ability of the department to match students with interesting and educational internship opportunities rather than the case-by-case approach that has occurred in the past. With time, the KDPH University Coordinator position will be expanded to cover such things as research and grant collaborations, working to align university coursework with field epi competencies needed by public health workers in Kentucky, coordinating teaching opportunities and adjunct or visiting faculty positions at the universities for KDPH professional staff, and many other avenues of collaboration.

A third BECKY meeting is planned for summer 2007. Through this continuing effort KPH expects to prepare workers to better meet the needs of public health in Kentucky into the future.

* Council of State and Territorial Epidemiologists report, "Public Health Epidemiology: Capacity at a Crossroads" online at: http://www.cste.org/pdffiles/2007/ECABriefFINAL.pdf.

Summary of Tick Borne Diseases in Kentucky Over the Last Five Years

State reports tick borne diseases equal to or lower than national average

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Kentucky has five common tick borne diseases: Lyme, Rocky Mountain Spotted fever (RMSF), Human Monocytotropic Ehrlichiosis (HME), Tularemia, and Southern tick associated rash illness (STARI). Cases for these listed diseases have been confirmed in Kentucky over the last five years. Kentucky has documented populations of tick species that are known carriers of all these diseases except Lyme disease (exceptions are clarified later in this article).

The total number of cases of tick borne disease and cases by disease type can be found in Table 1. The state has seen a drop in total number of confirmed cases over the last two years.

Table 1. State totals for tick borne confirmed cases over the last five year period

Year	2006	2005	2004	2003	2002
Disease					
HME	5	4	2	5	2
RMSF	3	3	3	3	5
Lyme	5	7	15	17	25
Tularemia	0	3	5	2	2
Total	13	17	25	27	34

In order to fully understand tick borne disease distribution in Kentucky one must look past the numbers. First, STARI is not a disease which can be easily confirmed by laboratory testing. The Centers for Disease Control and Prevention (CDC) has not formulated a confirmational positive case test for this disease. It is considered a theoretical disease that is diagnosed when individual patients from the southeastern U.S. express symptoms with a Lyme or RMSF-like pattern, but proven tests come back negative or contain high values of cross-reactive antibodies. Hence, the true nature or frequency of this disease is unknown. Second, an infected *Ixodes scapularis*, or deer tick, that transmits the spirochete *Borrelia burgdorferi* which causes Lyme disease, has never been found or proven to be endemic to Kentucky.

During numerous sampling tests by different government and non-government agencies, the deer tick has been documented in Kentucky, but only randomly and never continually each year. Most deer ticks found on individuals can be traced to the individual's travels outside of Kentucky and to locations known to have endemic populations. The true number of positive tick disease cases is most likely underreported due to incomplete testing protocols, individual interpretation of symptoms, and empiric treatments for tick borne diseases.

The statewide distribution of tick species and tick

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KENTUCKY EPIDEMIOLOGIC NOTES & REPORTS
Printed With State Funds
by the
Commonwealth of Kentucky
Cabinet for Health and Family Services
Department for Public Health
275 East Main Street
Frankfort, Kentucky 40621

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borne diseases in ticks themselves is unknown. Only information on selected locations is available. Sampling data on tick populations come from public universities, Kentucky Fish and Wildlife, Fort Campbell's Public Health Office, or specimens randomly sent to the Kentucky Department for Public Health for classification. Kentucky's data are neither constant from year-to-year, nor collected for the purpose of assessing the total statewide tick population. Fort Campbell's Public Health Office is Kentucky's only current source of data on tick populations and infective organisms within a defined area of the state. Since 2000, Blanchfield Army Community Hospital's Environmental Health Office at Fort Campbell has collected or received 906 ticks to be classified and tested for disease, with only 39 testing positive for any disease. This is a positive test rate of 4.3%. States that have an endemic Lyme disease problem have positive test rates of 20 to 40%. Of these 39 positive ticks, 36 were positive for HME, and the remaining 3 ticks tested positive for STARI organisms. (STARI infection is indicated by a tick carrying a *Borrelia sp*.other than *Borrelia burgdorferi,* the casual species of Lyme disease, since the cause of STARI is not well-defined.)

Kentucky has reported incidences of tick borne diseases annually, but these incidence rates have been equal to or lower than the national average for tick borne disease incident rates over the last five years. A comparison of the annual human incidence rates of tick borne diseases in Kentucky with surrounding states is similar to other states, except for the RMSF rate in Tennessee, which is almost 10 times greater. Kentucky's incidence rate of Lyme disease (less than 1/100,000), compared to a state such as Connecticut (Lyme disease incidence rate of 119.42/100,000), is extremely low.

For more information on tick borne disease, contact the Division of Epidemiology and Health Planning at (502) 564-3418. References available upon request.