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Public Concerns About MRSA in Schools

The Kentucky Department for Public Health's Response, Fall 2007

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In October 2007, two widely publicized events created great anxiety among Kentucky parents, who came to fear that their children may have been at risk of contracting a fatal or serious Methicillin Resistant Staphylococcus Aureus (MRSA) infection in the public school setting. The high level of parental and student concern over fear of infection led to a number of student absences. This, in turn, prompted school officials in three Kentucky counties to initiate unscheduled school closings of up to two days for cleaning.

The first event, on October 15th, was the unexpected death of a healthy 17-year-old Bedford County, Virginia, high school senior from a MRSA infection that had spread to his kidneys, liver, lungs and the muscles around his heart.[1] His death followed more than a week of hospitalization. "Students at his school organized a rally, saying the school needed to be cleaned up before they went back to class."[2] The rally illustrates student and parental concern about the risk of contracting a life-threatening MRSA infection from the school setting. On October 17th, Bedford County school officials responded to student and parent concern by closing over twenty of their schools for cleaning.

The second event, on October 17th, was the publication, in the *Journal of the American Medical Association (JAMA)*, of an article on the surveillance of MRSA[3] (Table 1). This article was widely reported in the media, and one popular headline about the report was that the estimated 2005 number of deaths for MRSA (18,650) was higher than the number of deaths for HIV/AIDS (16,316)[4]. This type of reporting added to the already heightened concern among students and parents about the risk of contracting MRSA in a public school setting.

The response of some Kentucky parents to the stories about MRSA in the news media was to keep their children home from school. In some schools, one or more students were said to be infected with MRSA, and parents kept their children home from school hoping to prevent their exposure to the infection. In addition, a group of Pike Central High School students held a demonstration to have their school cleaned before they returned to classes. The high level of absences and student/parent concern contributed to three school systems in Southeastern Kentucky (Letcher, Morgan and Pike Counties) closing their schools for up to two days to disinfect the schools in late October and early November. The total enrollment for these school systems is over 16,000, and the closure also affected the schools' 1,100 teachers. Although approximately thirty additional Kentucky school districts cleaned their schools, no instructional school days were lost since the cleaning was conducted on weekends or previously scheduled holidays. The geographic location of two of the school systems (Letcher and Pike Counties) that closed for cleaning may have affected parent and student concern about MRSA infections in school because both counties adjoin the state of Virginia.

Many parents and public school officials sought information and recommendations related to control of the spread of MRSA in schools from their local health departments and the Kentucky Department for Public Health (KDPH). Local health departments also sought guidance from KDPH. KDPH responded to those requests with a *Letter for Environmental and Infection Control of Skin Infections*[5] issued on November 15, 2007 by Dr. William Hacker, Acting Undersecretary for Health and KDPH Commissioner to school officials, parents and the general public.

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Findings from *Invasive MRSA Infections in the U.S., JAMA*, October 17, 2007

Estimated 2005 U.S. Invasive MRSA Rates

- Frequency – 94,360
- Incidence – 32 per 100,000 population
- Mortality – 6 per 100,000 population

The estimates were based on culture reports from nine large U.S. cities that participate in the CDC Active Bacterial Core laboratory surveillance system (ABCs). The nine cities had a combined total population of 16.5 million that comprised 6% of the total U.S. population.

The number of invasive MRSA cases from July 2004, through December 2005 was 8,987. Most of the cases (85%) were associated with health care, and almost three quarters (72%) of the cases had lived in the community for some period of time with their MRSA infection.

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Table 1. Definitions Used for Classification of Invasive MRSA Infections & Distribution of Cases Among Classifications, *JAMA* Article, 10/17/2007

Classification		*Definition*	*% of Cases*
Health Care Associated			**85%**
	Community Onset	Cases with at least 1 of the following health care risk factors: 1) presence of an invasive device at time of admission; 2) history of MRSA infection or colonization; 3) history of surgery, hospitalization, dialysis, or residence in a long-term care facility in previous 12 months preceding culture date	**58%**
	Hospital Onset	Cases with a positive culture result from a normally sterile site obtained > 48 hrs after hospital admission. These cases might also have one or more of the community-onset risk factors.	**27%**
Community Associated		Cases with no documented community onset health care risk factor.	**14%**
***1.3%** of cases could not be classified.*			

The one-page message from Dr. Hacker outlined the mechanism of disease, potential modes of transmission of the disease, and treatment of MRSA infections. The letter had two sets of infection control guidelines attached: 1) General Guidance for all school and similar environments, and 2) Guidance for Athletic Departments. The General Guidance recommended that schools remain open even if students in the school are found to be infected with MRSA, and listed the following measures to prevent the spread of infection: 1) handwashing, 2) reporting of skin infections to school officials, and 3) routine cleaning and disinfecting of the schools. These guidelines are applicable not only to MRSA, but also to all communicable diseases.

The unscheduled school closure in Letcher, Morgan, and Pike counties for cleaning had at least three undesirable effects: 1) disruption of the learning process, 2) potential reduction of school district funding, and 3) interruption of free and reduced-fee breakfasts and lunches. The interruption of the free and reduced-fee lunches is particularly important in school districts serving a large number of low income families. An estimated two-thirds of the children in the Letcher, Morgan, and Pike County school districts depend on these programs for two meals each school day.

In fact, in most cases, MRSA is transmitted from person to person rather than through inanimate objects. It may be a more effective strategy, therefore, to increase the level of parent and student knowledge of the control of MRSA and other infectious diseases. Public health interventions to achieve this objective include the following: 1) greater outreach and education to parents and students as well as to school officials by public health workers, hospitals, clinics, health care professionals, and other health care providers, and 2) enhanced training related to the control of MRSA and other infectious diseases in the training programs of Local Emergency Preparedness Committees, Citizens Corps, and other emergency preparedness workers.

Community education on MRSA and staph infections in general should include the following topics.

- A high prevalence of staph colonization (~30% in the U.S.) is found in all types of schools, workplaces, recreational facilities, etc., and not limited to school environments as claimed in several fall 2007 media stories.
- Most MRSA infections are minor soft tissue infections and may be treated without antibiotics or with commonly available antibiotics.
- Frequent handwashing and covering of lesions are the best preventive measures against the spread of staph infections.
- Behaviors that have been associated with the spread of skin infections should be avoided: close skin-to-skin contact, exposure to draining lesions, poor hygiene, sharing of contaminated items (razors, toothbrushes, etc.), contact with contaminated surfaces, and crowded living conditions.

In order to prevent development of antibiotic resistance, all the pills in an antibiotic prescription should be taken. Health care providers should emphasize that it is not good practice to save a few pills for the next infection.

The second objective is to reduce unnecessary prescribing of antibiotics by health care providers. Important community roles for physicians and health officials are to provide accurate information about the prevention and treatment of staph infections and to slow the rise of antibiotic resistance. As students and adults become better informed about appropriate use of antibiotics to treat skin infections, their demand for antibiotics from health care providers will decrease. There are five strategies that clinicians can use to prevent antimicrobial resistance among patients:

1. Prevention of infection.
2. Accurate diagnosis.
3. Wise antimicrobial use.
4. Education of patients to complete all courses of medication.
5. Prevention of transmission.

MRSA is not a nationally reportable disease per the CDC and the Council on State and Territorial Epidemiologists; fewer than twenty percent of states and cities choose to report it. Kentucky is among the majority of states that do not require reporting of every lab test that is positive for MRSA. A recent informal survey of Kentucky's regional public health epidemiologists indicates that only a few

regions in Kentucky conduct routine surveillance of MRSA. The fourteen out of eighteen regions that responded to the survey had at least thirty confirmed community acquired MRSA cases in school-age children state-wide in October 2007 but the actual number is likely higher. In the future, through implementation of the guidelines posted by DPH and increased information from physicians and public health officials, steps can be taken to prevent the spread of skin infections and reduce the increase in antibiotic resistance.

The DPH response to the events of Fall 2007 demonstrates that community concerns can be quickly addressed with accurate information. Timely and effective communication provides parents with knowledge that may help them keep their families safe and healthy.

MRSA Resources

Diagnosis of CA-MRSA: http://www.cdc.gov

Guidelines For the Prevention and Management of Multi-Drug Resistant Organisms: http:www.chfs.ky.gov

[1]*The Mountain Eagle,* Whitesburg, KY, 10/31/2007, http:///www.themountaineagle.com, viewed 1/2/2008.

[2]CNN, http://www.cnn.com, viewed on Dec. 28, 2007.

[3]Klevens, RM, et al. Oct. 17, 2007. "Invasive Methicillin-Resistant Staphlococcus aureus," *Infections in the United States*. Vol 298, No. 15, pp 1763-71.

[4]"A Glance at the HIV/AIDS Epidemic," http://www.cdc.gov, viewed 1/2/2008.

[5]http://chfs.ky.gov.

The Epi Rapid Response Team Program

Keeping Kentucky Epidemiologically Ready to Respond

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Background

When there is an outbreak of infectious disease in Kentucky, expertise in field epidemiologic investigation is crucial to identify the cause of the outbreak and possible risk factors for disease, and to implement and evaluate potential control measures. The burden for conducting these investigations has historically been on local health departments (LHDs) to field investigators for public health events in order to prevent further illness or death. The state health department provided consultation for these investigations. Up until the 1980s, however, there was no formal training available in the Commonwealth for LHD staff who were expected to perform public health investigations. Kentucky's answer to this dilemma was to start a program called the Epi Rapid Response Team (ERRT) Training Program.

History

In the late 1980s, the need to train public health workers in Kentucky in the basics of field epidemiologic investigation was acted upon by then-State Epidemiologist, Reginald Finger, MD, MPH, and Communicable Disease Branch Chief, Clarkson Palmer, MD, MPH. Dr. Palmer arranged for funding from the immunization program to put together a training for local public health staff. The first 2 ½-day training was developed by the Division of Epidemiology and focused on principles of epidemiology, surveillance, investigation, and communicable disease control and was held in Frankfort at the Holiday Inn (now the Capital Plaza Hotel) in August 1987. There were eleven members trained in 1987 and 10 more in 1988, all nurses or environmentalists from local health departments.

The concept of operations was that local health department (LHD) staff would be trained to conduct epidemiologic investigations at the local level and state-level staff would serve as consultants for investigations and specialized areas of epidemiology. The team concept was fashioned after the Tennessee State "E Team," a play on the T.V. series title, "The A Team" (for those of you old enough to remember Mr. T!). Local teams were to consist of nursing and environmental staff who volunteered to take on this additional responsibility without additional pay.

In 1988 or 1989 (records are not clear), a one-day conference was added to the program to showcase investigations and teach others "lessons learned" from the field. Communicable Disease Nurse Peggy Dixon came to the Department for Public Health in 1990 and was the team leader for the ERRT Program from then until 2000. Each year a conference and a three-day training series were provided and the ranks grew to 81 members by 1999. To maintain membership, participants were required to attend the ERRT conference each year, and programmatic updates on STDs, TB, and immunizations, which were rotated yearly.

After 2000, a series of personnel changes threatened to end the program through lack of continuity of training and leadership at the state. Though more members were trained annually, resources and direction were lagging until 2005 when the Building Epi Capacity in Kentucky (BECKY) effort was initiated and, through this, the LHD leadership indicated their strong desire to continue the ERRT Program.

ERRT Today

Leadership of the ERRT Program was stabilized in 2006 by forming an ERRT Advisory Board. This alleviated the problem of shifting personnel to run the program, with the added benefit of having many voices and hands to work toward improvement of the program. Through the work of the Advisory Board, the ERRT Program was revitalized, with two trainings and conferences in late 2006 and 2007. The training itself was modified to include an exercise that fully engaged students in an actual scenario taken from CDC case studies. Over 80 additional staff were trained in basic epidemiologic principles and investigation. They now stand at the ready to respond to urgent public health events at the local level, along with those previously trained. With the recent advent of bioterrorism funding, Kentucky has placed 18 MPH-level epidemiologists in Area Development Districts across the state and these Regional Epidemiologists serve as leaders and consultants to the Epi Rapid Response Teams. Team members can be epidemiologists, nurses, environmentalists, lab technicians, doctors, or any other specialty that the LHD director desires to have trained and participating on the team.

The goals of the modern ERRT Program are three-fold:

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Confounding

Topics in Biostatistics

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This is the first in a bimonthly series of articles in Epi Notes discussing topics relevant to biostatistics and research study design. We hope that the series will both be a good review for readers who do not use statistics in their everyday practice, and will generate discussion about biostatistical topics as they relate to areas of interest for those who use biostatistics more commonly in their everyday work.

Confounding is the first topic I'd like to consider. Confounding is described in *Field Epidemiology* (Gregg Ed., 2002) as "the distortion of an exposure-disease association by the effect of some third factor." In order to be a confounder, the factor must: 1) be associated with the outcome of interest in both the exposed and unexposed group, and 2) be associated with the exposure but not in the causal pathway between exposure and disease. If, like me, you have not yet attained your PhD in biostatistics or epidemiology, this definition may at first glance be a bit confusing. Therefore, what I hope to do in this article is to further elaborate on this definition and explain it in concrete terms. I'll then give you some examples of confounding and explain how to determine if confounding is present. Last, I'll describe several ways in which confounding can be controlled for in research in order to find true associations between risk factors and health effects.

Confounding is particularly important to evaluate in epidemiology because of the way in which studies are performed. Unlike in clinical medicine, where randomized trials are commonly done in order to find the best drug or treatment, epidemiologic studies are usually observational or retrospective. For example, we might perform a cohort study of everyone who attended a church picnic in order to determine if there was a particular food associated with illness. In such a case, assign risk factors randomly to people, because the event already happened (and we obviously couldn't do it ethically, either!). Thus, we have to sort out the effects of different exposures in our analysis so that we can effectively prevent further illness.

In order to describe confounding, I plan to consider the definition and each necessary condition in turn. As a reminder, the definition of confounding is "the distortion of an exposure-disease association by the effect of some third factor." Imagine, for example, that you are an early cancer epidemiologist. You astutely note that more men than women seem to develop lung cancer, and hypothesize that men are therefore more susceptible to lung cancer. In this case, the exposure is gender, or being male, and the outcome or disease is lung cancer. However, there is a third factor that might distort the relationship between gender and lung cancer. Smoking could distort this relationship, so it meets the definitions criteria as a confounder. We also know that in order to be a confounder, smoking would need to be associated with the outcome of interest (in this case lung cancer), in both the exposed and unexposed group. In this case the exposure is being male. The unexposed group therefore would be females. Since we know that smoking is associated with lung cancer in both women and men, the first condition of confounding is met.

The second condition is that the confounder must be associated with the exposure but not caused by it. In this case, smoking is associated with being male, in that more men smoke than women. However, smoking is not caused by being male. Therefore, smoking meets the criteria to be a confounder of the relationship between the exposure, male gender, and the disease of lung cancer.

What if you read an article in the paper that said everyone in Palm Beach, Florida was worried over a recent report that stated that their death rate was twice as high as those living in Lexington? Is living in Palm Beach bad for your health? Or could there be an additional factor accounting for the association between residing in Palm Beach and an elevated death rate?

As you might imagine, residents of Palm Beach as a group are probably older than Lexington residents. Therefore, age may be distorting the relationship between the exposure (residing in Palm Beach) and the outcome (death). Does age meet the first criterion for confounding? Yes. Older age is associated with death in both Palm Beach and Lexington residents. Age also meets the second confounding criterion, namely that the confounder (age) is associated with the exposure (living in Palm Beach), but is not caused by it. In this case, old age is associated with living in Palm Beach, but living in Palm Beach does not cause old age. Therefore, the higher death rate in Palm Beach is probably attributable to the older age range of residents there, rather than some environmental or other risk factor.

Confounding is one of the most important factors to consider when performing or planning research. Confounding may be controlled for before the study begins by performing matching, restriction, or randomization. After the event or study occurs, confounding may be accounted for by performing a stratified analysis or multivariate analysis. Again, I'll give examples and explain the advantages and disadvantages to each approach.

Matching occurs when the researcher attempts to place a proportional number of individuals with the potential confounder in both the control and experimental group. In the landmark study "Phenotypic differences between male physicians, surgeons, and film stars: comparative study" (*British Medical Journal*, 2006, vol 333. 1291-1293), Trilla and colleagues tested their hypothesis that surgeons were both taller and more attractive than their internist counterparts. They matched the participants by age in order to control for the role that this confounder might play on how attractive the participants were judged to be. The advantage of using matching as a method of controlling for confounding is that the variable matched upon in the study design no longer needs to be accounted for in the analysis. Unfortunately, this can be a disadvantage as well. For example, in the above-described study,

we can no longer determine the affect of age on attractiveness in physicians and surgeons, because that variable was matched upon in the study. Therefore, it is unwise to match on too many variables when creating control and experiment groups.

Randomization is another method of controlling for potential confounding. As the name implies, participants are randomly assigned to control or experimental groups. Randomization is often used in clinical trials comparing the effect of two medications, or comparing cardiac catheterization to thrombolysis, for example. The advantage of randomization is that it theoretically evenly distributes on a variety of factors which could be important to the outcome in question. With randomization we plan to achieve an even distribution of age ranges, smokers, patients with hypertension or high cholesterol, and other factors which might affect our results in both groups. In addition, since we didn't match on these factors, we can still analyze them as variables affecting the study outcome. One disadvantage of randomization is that it doesn't work as well in evenly distributing potential variables when the sample size is small. Further, randomization can't be performed in retrospective studies, which are much more common in epidemiology and public health.

The effect of confounding can also be controlled for by performing a stratified analysis. In another interesting *British Medical Journal* study (2005, Vol 331, 1498-1500), Lim and colleagues performed a study to determine the number of days teaspoons were present in their research institute prior to them "disappearing." They hypothesized that the rate of spoon loss would vary based on the quality of spoon and the location in which the spoons were initially placed. Therefore, they stratified by spoon type and spoon location in their analysis. Stratifying enables the researcher to obtain individual values based on the potential confounder. For example, in the above study the researchers calculated a mean teaspoon half-life for both the regular and high-quality teaspoons. Odds ratios can similarly be calculated based on a potential confounder. However, this approach leaves open the possibility that residual confounding will be present after the stratification. In addition, in order to control for confounding by stratification, one must be aware of the presence of the potential confounder. Therefore, researchers using stratification should have a good working knowledge of their subject matter.

Multivariate regression analysis is used to analyze the presence of several potential confounders on the outcome of interest. This method was used by Singleton and colleagues in "Factors associated with higher levels of injury severity in occupants of motor vehicles that were severely damaged in traffic crashes in Kentucky, 2000-2001" (*Traffic Inj Prev*, 2004, Vol 5, 144-150). Using a logistic regression analysis, they determined that among more than 10 factors they evaluated, unrestrained vehicle occupants, ejection from the vehicle, and head-on collisions were highly associated with death and hospitalization. The advantage of this approach is that the researcher is able to evaluate many potential confounders at the same time, in order to determine the factors truly important to the outcome of interest. In addition, this approach lends itself well to retrospective studies, in which confounders can't be controlled for by randomization. However, there are also drawbacks to this approach. To do a regression analysis, the researcher can't merely throw in a number of factors and see what appears to be important in the outcome. There must be theory, or model, of the variables important to the outcome that the researcher is interested in.

In summary, confounding is an important factor to consider both when reading research studies, and in designing and evaluating your own data. Confounding can both accentuate and mask the outcome of interest; therefore, it is important to understand if confounding is present and determine the best way to account for it.

Kentucky's Avian Influenza Rapid Response Team Workshop

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Background

Kentucky has been heavily involved in planning for avian and pandemic influenza. In January 2006, a state summit on pandemic influenza was held. In the next five months, 50 local summits covering all 120 counties were conducted. The Kentucky Department for Public Health (DPH) produced an educational guide for local leaders and created a statewide response plan and a planning template for local health departments (LHD) to develop pandemic influenza response plans locally. Several local and one state-wide pandemic exercise have been conducted in the past year.

Thus, when the Council of State and Territorial Epidemiologists (CSTE) announced the availability of three-day train-the-trainer workshops for developing Avian Influenza Rapid Response Teams (AIRRT), Kentucky's Division of Epidemiology and Health Planning jumped at the opportunity to send participants. Six DPH staff members attended one of two workshops in January 2007. The events offered insight into agriculture, poultry industry, and laboratory practices that public health attendees were largely unfamiliar with. At the events, CSTE also announced the opportunity to take the event to the state through funding and provision of materials.

Kentucky subsequently applied for the maximum $20,000 funding to conduct a local workshop. CSTE approved Kentucky's application and DPH leadership decided to supplement this with an additional $20,000 of pandemic influenza funding, in order to make it possible to bring together public health, agriculture, laboratory and poultry industry representatives from across the state. Planning was set into

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motion in June/July, 2007.

Planning Effort

Project funds had to be expended within six months of receipt (June 2007) so planning and implementation was executed quickly. To make the effort as effective as possible, it was decided to format participation around what groups might respond to an avian influenza outbreak in each of 18 regions defined by placement of our Regional Epidemiologists (primarily based on Area Development Districts or ADDs). To accomplish all planning aspects, an AIRRT Workshop Planning Committee was formed. Initial key partners in Kentucky were identified to serve on the Planning Committee and in turn used to identify other key partners resulting in a 25- member-strong committee. Partners included state and local health department personnel (epidemiologists, preparedness planners, training coordinators, directors, and public health nurses) and poultry industry, KY Department of Agriculture, KY Department of Fish and Wildlife, USDA, laboratory, veterinary, hospital ICP (Infection Control Specialists), Emergency Management and academia (Agriculture Extension Office Program) representatives.

Two main tasks faced the Planning Committee: selection of participants for the AIRRT Workshop and revision of the workshop from three days down to two. Based on hotel, travel, and material costs, the Planning Committee estimated that we could host up to 180 individuals (10 from each region) for a two-day workshop. The Planning Committee brainstormed about which groups would be most appropriate for the actual workshop and worked to get representatives for all of these groups. In most cases, organizations were solicited for participants up to a certain number and representatives from all disciplines were sought for all 18 regions, so that each response team training group would have adequate representation of all disciplines. The Planning Committee also formed subcommittees based on five original CSTE modules and worked to pare down the material from a 3-day to 2-day format. Finally, DPH staffers took the CSTE-supplied exercises and reworked several into a final, more comprehensive exercise that included many Kentucky-specific elements with a newly-crafted portion to include wildlife aspects of a potential avian influenza outbreak.

The primary goals of Kentucky's AIRRT Workshop were to:

1. Raise awareness of issues related to preparation and response for a highly pathogenic avian influenza pandemic among those most likely to be responding across the state;
2. Initiate and/or build relationships at the local level between public health, agriculture, poultry industry, veterinary, lab and other disciplines to facilitate improved preparedness activities.
3. Identify gaps in current planning for HPAI response.

Event

The Kentucky AIRRT Workshop was held in Lexington on October 29-30, 2007, at the Marriot Griffin Gate Hotel. A total of 172 participants attended the workshop. Both didactic lectures given by local public health, poultry industry, and veterinary experts and table top exercise sessions utilizing regional response representatives were included in the two-day workshop. Participants were encouraged to actively engage in the exercises to try to learn the response plans and capabilities of the other entities represented from their region and to share their own agency plans. Two "lessons learned" sessions were held, one at the end of each day to identify gaps in response planning, overlaps in response capacity between agencies, strengths in response capability, and concrete steps to address problems and gaps that were identified.

Outcomes

Kentucky's AIRRT Workshop was by all measures a success. A pre-/post-test evaluation conducted by DPH showed an increase in knowledge between pre-test and post-test in 77.5% of responding participants, indicating raised "awareness of issues related to highly pathogenic avian influenza response and preparing for a pandemic among those most likely to be responding across the state" (Goal 1). Only 7.2% of responding participants scored 100% on the pre-test, while 60.4% received 100% on the post-test.

Participant comments made it clear that relationships had been initiated and built "at the local level between public health, agriculture, poultry industry, veterinary, lab and other disciplines to facilitate improved preparedness activities" (Goal 2). Participants strongly indicated their positive assessment of the usefulness and effectiveness of the workshop both verbally and in writing. Participants will be encouraged to form local planning groups based on recommendations of the overall group and to pursue greater collaboration among local agencies that might be involved in avian influenza responses.

Finally, the "lessons learned" session identified several key gaps in avian influenza response planning (Goal 3). These included: standardizing legal processes to deal with quarantine issues associated with avian influenza outbreaks and training on these legal processes; need for joint exercises with agriculture, wildlife, poultry, lab, law enforcement, public health, and academic entities; training for local health department Epi Rapid Response Teams on proper specimen collection techniques for avian influenza; improving communication between all partners; forming regional committees including all agencies represented at the AIRRT workshop to address collaborative planning; training Fish and Wildlife personnel on use of PPE and acquiring appropriate equipment; and improving prevention of illegal importation of animals.

The AIRRT workshop was an important step in increasing Kentucky's preparedness for avian influenza and other communicable disease outbreaks. The next steps planned in this process are follow-up on this workshop from DPH and pursuit of increased collaborations, communication, and integrated planning at the local level. Rarely do we bring such a varied group of professionals to the planning table simultaneously. The AIRRT Workshop truly manifested the usefulness and utility of this approach.

World Tuberculosis Day—March 24

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Each year, World Tuberculosis (TB) Day is recognized on March 24th. This annual event commemorates the date Robert Koch announced his discovery of the bacillus that causes TB. Around the world, TB Programs, non-governmental organizations and others take advantage of the increased interest and awareness that World TB Day generates concerning the international health threat that the disease presents. It is a day to recognize the collaborative efforts of all countries involved in fighting TB. TB can be cured, controlled, and with diligent efforts and sufficient resources, eventually eliminated.

What Is TB?

Tuberculosis is an airborne infectious disease that is preventable and curable. People ill with TB bacteria in their lungs can infect others when they cough. In 2005, 8.8 million people fell ill with TB worldwide and 1.6 million died. If TB disease is detected early and fully treated, people with the disease quickly become non-infectious and eventually cured. Multidrug-resistant TB (MDR-TB) and extensively drug-resistant TB (XDR-TB), HIV-associated TB, and under resourced health systems are major challenges to The World Health Organization's (WHO) "Stop TB Strategy."

Where Have We Been?

In 1996, 21,210 active TB cases were reported in the United States, with a case rate of 7.9 per 100,000 population. In 2006, there were 13,779 active TB cases reported, with a case rate of 4.6 per 100,000 population. Since 1993, TB case rates have been declining an average of 4.6% per year, suggesting that the nation is recovering from a resurgence of TB that occurred in the mid-1980s, and is back on track toward TB elimination. While the decrease in TB case rates is encouraging, some hard facts about TB continue to be concerning:

- TB cases continue to be reported in all 50 states.
- An estimated 10 to 15 million persons in the U.S. are infected with *Mycobacterium tuberculosis* but do not have current symptoms.
- Without intervention, about 1 to 1.5 million persons infected in the U.S. will develop TB disease at some point in their life.
- Those with active TB who receive no treatment can infect an average of 10 to 15 people annually.
- Certain other medical conditions increase the risk that a person with TB infection will develop TB disease, e.g. HIV, diabetes mellitus, cancers of the head and neck, jejunoileal bypass, solid organ transplantation, and other immunocompromising conditions.
- Won estimated 1.6 million people died of TB in 2005, 12% of whom were coinfected with HIV.
- Multiple Drug-Resistant TB (MDR-TB) cases were reported in almost every state in 2005.
- Extreme Drug-Resistant TB (XDR-TB) has emerged.

Where Are We Now?

TB remains a health threat to people around the world. Among infectious diseases, TB remains the second leading killer of adults in the world. When offset by population growth, the number of new cases arising each year is still increasing globally. Multiple Drug Resistant TB (MDR-TB) and now the emergence of Extreme Drug Resistant TB (XDR-TB) creates a greater and more deadly challenge. Whereas MDR-TB is resistant to two or more first line TB drugs, XDR-TB is defined by the World Health Organization as TB that is resistant to the two main first line TB drugs, isoniazid (INH) and rifampin (RIF), as well as three of the six main classes of second line drugs. Seen more globally than domestically, incidences of XDR-TB in the United States are expected to rise. Poor treatment outcomes and failed treatment are the largest contributing factors to the development of MDR-TB and XDR-TB. Moreover, drug resistant strains are transmitted from person to person. Until TB is controlled, World TB Day will be a valuable opportunity to educate the public about the devastation that TB can spread, and how it can be stopped.

WHO Stop TB Strategy

In 2006, the World Health Organization (WHO) launched their new Stop TB Strategy. The core of this strategy is Directly Observed Therapy, Short-course (DOTS), the TB control approach launched by WHO in 1995. Since its launch, more than 22 million patients world wide have been treated under DOTS-based services. This six-point strategy builds on this success, while recognizing the key challenges of TB/HIV and MDR-TB. The strategy also responds to access, equity and quality constraints, and adopts evidence-based innovations in engaging with private health-care providers, empowering affected people and communities and helping to strengthen health systems and promote research.

The six components of the Stop TB Strategy are:

1. **Pursuing high-quality DOTS expansion and enhancement.** Making high-quality services widely available and accessible to all those who need them, including the poorest and most vulnerable, requires DOTS expansion to even the remotest areas. In 2004, 183 countries (including all 22 of the high-burden countries which account for 80% of the world's TB cases) were implementing DOTS in at least part of the country.
2. **Addressing TB/HIV, MDR-TB and other challenges.** Addressing TB/HIV, MDR-TB and other challenges requires much greater action and input than DOTS implementation and is essential to achieving the targets set for 2015, including the United Nations Millennium Development Goal relating to TB.
3. **Contributing to health system strengthening.** National TB control programs must contribute to overall strategies to advance financing, planning, management, information and supply systems and innovative service delivery scale-up.

4. **Engaging all care providers.** TB patients seek care from a wide array of public, private, corporate and voluntary health-care providers. To be able to reach all patients and ensure that they receive high-quality care, all types of health-care providers are to be engaged.
5. **Empowering people with TB, and communities.** Community TB care projects have shown how people and communities can undertake some essential TB control tasks. These networks can mobilize civil societies and also ensure political support and long-term sustainability for TB control programs.
6. **Enabling and promoting research.** While current tools can control TB, improved practices and elimination will depend on new diagnostics, drugs and vaccines.

On March 19, 2007, the World Health Organization (WHO) announced that the global tuberculosis epidemic has leveled off for the first time since WHO declared TB a public health emergency in 1993.

TB in Kentucky

The 2007 reporting period has just ended and the number of verified cases of TB in Kentucky has increased slightly since 2006. For 2007 a total of 120 confirmed cases were reported to CDC, giving a case rate of 2.8 – 2.9* cases per 100,000 population. This 2007 rate still places Kentucky well below the 2006 national TB case rate of 4.6 cases per 100,000 population, and below the state objective of reducing the verified TB case rate to 3.5 per 100,000 population. In 2006, the Kentucky TB Control Program reported 84 cases compared to 124, 127, and 138 cases in 2005, 2004, and 2003 respectively. Viewed over a five-year period, a pattern of case reduction emerges. This case reduction is a reflection of the hard work and dedication of the TB Control staff at the local health departments and healthcare professionals across the state.

The future of TB Control in Kentucky

Fluctuating case numbers from year to year are an indication that we have not yet won the war on TB. Diligent efforts to identify and treat persons with TB infection that are at high risk for developing TB disease is the key to the continued reduction of the incidence of TB disease in Kentucky. In addition, ensuring successful treatment outcomes to those with active disease is the main method for preventing MDR-TB and XDR-TB. To prevent resurgence of TB, staffing and resource levels must be maintained in order for Kentucky to have the tools to continue to work toward the goal to eliminate this persistent disease.

* Kentucky State Data Center reports the state population as a range from 4,206,074 – 4,217,544 for 2006 studies.

Condensed from:

- CDC National Center for HIV, STD, and TB Prevention, Division of TB Elimination
- WHO Facts on TB.

March National Health Observances

National Brain Injury Awareness Month

National Endometriosis Awareness Month

National Nutrition Month®

National Colorectal Cancer Awareness Month

National Multiple Sclerosis Education and Awareness Month

Save Your Vision Month

Workplace Eye Health and Safety Month

2 - 8 National Patient Safety Awareness Week

3 - 7 National School Breakfast Week

3 - 9 National Sleep Awareness Week®

9 - 16 National Problem Gambling Awareness Week

10 - 16 Brain Awareness Week

16 - 23 National Inhalants and Poisons Awareness Week

13 World Kidney Day

25 American Diabetes Alert Day

Subject Index

Kentucky Epidemiologic Notes & Reports, Volume 42, 2007

KENTUCKY EPIDEMIOLOGIC NOTES & REPORTS publication updates.

The Kentucky Epidemiologic Notes & Reports Advisory Board announces that our publication is now edited by Christopher Rowe. Please direct any editorial, subscription, or production correspondence to Mr. Rowe at ChristopherV.Rowe@ky.gov.

Surface mail should be directed to this address. Please note the addition of a mail stop to our mailing address.

KENTUCKY EPIDEMIOLOGIC NOTES & REPORTS
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Editor

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(Continued from page 3)

1. To help participants gain, increase, and improve their knowledge and skills in concepts and practices associated with responding to a case/cluster/outbreak investigation.
2. To increase the number of public health professionals capable of participating on a strike team in an outbreak investigation, terrorism event or other public health threat.
3. To improve the capability of health departments to respond to investigation of urgent public health events, i.e., outbreaks, terrorist events, etc.

The current ERRT roster has a total of 248 trained members. These include the typical disciplines listed above but also LHD Directors, Preparedness Coordinators, a dietician, a public information officer and a lab supervisor. To earn and maintain ERRT membership, participants must meet several initial and annual requirements:

- Have supervisor and LHD Director approval and submit an official Sign-Off Sheet;
- Attend an ERRT Beginner's Training Session (usually 2 days);
- Attend the Application Exercise Day if in the first year as an ERRT member;
- Attend, as a refresher, an Application Exercise Day once every five years;
- Complete at least four hours of approved continuing education annually;
- Attend at least two ERRT Annual Conferences out of every four years.

To give a hint of the breadth of issues that ERRT members have been involved in during the past year, here is a list of topics presented at the fall 2007 ERRT Annual Conference:

- HIPAA and Public Health – Brennon O'Banion, DPH Epidemiologist
- Hepatitis A Outbreak – Andy Waters, Regional Epidemiologist, Lexington
- Noroviruses - Overview, Epidemiology and Collection Procedures, Karim George, Lab Technician
- Investigating Animal Disease Outbreaks - Barry J. Meade, Veterinary Medical Officer, USDA-APHIS-VS
- Q Fever - Coxiella burnetii - Scott Bowden, Regional Epidemiologist, N. KY
- Reportable Disease Desk Reference - Peggy Ellis, DPH Surveillance Epidemiologist
- Electronic Disease Surveillance Module - Sandy Kelly, DPH Communicable Disease Nurse
- Refugee Health - Matt Zahn, Medical Director Louisville Metro Health Department

Thus, the ERRT Program is off and running again and at the ready to investigate public health events among the citizens of the Commonwealth of Kentucky. If an outbreak occurs in your locale, you will probably meet some of our ERRT-trained local health department responders. If you would like more information on the program, please visit our website at: http://chfs.ky.gov/dph/epi/Epi.