Kentucky
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DEPARTMENT FOR PUBLIC HEALTH
DIVISION OF EPIDEMIOLOGY
& HEALTH PLANNING
# Epidemiologic Notes & Reports

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Agricultural Injury in Kentucky

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Active surveillance of agricultural injuries in six Kentucky counties continues as part of the Community Partners for Health Farming (CPHF) Project. The counties are in two regions: Barren River (Barren and Warren) and Buffalo Trace/Gateway (Bracken, Fleming, Mason and Rowan). The Occupational Health Nurses in Agricultural Communities, which collected similar data between 1992 and 1996 served as a model for CPHF.[1] The surveillance data collected since 1997 have been used to describe and identify trends in agricultural injury. In addition, the community-based nature of the project has fostered the implementation of many interventions in the regions.

SUMMARY FROM MEDICAL RECORD REVIEW

A community health nurse in each of the two regions identified cases of agricultural injury through review of emergency department medical records. The data presented here are for injuries that occurred from February 1, 1997 through September 30, 1998. Of the 380 injured people, white (91%) males (86%) predominated. More Hispanics (28 or 7.4%) were injured in this reporting period than in prior years. Fifteen percent of the injured were under age 19, 68% were 19 to 54 years old, and 17% were 55 years of age or older. Age and sex distribution is shown in Figure 1. The median age of the injured was 34 years (range <1 to 93).

Upper (37.2%) and lower (25.9%) limbs were the most frequently injured parts of the body. Head injuries occurred in 14.7% of the injuries, followed by those to the chest (11.5%). Back injuries comprised 5.5% of the cases and eye injuries 5.2%. The major injury categories were: open wounds (28.6%), fractures (21.3%), contusions (17%), and sprains (9.8%).

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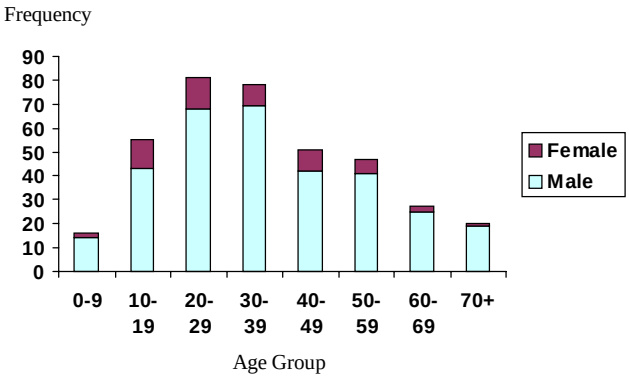
Figure 1. Frequencies of Farm Injuries in two Kentucky regions by sex and age group – February 1997-September 1998.



Most of the injured traveled to the emergency room by private vehicle; however, 11% of the injured required transportation by ambulance. Inpatient care was necessary for 5.7% of the injured, whereas 88.4% were treated and released from the emergency department. Of those treated in the emergency department, 82% were released in two hours or less. The average length of stay for those admitted to the original treatment facility was five days, with a range of 1 to 37 days. Five percent of the 380 injured were transferred to another facility for medical care.

SUMMARY FROM INTERVIEWS

A community health nurse interviewed each of the injured persons or parents, in the case of young children, to obtain additional information about the person's work experiences and the circumstances of the injury. The primary products of the farms on which the injury occurred were tobacco (80.9%), followed by cattle (9.4%), and horses (4.6%).

See Agricultural Injury In Kentucky (continued on pages 2 & 3)

Agricultural Injury In Kentucky (continued from page 1)

The interviewed farm worker (> 18 years) had a median of 15 years experience (range 0 to 68 years) at the particular task he or she was performing at the time of the injury.

Of those injured, 58% were covered by private insurance, 23% had no health insurance, 8.5% had Medicare, 7.7% had Medicaid, and 2.5% were workers' compensation cases. For those cases where cost information was available (n=137), the median medical cost for nonfatal injuries was $385 (range $48 - $25,778).

Machinery, animals, and falls continue to be the leading causes of injury on Kentucky farms (Figure 2). Knives, hand tools or sharp instruments injured children under 19 years of age more often than adults. One out of five people had a previous farm-related injury that required medical treatment.

Machinery

A farm tractor was involved in one-third of the 65 machinery-related injuries; four of these were tractor overturns. Other causes of injury included being cut or pierced by a machine (29%), being caught in moving parts (12.9%), and falling from or into a machine (11.3%). Sixty percent reported that they had received training on operating the machine from a family member, and 10% had received no training.

Animals

Cattle were involved in almost 60% of the 54 animal-related injuries, followed by horses or mules (37.7%). Thirty-three percent of the persons were kicked, while 11.5% fell from an animal. Other injuries were caused by being stepped on, gored by, or thrown by an animal. Fifty-eight percent of the persons reported they had received training from a family member in handling animals, and 18.6% had received no training.

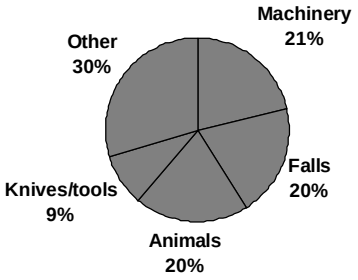
Falls

Thirty-eight percent of the 57 falls occurred when the person slipped or tripped. Thirty percent of the injuries were from a work surface collapse (such as a barn tier pole breaking), or the person losing balance or grip (18.9%). Seventy percent of the falls occurred on a dry surface while 9.3% occurred on a wet surface. Other surface conditions reported were damaged/worn (11.2%), slip resistant (1.9%), or cluttered (1.9%).

Fatal Injuries

There were four fatalities in this reporting period, three of which involved farm tractors. Two were tractor overturns and one involved the person being run over by the attached rotary mower after falling off the tractor. The remaining death occurred when a falling tree struck the person.

Figure 2. Cause of Injury (n=380)



In an attempt to estimate an exposure period, persons were asked how many hours they worked on the farm during the seven days preceding their injury. For those over age 18 it was reported that an average of 32 hours had been spent doing farm work during the preceding week. Additionally, 50.3% reported they had worked at a job off the farm during the seven days before the injury. Fifty-seven percent of the injuries did not result in time lost from farming. Of those who also worked off the farm, 28% of the injuries resulted in loss of time from the off-farm job.

Factors associated with agricultural injury include working alone, fatigue from working multiple jobs, economic pressures of a small profit margin, aging equipment, lack of adequate child care, and the perceived lack of resources to purchase safety equipment such as a roll over protective structure for the tractor.[2] Children are at particular risk because they are often expected to perform farm chores at an early age and often lack coordination to handle certain tasks. When workplace and playground are the same, the risk of injury is increased.[3]

INTERVENTIONS

CPHF nurses have been extensively involved in promoting farm safety in their communities. Intervention activities are driven by the surveillance data that have been used to identify and address a variety of farming-related issues. Activities, that are tailored to reach both children and adults on farms, as well as public health professionals, have included:

- Farm Safety Day Camps for children;
- Farm Safety 4 Just Kids Chapter activities;
- radio and television public service announcements;
- newspaper articles about farm safety;
- professional publications about carbon monoxide poisoning from farm tractors;

Agricultural Injury In Kentucky (continued from page 2)

- lectures at participating hospitals on zoonotic diseases, green tobacco sickness, and tractor safety; and
- learning exercises on a web page designed to prevent similar injuries for those 16 and over who farm (see address below).

Kentucky Commissioner of Agriculture, Billy Ray Smith, recently spearheaded an initiative to reduce farm injuries in the state. Through legislative support, funds have been set aside for community-based farm safety initiatives. Coalitions of business persons, health care providers, agricultural service providers, and others may be eligible for seed funds to establish long term injury prevention initiatives and build farm safety coalitions. Several local health departments have been awarded grants and will be initiating community-based agricultural injury prevention activities. For more information on this initiative call Dale Dobson, farm safety coordinator for the Department of Agriculture at (502) 564-5016.

Visit our website for a more detailed analysis of these data: http://www.kiprc.uky.edu or call 606-257-4955 or write Tim Struttmann, MSPH, Kentucky Injury Prevention and Research Center, 333 Waller Avenue, Lexington KY 40504.

REFERENCES

1 Struttmann T, Auslander M. Farm injury surveillance in Kentucky--What have we learned? *Kentucky Epidemiologic Notes and Reports* 1996; 31 (10): 1-4.

2 Murphy D. Safety and health for production agriculture. St Joseph (MO): American Society of Agricultural Engineers; 1992.

3 National Committee for Childhood Agricultural Injury Prevention. Opportunities for safety and health. Marshfield (WI): Marshfield Clinic; 1996.

Web Resources: Internet Sites on Health Topics

- **U. S. Public Health Service** **www.surgeongeneral.gov/phs200**

This site was inaugurated to commemorate the 200th anniversary of the Public Health Service and includes online videos, exhibits and games. The site is designed primarily for classroom use for students ranging from elementary school to schools of public health. The site has a link to the updated Surgeon General's homepage www. surgeongeneral.gov and links to three decades of Surgeon General reports.

- **Women's Health Information Center** **www.4women.gov**

Also launched by the Public Health Service, this site, along with a telephone hotline, serves as a one-stop resource for information on women's health. Web users can visit links to publications and women's health agencies. Callers to the 800-994-WOMAN phone line can order fact sheets, brochures or other materials.

- **Lung Cancer Awareness Campaign** **www.lungcancer.org**

This site was established to increase awareness of the nation's biggest cancer killer and to provide information.

- **The National Arthritis Action Plan** **www.arthritis.org/resource/naap**

The Arthritis Foundation website is the address for viewing the Action Plan prepared by a nationwide coalition of arthritis and public health leaders. The plan includes strategies to prevent arthritis when possible, increase public awareness, promote early diagnosis and appropriate disease management, and minimize preventable pain and disability. You may also reach the Arthritis Foundation at 404-872-7100.

- **American Public Health Association (APHA)** **www.apha.org**

Anyone can check out APHA's legislative issues, news releases, Managed Care Corner and selected abstracts of *American Journal of Public Health*. Members can use a password to access "member's only" information such as the Executive Director's Biweekly report and APHA staff directory. Members who need a password contact membership.mail@apha.org for assistance.

Search the Web

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SEARCH THE WEB

Newborn Screening: Reducing Specimen Rejection

Proper specimen collection and handling are fundamental for the success of Kentucky's Newborn Screening Program. Every infant should have an equal opportunity for early detection and treatment of the disorders that are mandated by law to be tested for in the state laboratory. To achieve this goal, the rejection rate due to improperly collected or submitted specimens must be 0%. Currently, the rejection rate is 5%, or more than 2500 specimens a year. A diseased infant could go undiagnosed because no satisfactory specimen was submitted for testing. Our goal is to detect and place on treatment every diseased infant before clinical symptoms appear so that the child will develop normally.

Each submitter should designate a person or persons who will visibly inspect specimens before they are sent to the state laboratory. A poor quality specimen should be recollected before the infant leaves the hospital or clinical setting. The turnaround time before another specimen can be collected and submitted to our laboratory is significant for an infant with a metabolic or genetic disorder. Review these handling and collection errors to eliminate specimen rejection.

Handling Errors

Unacceptable Specimens	Possible Causes
Too old	Specimens are considered too old for testing if there is more than 14 days between date of collection and the date we receive them. **Specimens must be mailed within 24 hours of collection.**
Submitted in plastic bag	The sickle cell test will be rejected and a repeat specimen will be required. PKU, galactosemia and T_4 results will be given as "may not be valid". **Specimens should be mailed in a manila envelope, not folded.**
Demographic information	Absence of pertinent information on the form may result in rejection of the specimen or invalidation of results. **It is very important that all information be filled out completely.** For tracking diseased infants and to link subsequent specimens, information must be submitted correctly each time. **When labels are used on the form, the name on the label and the name on the submission form must match**. If there is no match, the specimen is unsuitable for testing. Also, the laboratory needs to know the last antibiotic date and the last transfusion date. For valid test results, screening specimens should not be collected too soon after these procedures. **Birth dates and specimen collection dates are important to determine the age of specimens**.
Old lot filter paper	Each year we change to a new filter paper lot number. When you receive the new filter paper, discard all old filter paper (the previous lot number). A cutoff date is announced in the letter sent with the new forms. **After the cutoff date, specimens will be rejected if submitted on the old filter paper.**

Collection Errors

Unacceptable Specimens	Possible Causes
Inadequate sample	The printed circle on the form must be completely filled with one drop of blood, making sure the blood has saturated the filter paper all the way through to the back. **Never go back to any circle front or back and add additional blood.**
Repeatedly applied	Only one drop of blood should be touched to each circle of the filter paper.
Blood on both sides	**Never apply more than one drop of blood to each circle**. If the filter paper appears to have been turned over and more blood added to the back, the specimen will be rejected.
Clotted	**Circles with visible clots are not suitable for testing**. In order to avoid clotting, it is often necessary to wipe the site again with dry gauze to help break up the clot. Also, avoid the use of capillary tube collection, as clots may form in the tubes during collection.
Appears separated	The circle of blood has a watery appearance. This could occur when the specimens are not properly dried. **Dry specimens for at least 4 hours on a level non-absorbent surface.** Blood specimens should be placed in this manner immediately after collection. Milking or squeezing of the heel could also account for the separated appearance.
Improper capillary collection	Heparinized capillary tube collection is acceptable if done properly, although it is not the recommended method of collection. Collect approximately 100 microliters into the heparinized capillary tube. Use a fresh tube for each circle. Apply the drop of blood to the filter paper immediately after each tube collection. Delay in application may result in separation of blood or clots. The capillary collection is not recommended because of the problems that could lead to a rejected specimen.
Specimens contaminated when received in laboratory	Specimens that appear to have had something spilled on them are rejected. Protect the filter paper before and after collection by storing it in a place away from possible contaminants such as water, alcohol, lotions, beverages, etc. Store the filter paper on its side before collection, which will prevent compression of the filter paper. This could affect the ability to absorb blood. Never place any labels over the filter paper. **Consider the form and the filter paper attached to it a medical instrument.**
Improper collection	Sometimes we receive a specimen that cannot be categorized. It is usually a combination of the above mentioned collection errors.

"Neonatal Screening Blood Specimen Collection and Handling Procedure" and "Simple Spot Check" are full-color charts illustrating proper specimen collection techniques. They are available at no charge from the Division of Laboratory Services, 100 Sower Blvd, Frankfort, KY 40601, or call 502-564-4446.

Contributed by: Linda Dailey, MT(ASCP), Newborn Screening Supervisor, Division of Laboratory Services.

Questions and Answers: New Lyme Disease Vaccine

- **Who should receive Lyme disease vaccine?**

According to the prescribing information for LYMErix™ Lyme disease vaccine (SmithKline Beecham Biologicals), the vaccine is indicated for those who live or work in *Borrelia burgdorferi*-infected tick infested areas. It is approved for use in individuals 15 to 70 year of age.

B. bugdorfori is a spirochetal bacterium found in the midgut of infected *Ixodes* ticks. *Ixodes scapularis* is found primarily in the northeast and upper midwest; *Ixodes pacificus* is found in the Pacific coastal states. *Ixodes* species ticks are not found routinely in Kentucky. In fact, there are only 2 documented findings of an *Ixodes* tick ever in Kentucky. Both these findings occurred in far western Kentucky counties several years apart. Biologists have theorized that these incidents could have occurred as the result of a tick falling off a migrating bird during its flight over the state. Routine, regular tick collections conducted by various sources have not found *Ixodes* ticks in Kentucky.

As would be expected from the lack of native carrier ticks, the number of reported confirmed cases of Lyme disease in Kentucky is low (mean=22 cases/year for 1994-98). Lyme disease may well be underreported, but even if reported cases accounted for only 10% of the actual cases, the annual incidence would increase from 0.57/100,000 population to 5.7/100,000 population. This is a very low incidence rate when compared to endemic areas. In vaccine efficacy trials conducted in peak Lyme disease areas of the country, the incidence of Lyme disease was 984.7/100,000 in unvaccinated participants.

With the low incidence of Lyme disease in Kentucky, the Kentucky Department for Public Health currently does not recommend routine vaccination against Lyme disease. However, if one travels to a highly endemic area (Connecticut, Delaware, Maine, Maryland, Massachuesetts, Minnesota, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and Wisconsin) and engages in outdoor activities (e.g., hunting, fishing, hiking, and camping), vaccination may be indicated. Precautions to prevent tick attachment such as avoiding tall grass and brushy areas, wearing long sleeves, tucking long pant legs into socks, and using tick repellents, are always a good idea. Endemic Kentucky ticks can carry Rocky Mountain spotted fever, ehrlichiosis, and tularemia for which there is no preventive measure other than preventing tick attachment.

- **What is the schedule for vaccination?**

LYMErix™ requires 3 doses of 0.5 ml vaccine in the deltoid region at 0, 1, and 12 months. After the first 2 doses of vaccine, vaccine efficacy against *B. burgdorferi* infection is 50%, and after the 3rd vaccine dose, vaccine efficacy is 78%. For the best possible protection the administration of vaccine should occur before tick season begins so that protective antibodies are present before possible tick exposure.

- **Where can I get vaccinated?**

The Kentucky Department for Public Health currently is **not** purchasing Lyme disease vaccine or making it available to local health departments. Any private provider can buy the vaccine through his/her regular SmithKline Beecham supplier. The current wholesale cost of the vaccine is approximately $49/dose. If you need any other general information, SmithKline Beecham can be contacted at (888)LYMERIX or on the web at www.lymerix.com. To discuss whether or not your insurance covers LYMErix™ , call (888)VACCRIX. For physicians ordering vaccine, call 800-822-2638.

Submitted by: Michael Auslander, DVM, MSPH, State Public Health Veterinarian, Kentucky Department for Public Health, Division of Epidemiology and Health Planning. For more information call 502-564-3418.

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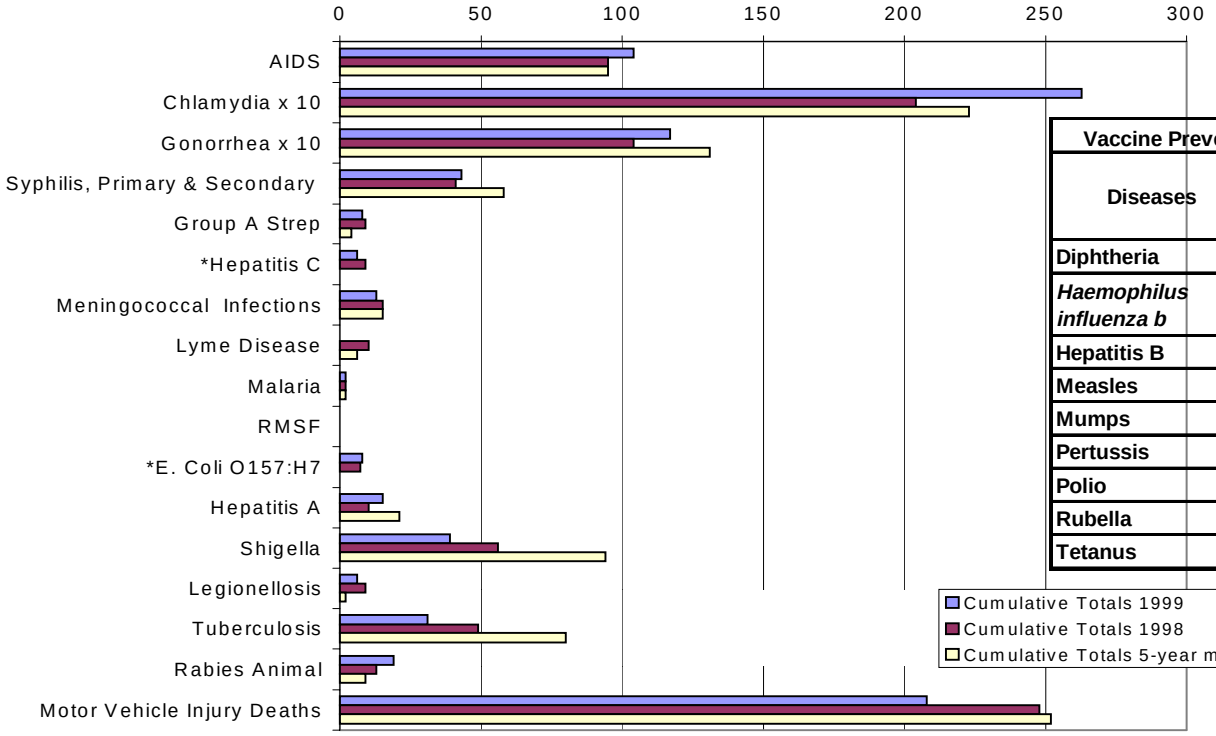
CASES OF SELECTED REPORTABLE DISEASES IN KENTUCKY, YEAR TO DATE (YTD) THROUGH APRIL 1999



Vaccine Preventable Diseases		
Diseases	**1999 YTD**	**1998 Annual Totals**
Diphtheria	**0**	**0**
Haemophilus influenza b	**4**	**7**
Hepatitis B	**10**	**44**
Measles	**0**	**0**
Mumps	**0**	**1**
Pertussis	**2**	**93**
Polio	**0**	**0**
Rubella	**0**	**0**
Tetanus	**0**	**0**

*Historical Data Not Available