ILLINOIS DEPARTMENT OF PUBLIC HEALTH

Illinois Infectious Disease Report

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Animal Rabies Surveillance

By Connie Austin, D.V.M., M.P.H., Ph.D. and Lori Saathoff-Huber, M.P.H.

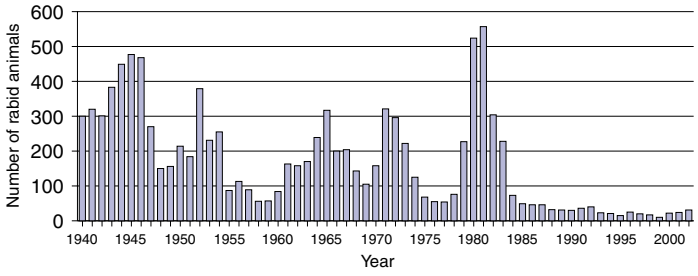
In 2002, 4,006 animals were submitted for rabies testing to the Illinois Department of Agriculture (IDA) and the Illinois Department of Public Health (IDPH) diagnostic laboratories. Of those, 31 were fluorescent antibody-positive for rabies and *all were bats*. However, in previous years, other animals have tested positive (Table 1).

Table 1. Rabies test positive animals by species and year, Illinois, 1993-2002

Species	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Bat	19	16	12	23	16	16	10	22	24	31
Cat	0	0	0	1	0	0	0	0	0	0
Cattle	0	0	1	0	0	0	0	0	0	0
Dog	1	1	0	0	0	0	0	0	0	0
Fox	0	0	0	0	0	0	0	0	0	0
Skunk	3	4	2	1	4	1	0	0	0	0
Raccoon	0	0	0	0	0	0	0	0	0	0
TOTAL	23	21	15	25	20	17	10	22	24	31

The number of animals testing positive for rabies has decreased since the early 1940s (Figure 1). In addition, there has been a large drop in positive testing results in animals since the early 1980s.

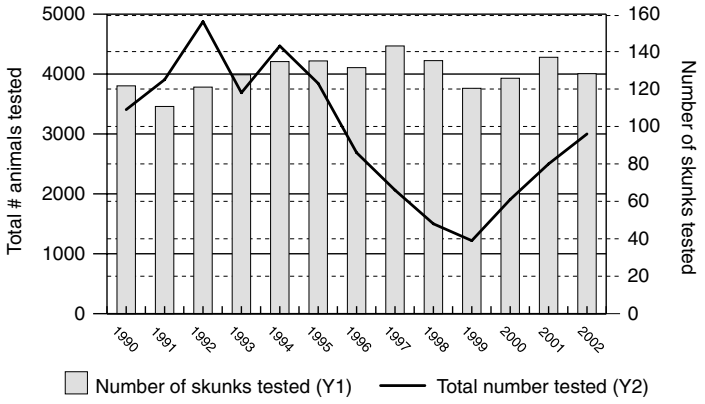
Figure 1. Animal Rabies, Illinois, 1940-2002



SKUNKS

No skunks tested positive for rabies in 2002, but the number of skunks tested continues to be low. Of the 4,006 animals tested, only 96 (2.4 percent) were skunks. The number tested increased from 2001, but testing is still lower than in the early 1990s (Figure 2).

Figure 2. Trends in Animal Rabies Testing Illinois, 1990-2002



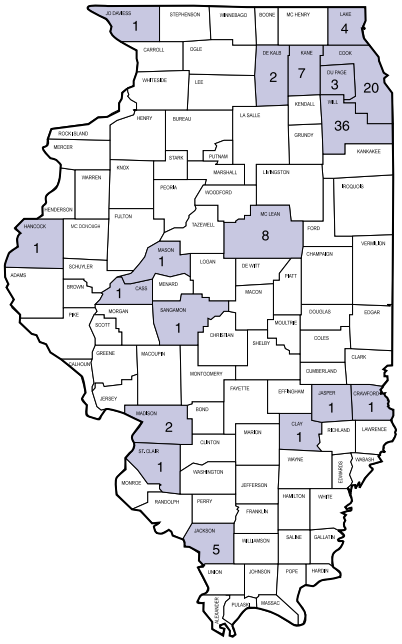


Figure 3. Number of skunks tested for rabies, Illinois, 2002

The following Illinois counties submitted skunks for rabies testing in 2002: Cass, Clay, Cook, Crawford, DeKalb, DuPage, Hancock, Jackson, Jasper, Jo Daviess, Kane, Lake, Madison, Mason, McLean, Sangamon, St. Clair and Will. Will County provided 36 skunks for testing, exceeding all other counties (Figure 3).

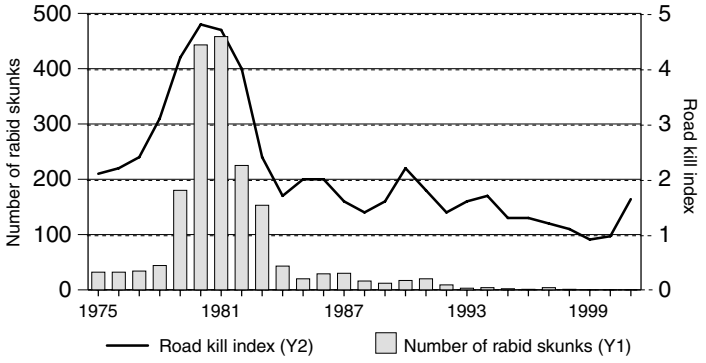
The skunk is the main terrestrial animal reservoir for the rabies virus in Illinois. Thus, testing is essential to maintain adequate surveillance in the state. Negative testing of wild mammals, especially skunks, in a locality is one factor used to determine whether rabies post-exposure treatment is recommended for stray dog and cat bites. **Therefore, county animal control officers are encouraged to submit skunks for testing if they have exposed a person or a domestic animal, are found in places unusual for a skunk or they have signs suggestive of rabies.**

These signs include lack of fear of humans, aggressive behavior, salivation, staggering, paralysis and muscle tremors.

In addition, local animal control and local public health agencies also are asked to submit skunks that have not exposed persons or animals. This is especially important if no skunks have been tested for rabies in their jurisdiction. Local agencies are encouraged to contact nuisance wildlife trappers and others in their jurisdictions who may have freshly killed skunks that could be tested and arrange for transportation and testing by one of the IDA or IDPH laboratories. Rabies testing is free at the IDA and IDPH laboratory for this enhanced skunk surveillance program. For other animal rabies testing, the IDA laboratories charge $5 per animal. All rabies testing is free at the IDPH laboratories.

Increase in the skunk population have preceded skunk rabies outbreaks in the past. The skunk road kill index provided by the Illinois Department of Natural Resources is used to monitor the skunk population in the state (Figure 4). Based on data from 1975 through 2001, there does not seem to be an increase in the number of skunks in the state using the road kill index. The index is used to record the statewide incidence of road-killed striped skunks each year. It is calculated as the number of striped skunks observed per 1,000 miles corrected for changes in rural traffic volume over time.

Figure 4. Reported Skunk Rabies and Road Kill Index, Illinois, 1975-2001



BATS

Bats were the only species identified with rabies in Illinois in 2002. For the past three years no terrestrial animals were diagnosed with rabies; bats are non-terrestrial. In 2002, 912 bats were tested for rabies. Of those tested, approximately 860 were negative for the virus, 31 (3.4%) were confirmed positive and 21(2.3%) tests were inconclusive.

Bats testing positive for rabies were found in the following counties: Carroll, Coles, Cook, Cumberland, DuPage, Fayette, Jackson, Madison, Marion, McHenry, Sangamon, White, Will, and Winnebago (Figure 5). Among the 31 cases involving a bat testing positive, humans were exposed in five of these. In three situations a person was bitten, in another, a couple slept in a room with a bat, and in the final situation, a child was scratched by a rabid bat. Several animals also were exposed to rabid bats including five cats, two dogs and a horse.

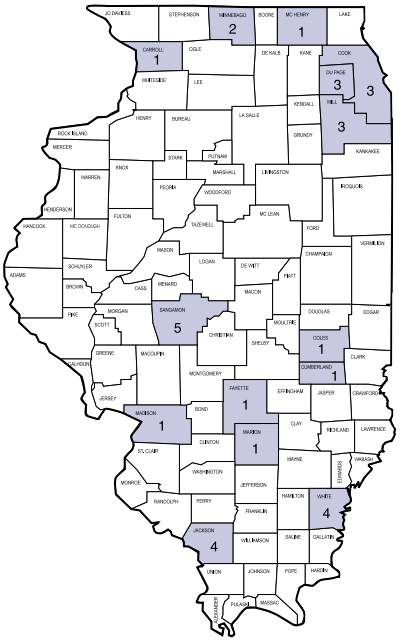
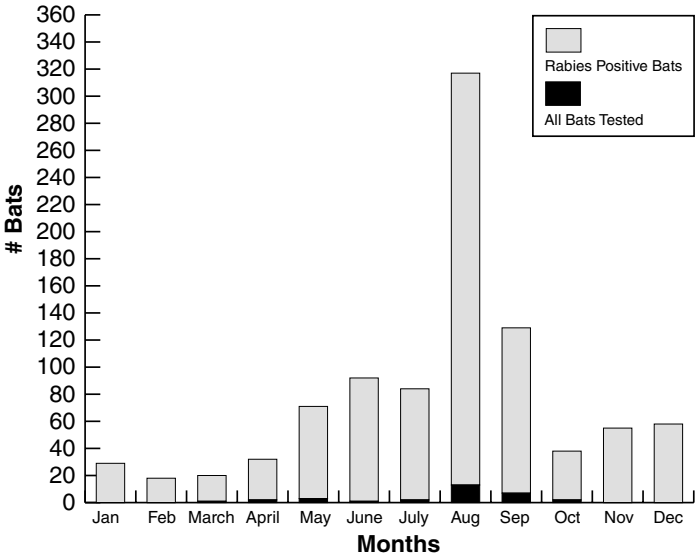


Figure 5. Number of positive bats by county, Illinois, 2002

The majority of testing (60%) occurred from May to August when bats are most active and likely to come in contact with humans or pets (Figure 6).

Figure 6. Number of all bats and positive bats by month, Illinois, 2002



SPECIMEN SUBMISSION

Animal testing for rabies, excluding skunks (see above), should be performed when the following conditions occur:

1. A domestic animal or a person is bitten by an animal

2. An animal exhibits neurological symptoms consistent with rabies

All brain and head specimens should be submitted immediately for testing and not batched with other specimens.

2002 HUMAN RABIES CASES IN THE UNITED STATES

No case of human rabies has been reported in Illinois since the 1954. Three reports of human cases were published in 2002. Those cases occurred in California, Tennessee and Iowa. All three cases were fatal.

RABIES POST-EXPOSURE PROPHYLAXIS

Rabies post-exposure prophylaxis (PEP) should be considered after direct contact between a human and a bat unless the exposed person is certain a bite, scratch or mucus membrane exposure did not occur. Rabies PEP should also be considered for persons who were in the same room as a bat and who might be unaware that a bite or direct contact had occurred (e.g., when a sleeping person wakes to find a bat in the room or an adult witnesses a bat in the room with an unattended child, mentally disabled person or intoxicated person). If there is definitely no direct contact between a person and a bat, no PEP is recommended. For example, if a bat flew by an awake and aware person and no physical contact occurred, no rabies PEP would be recommended. Rabies should be considered in any patient with progressive encephalitis. Testing for human rabies can be requested through your local health department.

SUMMARY

Reported animal rabies is at an all-time low in Illinois. In 2002, 31 of the 912 bats tested for rabies were positive. Bats were the only animals that tested positive for the rabies virus in 2002. Skunk testing remained low with only 96 skunks being tested, yet this is an increase over the number tested last year. Adequate surveillance of rabies in skunks is necessary to feel confident in reporting that terrestrial animal rabies does not occur in a particular area in the state. This information is vital when assessing the need for rabies PEP after stray dog and cat bites in the state. Local jurisdictions are encouraged to submit skunks for rabies testing to maintain surveillance in their locality.

Shigellosis in Stephenson County

By Lillian Brown, M.P.H.

On May 2, 2003, the Stephenson County Health Department contacted the Illinois Department of Public Health regarding a dramatic increase in reported cases of Shigellosis. The county, which had reported only four cases of shigellosis between 1996 and 2001, was experiencing an outbreak that had begun the previous November.

Shigellosis is an acute bacterial disease involving the large and distal small intestine. The primary symptoms are diarrhea (which may be bloody), fever, vomiting, and abdominal cramps. Large community-wide outbreaks in the United States (Shane et al [7], Sivapalasingam et al [8]) can be difficult to control because of the ease of person-to-person transmission; high secondary attack rates; poor hand hygiene, especially in young children; and multiple points of exposure (CDC 1990 [2]). Analysis of previous shigellosis outbreaks (CDC 1987 [1], 1990 [2]) identifies three key components of effective control efforts: (1) community-wide recognition of the problem and participation in the intervention; (2) diversified and culture-specific educational efforts; and (3) supervised hand washing for children. The objectives of the outbreak response were to control the outbreak by reducing transmission of Shigella in the community and to validate a community-based approach. This approach was previously successfully used during an outbreak of shigellosis in Lexington-Fayette County, Kentucky, in 1991 (Mohle-Boetani et al [3]).

The Investigation

The IDPH Rapid Response Team and the Stephenson County Health Department enhanced surveillance of diarrheal illness by increasing the awareness of shigellosis in the community and encouraging reporting of diarrheal illness. Local physicians were advised of the ongoing outbreak and encouraged to perform stool cultures in all patients with diarrheal illness. Day care centers and elementary schools were provided with information on shigellosis modeled after similar documents used in Lexington-Fayette County (Mohle-Boetani et al [3]) and asked to report all students with diarrheal illness, defined as three or more loose stools in a 24 hour period for two or more days, to the local health department. Day care centers and schools also were provided with information sheets to send home to parents that requested diarrheal illness in the children be reported to the local health department.

Five stool specimens were initially tested by the Freeport Memorial Hospital for antibiotic susceptibility in December 2002. After the Rapid Response Team involvement was initiated, all stool specimens were forwarded to the IDPH laboratory so that antibiotic susceptibility testing and pulsed field gel electrophoresis (PFGE) analysis could be performed on selected isolates. These tests were performed on samples chosen to represent different onset dates, ages and possible exposures. Additional antibiotic susceptibility testing was performed at the end of May to determine if the Shigella strain was developing resistance to the recommended antibiotics.

The IDPH enterics case report form was used to obtain information on age, race, sex and clinical illness, and if the case attended a day care center. Additionally the interviewer was instructed to determine the school, grade level, and classroom of all cases when applicable. A confirmed case was defined as a person with laboratory confirmation of Shigella from a blood, urine or stool sample. Probable cases were defined as persons with clinically compatible illness who were epidemiologically linked to a confirmed case, but were not laboratory confirmed.

An environmental investigation was performed at a local kindergarten facility with a substantial number of cases. The investigation focused on potential fomites that could promote the spread of Shigella, hand washing procedures, and the effectiveness of control measures that had been implemented during December through March (e.g., hand washing instruction by student nurses and the removal of name tags from classroom tables).

A community-wide task force comprised of health care providers, school nurses and principals, the superintendent of the school district, community leaders, and the local media met four times between May 9 and July 18. The updated epidemiology of the outbreak and current and past control measures were evaluated at each meeting. All licensed day care centers, schools, swimming pools, churches, summer camps, and bathing beaches were provided with information on shigellosis and recommended hygiene policies to prevent the transmission of Shigella.

Results

From November 2002 through July 2003, 305 cases of shigellosis were reported including 251 confirmed and 54 probable cases. The cases were distributed bimodally with an initial peak in November and December 2002 and a subsequent peak in May 2003 (Figure 1). Confirmed cases and probable cases were similar in sex, age and race and confirmed cases were significantly more likely than probable cases to attend a day care, have a household contact in day care, be a kindergarten student or staff, or have a household contact in kindergarten ($p<0.05$). Diarrhea was the most frequently reported symptom, present in 98 percent of cases. Four cases were asymptomatic; three were contacts of confirmed cases and were food handlers and one was a household contact of multiple confirmed cases and requested testing. Diarrhea with blood was reported in 61 cases (24%). Other symptoms documented in confirmed cases included vomiting (45%), abdominal cramps (71%), fever (75%), and body ache (40%). Eighteen cases were hospitalized. Shigella was isolated from the stool of two confirmed cases following appendectomies. The surgical pathology reports indicated that one case had a normal appendix and the other had findings that appeared to not definitively demonstrate appendicitis.

Overall, 27 percent of confirmed and probable cases were day care center attendees, and an additional 18 percent were their household contacts. Thirty percent of confirmed and probable cases were reported in kindergarten students and their household contacts. Therefore, 75 percent of all cases were epidemiologically associated with day care or kindergarten.

All isolates were serogroup D, Shigella sonnei. Antibiotic susceptibility testing at Freeport Memorial Hospital in December 2002 and the IDPH laboratory in April 2003 demonstrated susceptibility to ciprofloxacin and trimethoprim-sulfamethoxazole. PFGE analysis verified all strains from the current outbreak were the same and unique to the Stephenson County outbreak and did not match other strains from sporadic cases occurring in other locations in Illinois.

The environmental health investigation revealed the school lacked an effective method to monitor student hand washing during restroom breaks. At this time, a comprehensive hand washing policy was recommended. The policy included hand washing on arrival, before all food consumption after all food consumption and after using the bathroom. The removal of items in the classrooms observed to be potential fomites, including stuffed animals, crayons, and wooden blocks, was recommended.

Summary

This investigation confirmed the central role young children play in propagating transmission in the community and the importance of household transmission. The majority of cases of shigellosis during the Stephenson County outbreak were day care and kindergarten attendees or their household contacts. Thus, control efforts were targeted toward facilities with large numbers of young children and the families of those children.

Similar to previous community-wide outbreaks, the effective interruption of the outbreak involved the mobilization of the community and educational efforts to promote hand washing and hygiene (CDC 1990 [2], Mohle-Boetani et al [3]). The investigation also highlighted both the importance of and the challenge of hand hygiene in a school setting. Constant hand washing is burdensome to the teachers, who report that it is time-consuming, difficult to enforce, and takes away from instruction time. However, previous studies have demonstrated comprehensive hand washing programs at elementary schools effectively reduce absenteeism caused by infectious disease (Guinan et al [4], Master et al [6]). Correct and comprehensive hand sanitizing programs using alcohol-based hand sanitizer have also effectively reduced school absenteeism in elementary schools (Hammond et al [5]). Effective programs include administrative support, hand hygiene education and easily accessible hand washing facilities and/or alcohol-based hand sanitizer. Encouraging schools to incorporate a comprehensive hand hygiene program in their curriculum and monitoring adherence to these programs can minimize outbreaks in the future.

The mobilization of the community through the community task force, communications to schools, day care centers, churches, camps, pools and beaches, and the local media was integral to stopping transmission. The convening of the task force and its announcement in the local newspaper may have helped lend credibility and influence to the public health efforts that centered around handwashing (often a practice met with little enthusiasm). The epidemic curve peaked during the week of May 12, subsequent to the first meeting of the task force on May 9 and the commencement of enhanced surveillance activities. The timing and magnitude of the peak reflects both the burden of disease in the community and an increase in testing and reporting of shigellosis as a result of the efforts to educate health care providers and the community at large. Shigellosis reports began to decline steadily during the week of May 19, 10 days after the first task force meeting. Encouraging the community to take an active role in ending the outbreak was important to cooperation with the recommended policies and a greater awareness in the community of hand hygiene and the spread of infectious disease.

References:

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Update on Trends in Mortality Among Persons with AIDS in Illinois

By Mark S. Dworkin, M.D., M.P.H.T.M.

Since 1995, there has been a dramatic decline in the United States in the number of deaths among persons reported with AIDS. Survival of persons with HIV infection and AIDS has been significantly impacted by highly active antiretroviral therapy (HAART) that became increasingly available beginning in 1995.

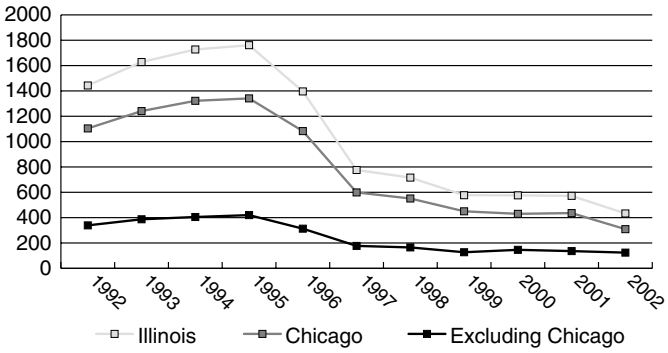
Prevention efforts in the 1980s and early 1990s produced a decline in the incidence of HIV and AIDS, which would be expected to be followed by a decline in the number of persons dying with AIDS

during the subsequent years. However, deaths among persons reported with AIDS in 1996 and 1997 were much fewer than expected based only on decreased incidence, which lends support to the belief that HAART has played a major role in delaying death from AIDS.

Illinois data obtained from the IDPH AIDS surveillance system demonstrates that declines in the number of deaths among persons with AIDS are present across all demographic groups. The data presented here are preliminary and may change as additional cases are reported. Overall, the number of deaths declined from a peak of 1,761 in 1995 to a low of 433 in 2002 (Figure 1). This decrease in mortality has continued even after the steep decline observed during the mid 1990s. Based on an analysis of Illinois AIDS surveillance data, for the years after HAART became widely available (1998 through 2002), the average annual percent change in AIDS deaths was -9.6 percent ($P<0.05$). The decline in the average annual percent change was larger for the city of Chicago (-11.2% [$P<0.05$]) compared to the rest of Illinois (-4.8% [$P=0.20$]). Therefore, during these most recent years, the average annual percent change was statistically significant for reports from the city of Chicago but not for reports from Illinois excluding Chicago. Further epidemiologic investigation is warranted to determine why this disparity is occurring.

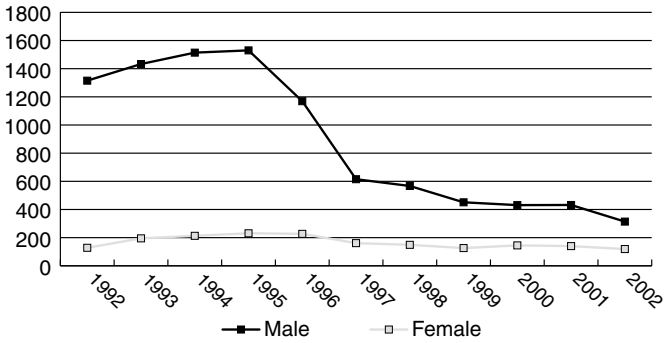
Looking at subgroups within the dataset, the number of deaths declined for males from a peak of 1,530 in 1995 to a low of 314 in 2002 and for females from a peak of 231 in 1995 to a low of 119 in 2002 (Figure 2). Although declines in deaths were observed for whites, blacks, and Hispanics, the data demonstrate that declines in death were less pronounced for blacks demonstrating a racial disparity that is important for prevention efforts. The percentage of AIDS cases that are white or black is similar to their respective percentage among deaths with AIDS in the overall data set. During 1992 through 2002, 34 percent of all reported AIDS cases were white and 37 percent of all AIDS deaths were white. During the same time period, 53 percent of all reported AIDS cases were black and 52 percent of all AIDS deaths were black. However, bivariate analysis of only the time period since HAART has been widely available (1996 through 2002) suggests that blacks are not only dying with AIDS in greater numbers than whites and out of proportion to their percentage of the Illinois population (15.1 percent), but they are also more likely to die with AIDS than their white counterparts (odds ratio = 1.23, 95% confidence intervals 1.13 – 1.33). A similar analysis for only the most recent years demonstrates a larger odds ratio (1.79 for 2001 and 1.52 for 2002) and both results are also statistically significant. Interpretation of this data is limited by the fact that this is bivariate and not multivariable analysis and because AIDS cases and deaths may continue to be reported into this surveillance system, especially for the most recent years.

Figure 1. Trends in Death Among AIDS Cases by Region



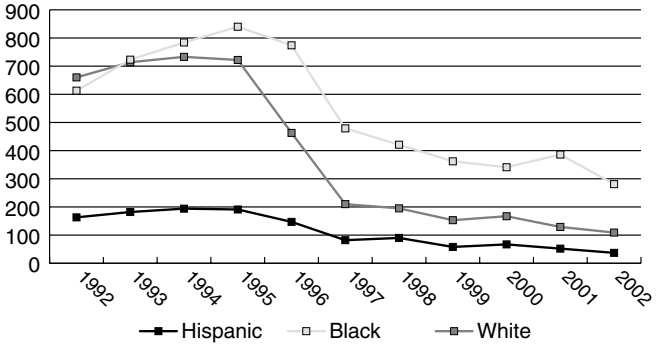
Source: IDPH HIV/AIDS Reporting System (HARS)

Figure 2. Trends in Death Among AIDS cases in Illinois by Gender



Source: IDPH HIV/AIDS Reporting System (HARS)

Figure 3. Trends in Death Among AIDS Cases in Illinois by Race/ethnicity



Source: IDPH HIV/AIDS Reporting System (HARS)

What is the SHAS Project?

By Sarah Starks, M.S., and Mark Dworkin, M.D., M.P.H.T.M.

The Supplement to HIV/AIDS Surveillance (SHAS) project is an interview study designed to obtain descriptive information on persons with the human immunodeficiency virus (HIV) infection or the acquired immunodeficiency syndrome (AIDS), who have been reported through routine surveillance to state or local health departments. Nationally, the study began in 1990, but interviews in Illinois began in 2003. SHAS is conducted by state and local health departments and is funded by the U.S. Centers for Disease Control and Prevention through competitive cooperative agreements. The information from this study supplements data routinely collected through national HIV and AIDS surveillance activities. Specific information includes sexual and drug-use behaviors, health care access, HIV testing patterns, minority health issues, utilization of and adherence to therapies for HIV and HIV-related opportunistic illnesses and disability related to HIV infection. Results from the project are used at the state and local level to inform health department policy makers, HIV community planning groups, and others involved in the development and evaluation of interventions to prevent HIV transmission and to provide services for persons with HIV disease. At the national level, these data are used to enhance HIV/AIDS surveillance information, for planning and allocation of resources.

Table 1. Supplement to HIV and AIDS Surveillance: Demographics.

Total Cases Reported 01/01/03 – 12/01/03	HIV + AIDS		AIDS		HIV	
	# of cases	%	# of cases	%	# of cases	%
	108	100	44	40.7	64	59.3
Male	70	64.8	32	72.7	38	59.4
Female	38	35.2	12	27.3	26	40.6
Race [1]						
White	6	5.4	3	6.8	3	4.7
African American	96	87.3	38	84.4	58	90.6
Hispanic	8	7.3	5	11.4	3	4.7
Other	0	0	0	0	0	0
Risk Group [2]						
MSM	38	35.2	17	38.6	21	32.8
IDU	34	31.5	13	29.6	21	32.8
MSM/IDU	9	8.3	5	11.4	4	6.3
Heterosexual Contact	20	18.5	9	20.5	11	17.2
NIR (no identified risk)	7	6.5	0	0	7	10.9

1 Two individuals reported more than one race and each race was counted.
2 Risk group according to HIV and AIDS Surveillance (HARS)
Source: Supplement to HIV/AIDS Surveillance (SHAS), IL 2003.

The basic study design of the SHAS project is a cross-sectional interview. HIV-infected persons older than 18 years of age and reported through surveillance to state and local health departments within the past two years are eligible for the SHAS interview. Trained interviewers administer a confidential, standardized questionnaire. The interview takes approximately one hour to complete. In Illinois, the SHAS project is facility-based. The Illinois Department of Public Health (IDPH) conducts all interviews at the CORE Center in Chicago, an outpatient facility that provides a comprehensive range of care to individuals affected by HIV/AIDS and other infectious diseases. The center is an affiliate of the Cook County Bureau of Health Services and located on the campus of the John H. Stroger Hospital of Cook County (formerly Cook County Hospital). Currently, only CORE Center clients are recruited and are eligible to participate in the SHAS study in Illinois.

Since January 2003, IDPH has conducted more than 100 interviews. The basic demographic data and a summary of responses to selected questions are summarized in the accompanying tables to provide a sense of the scope of the study. Most of the study participants (and the CORE Center clientele) are African American (89%) and 35 percent are women. Nearly 60 percent of those interviewed had not yet progressed to AIDS. To give an example of the kind of descriptive epidemiology that the SHAS project can provide, responses related to injection drug use, incarceration and CD4+ lymphocyte cell count are presented in Table 2 among African American males (one of the largest population subsets in the database and among Illinois incident cases of HIV). These data demonstrate a high prevalence of a history of incarceration and both injection and non-injection drug use in the 12 months before the interview in this population. The data also reveal that the reliability of interview data on sensitive subjects, like injection drug use history, may be poor. Among African American men reported in the HIV/AIDS surveillance system as having had a history of injection drug use, only 67 percent indicated such a history during the SHAS interview. Among these men with a history of both sex with other men and injection drug use, only 11 percent reported a history of injection drug use during the SHAS study.

These data illustrate the potential limitations of interview studies conducted at a single encounter where the subject has no relationship with the inter-

viewer, and they demonstrate that important barriers to accurate data collection may exist in obtaining this sensitive information. Unlike other public health surveillance studies that collect "hard" data such as blood culture results or occupation, interview data of behaviors should be cautiously interpreted and verified with other databases when possible. The size of this study is small so these findings cannot be generalized. Also, sufficient numbers of non-African American males have not yet been enrolled, so comparisons with other racial ethnic groups cannot be made. But since the goal of this behavioral surveillance project is to advise prevention programs and policy to assist vulnerable populations, it is a useful exercise to compare its initial findings with the HIV/AIDS Reporting System (HARS) data that often derive from medical record abstraction.

Table 2. Supplement to HIV and AIDS Surveillance: Responses from African American Males to Selected Questions (n=62)

	Heterosexual* (n=2)	Other/no indicated risk* (n=3)	MSM* (n=30)	IDU* (n=18)	MSM/IDU* (n=9)
Have you ever injected drugs?	0 (0%)	1 (33.3%)	1 (3.33%)	12 (66.7%)	1 (11.1%)
Have you injected drugs in the past 12 months?	0 (0%)	1 (33.3%)	0 (0%)	3 (16.7%)	0 (0%)
Have you ever used non-injection drugs?	2 (100%)	3 (100%)	24 (80.0%)	18 (100%)	8 (88.9%)
Have you used non-injection drugs in the past 12 months?	2 (100%)	0 (0%)	16 (53.3%)	11 (61.1%)	6 (66.7%)
Have you ever been arrested and put in jail for more than 24 hours?	1 (50.0%)	3 (100%)	14 (46.7%)	14 (77.8%)	6 (66.7%)
What is your current CD4 count? ((L)					
Less than 200	0 (0%)	0 (0%)	1 (50.0%)	1 (50.0%)	0 (0%)
200 to 499	1 (33.3%)	2 (66.7%)	0 (0%)	0 (0%)	0 (0%)
500 or more	8 (26.7%)	13 (43.3%)	5 (16.7%)	4 (13.3%)	0 (0%)
Don't know	7 (38.9%)	5 (27.8%)	4 (22.2%)	1 (5.60%)	1 (5.60%)
No response	1 (11.1%)	7 (77.8%)	0 (0%)	0 (0%)	1 (11.1%)

* Risk group according to HIV and AIDS Surveillance (HARS); MSM = male-male sex, IDU = injection drug use

Source: Supplement to HIV/AIDS Surveillance (SHAS), IL 2003.

Surveillance is Information for Action: Malaria

By Gregory Huhn, M.D., and M.P.H.T.M.

Malaria is a febrile infection caused by any of four species of the protozoan parasite Plasmodium (i.e., P. falciparum, P. vivax, P. ovale, and P. malariae). The Plasmodium parasite is transmitted by the bite of an infected anopheline mosquito. The incubation period may vary between seven days to several months.

Until the 1940s, malaria was endemic in the United States. Since then, malaria surveillance has emphasized human malaria infections, patient characteristics and risk factors, the detection of locally acquired cases, and monitoring patterns of antimalarial chemoprophylaxis failures among U.S. travelers. Information collected through malaria surveillance is used to track chemoprophylaxis failures, which may suggest drug resistance requiring further investigation, especially for countries lacking strong malaria surveillance programs on their own.

Malaria is a notifiable disease in Illinois. Illinois uses the Centers for Disease Control and Prevention (CDC) case definition for a laboratory confirmed case; a person's first infection demonstrated by malaria parasites in blood films and occurs while in the United States. Laboratories in Illinois are required to forward parasitemic slides to the state laboratory for speciation. It is important to identify the malaria species microscopically because treatment may differ based upon the infectious parasite observed. P. falciparum may cause more severe disease requiring more intensive treatment, including empiric treatment if clinically indicated. Forwarding specimens to the laboratory also allows for accurate tracking of the epidemiology of malaria by species type in returning travelers.

From 1993 through 2002, 749 cases of malaria were reported in Illinois (median annual cases = 70). All of these infections were acquired outside of the United States. P. vivax and P. falciparum accounted for 38 percent and 34 percent of these cases through 2001. Based upon Illinois surveillance data, the area with the highest number of malaria cases for travelers is sub-Saharan Africa, followed by India and Central America. Chemophrophylaxis for travelers is one of the hallmarks of malaria prevention in the United States. CDC currently recommends chloroquine as the antimalarial drug of choice for those persons visiting malarious areas that do not have reported strains of chloroquine-resistant P. falciparum, for example Morocco, Costa Rica, and Argentina. U.S. travelers visiting areas where chloroquine-resistance has been reported are advised to use the antimalarial drugs doxycycline, mefloquine, primaquine, or Malarone™ for prophylaxis (Figure 1).

In July 2000, the FDA approved Malarone™, a fixed combination of atovaquone and proguanil, for the treatment and prevention of P. falciparum malaria. Based on data that showed the efficacy of Malarone for the prevention of malaria in nonimmune persons, CDC revised its malaria prevention guidelines in November 2000 to add Malarone™ as one of three antimalarial drug options for persons traveling to areas where chloroquine-resistant P. falciparum has been reported.

In addition to chemophrophylaxis, travelers to malarious areas are encouraged to use personal protective measures such as mosquito repellents and bednets and stay in air-conditioned or well-screened rooms when possible to reduce the risk of infection. More detailed information on malaria infection and prevention can be found at the CDC website: http://www.cdc.gov/ncidod/dpd/parasites/malaria.

Figure 1a and 1b: Malaria-endemic Areas by Choroquine Susceptibility Status

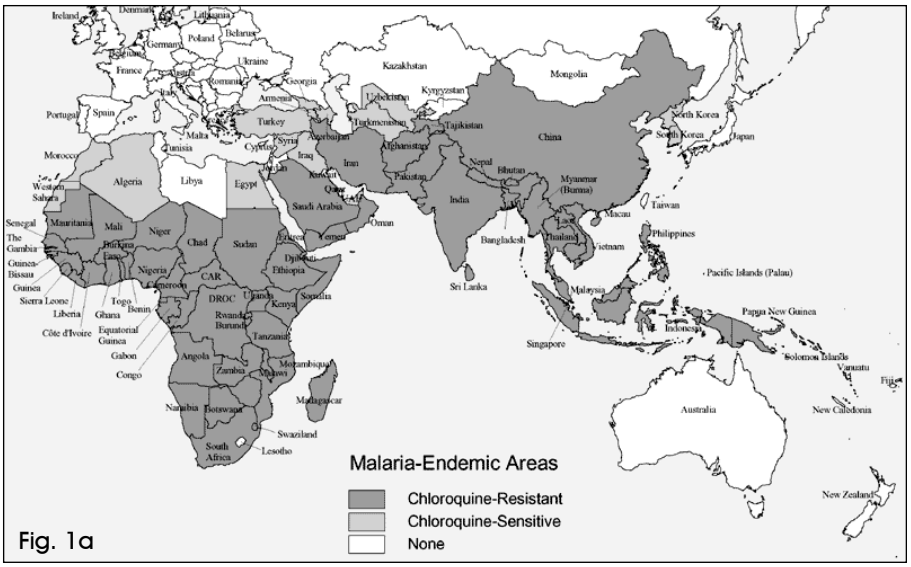


Fig. 1a

Fig. 1b

Note: Rural areas in Hainan and Yunnan provinces in China are chloroquine-resistant. All other areas of China are chloroquine-sensitive

County Corner

Local Health Department Reports of Outbreaks, Studies or Prevention Efforts

An Outbreak of Scombroid Fish Poisoning in Suburban Cook County

By Stephanie Smith, M.D., M.P.H., and Maria Chudoba, M.D, M.P.H.

Scombroid poisoning results from the consumption of contaminated fish that has undergone bacterial decomposition during a period of inadequate refrigeration. Inadequate refrigeration causing bacterial growth leads to the conversion of free histidine to toxic levels of histamine. Therefore, the clinical manifestations of this illness are effects of histamine such as tingling and burning sensations around the mouth, facial flushing and sweating, nausea and vomiting, headache, palpitations, dizziness and rash. The most common fish associated with scombroid poisoning are fish from the family Scombridae, which includes tuna and mackerel. In addition, other families of fish, especially dark-fleshed fish (e.g., mahi-mahi, abalone, and blue fish) from tropical and semi-tropical waters, have been shown to cause histamine poisoning. This report describes an outbreak of scombroid fish poisoning in suburban Cook County.

On October 1, 2003, the Cook County Department of Public Health (CCDPH) received a report of illness in four persons. The ill were police officers who had eaten dinner together at a local restaurant the evening before the report to CCDPH. The police officers had no other foods in common in the three days before illness. On the evening of September 30, 2003, approximately 90 minutes before becoming ill, the four officers consumed fish dinners, including three marlin plates and one cod plate. The only other common foods were salad and french fries, which were eaten by two of the four officers. The three persons who ate marlin presented to the same hospital emergency department with complaints of nausea, vomiting, diarrhea, abdominal cramps, headache, facial flushing, rapid heartbeat, sweating, and a red rash. Symptoms were relieved by treatment with an antihistamine and all were diagnosed with histamine poisoning due to eating contaminated fish. The person who ate cod experienced similar but milder symptoms and did not seek medical care. The median duration of illness was four hours.

The ill officers filed a police report while in the emergency department, which resulted in closure of the restaurant pending inspection. All food products were ordered saved. Inspection of the restaurant the following morning led to submission of the remaining marlin to the Illinois Department of Public Health Laboratory (IDPH) for histamine testing. A left-over sample of marlin obtained from the home of one of the ill people was also submitted for testing. Test results for all samples were positive for abnormal levels of histamine. The levels detected were greater than 50 mg/100 gms (ppm) as established by the Food and Drug Administration as a hazardous level in tuna.

An investigation of food handling practices at the restaurant failed to demonstrate improper storage of the fish products. During the unannounced restaurant inspection, a review of purchase receipts by CCDPH staff revealed that the type of marlin served to the police officers was Hawaiian Blue Fish. Information about the distributor of the fish product was also obtained. The outbreak was reported to the IDPH Division of Food, Drugs and Dairies for possible trace back investigation of the marlin fish to determine the likely point at which the cold chain was broken.

The officer who ate cod also experienced an illness consistent with histamine poisoning, although the cod was not submitted for testing. This individual is considered to be a presumptive case of scombroid poisoning. The cod may have been cross-contaminated while preparing it on the same surface where the marlin was prepared.

As is demonstrated in this outbreak, cooking does not alter the presence of active scombroid toxin once formed. The key to prevention is continuous icing, refrigeration or freezing of potentially scombrotoxic fish from the catch to cooking. Prompt reporting of this outbreak allowed for the local health department staff to prevent further cases of scombroid poisoning by removing the remaining contaminated marlin from the restaurant.

Upcoming Events

2004 **Illinois Immunization and Communicable Disease Conference**
Crowne Plaza Hotel and Conference Center
Springfield, Illinois
June 15 and 16, 2004
More information:
Illinois Public Health Association
217-522-5687 or ipha@ipha.com

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Factoid Tetanus: The spores of Clostridium tetani are very resistant to heat. They can survive autoclaving at 121 degrees Celsius for 10 15 minutes. The spores are also relatively resistant to phenol and other chemical agents. Source: CDC. Epidemiology and Prevention of Vaccine-Preventable Diseases, 7th edition, 2002.