LOUISIANA MORBIDITY REPORT

EPIDEMIOLOGY

NOVEMBER/DECEMBER 1989

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LEGIONELLOSIS IN WASHINGTON PARISH

New Source Identified

On October 31, 1989 the Louisiana Department of Health and Hospitals received reports from Drs. W. LaMaire and H. Jackson of an outbreak of pneumonia among residents of Bogalusa and the surrounding parish. An investigation confirmed 31 cases of legionellosis among persons who were hospitalized with pneumonia between October 10, and November 13, 1989. The patients ranged in age from 36 to 88 years old; 26 (75%) were female. Two persons who died of pneumonia during the outbreak period had autopsies performed. Both had Legionella pneumophila serogroup 1, (LP1) subtype 1,2,5,6 identified in lung tissue by direct fluorescent antibody tests. A case control study of 28 cases and 56 controls, frequency matched by age and chronic disease status, showed cases were no more likely than controls to live or travel within 200 meters of any identified cooling towers within the town in the 10 days before their illness. However, cases were more likely to shop at grocery store A in the 10 days before their illness (93% vs 52% OR=7.4, p=002). Among cases and controls who shopped at grocery store A, cases were more likely than controls to shop for more than 30 minutes (22/24 vs 16/28, OR=11.6, p=.0003) and to buy certain produce items (23/25 vs 17/28 OR=7.4, p=.02).

Forty-three aerosol sources were tested for the presence of Legionella (200 water samples). LP1 was isolated from 4 (9.3%) sources.

Water from a reservoir of a mist machine in the produce section of grocery store A was found to have LP1 subtype 1,2,5,6. The machines continuously generated an aerosol over produce items implicated in the case-control study. The mist was generated by ultrasonic nebulizers located in a reservoir. The machine has been removed from grocery store A. Water samples have been taken from similar machines in other grocery stores to determine the extent of Legionella colonization.

Editorial note:

Investigation and control of community-wide outbreaks of Legionellosis are often challenging because of the presence of multiple aerosol sources to which individuals may be exposed in the 2-10 day incubation period before their illness, and because LP1 may often be present in such sources without causing disease. In the past, outbreaks have been associated with exposure to cooling towers, whirlpool baths, respiratory therapy equipment and showers. Ultrasonic nebulizers have not previously been associated with a community-wide outbreak. Further studies are needed to determine what factors promote colonization of these machines with Legionella and the environmental conditions necessary for possible transmission to humans.

It is important to note that most grocery store mist machines are of a fundamentally different deisgn than the machine implicated in this outbreak. The more common machines do not have reservoirs, operate intermittently and should not carry the same risk as the ultrasonic machines.

PERTUSSIS - COVENANT HOUSE
New Orleans

On September 8, 1989, the Epidemiology Section was notified of a positive pertussis fluorescent antibody (FA) test result for a 3-month-old child living with his mother at Covenant House. Three other symptomatic children living at Covenant House were then evaluated, and all three had positive FA tests.

Covenant House is a residential facility for homeless and runaway teenagers. Teenage girls who have children of their own live with their children at the facility. The majority of the teenagers and children at Covenant House stay for less than two weeks. At the time of the outbreak, there were 82 teenagers (50 males and 32 females) and 19 children living there. Eleven (58%) children were behind schedule for their DPT series; five (26%) children had had no immunizations.

The Epidemiology Section's investigation included gathering information regarding symptoms on all residents and performing nasopharyngeal swabs for FA testing on all children and 24 (75%) of the 32 female teenagers. In all, seven (37%) of the 19 children had positive FA, including the four identified initially. The most common symptoms in the FA-positive children were cough (100%), runny nose (71%), fever (51%), and vomiting (43%). Only three FA-positive children had cough lasting more than three days, and only two had cough that was described as frequent. No child was described as having a whoop, and no child was hospitalized. None of the 24 teenagers tested had positive FA tests. However, during the investigation, a 25-year-old employee of Covenant House with a persistant cough was found to be FA-positive.

Control measures included treating all residents and employees with erythromycin, and bringing all children up to date on their immunizations.

Editorial note:
This outbreak of pertussis took place in a setting where many incompletely-immunized children come in contact with each other. Because of the sporadic preventive medical care that these children receive, and the high turnover at Covenant House, this setting will always be somewhat at risk for outbreaks of vaccine-preventable disease. Efforts to immunize the children upon arrival to the institution would be useful in minimizing the likelihood of such outbreaks.

The outbreak highlights the fact that pertussis may cause relatively mild symptoms, even in young children. Physicians should consider the diagnosis of pertussis in any inadequately immunized child with a persistent cough, regardless of whether the cough is frequent or a whoop is present. The finding of an ill adult employee serves as a reminder that pertussis immunity wanes in late childhood, and that adults with exposure to inadequately immunized children are at risk for developing pertussis in the form of a persistent cough.

INTENTIONAL INJURY
Homicide in New Orleans

A review of coroner's records for every victim killed in Orleans Parish during the years 1979, 1982, 1985 and 1986, demonstrated the following facts:
o 74.5% of victims were killed by firearms (72.3% by handguns and 2.2% by other guns).
o The large majority of perpetrators were male, and among homicides in which the perpetrator could be identified, the majority of homicides were intra-racial, that is, black on black or white on white.
o In the 70% of cases where a precipitating factor could be established, about half of the homicides took place in the context of an argument.
o Sexual assault accompanied the deaths of ten black females (8.8% of BF homicides) and one white female (4% of WF homicides).
o Drug-related homicides remained at a consistently low level (9.2% overall) for all study years, although there was a significant increase by 1986 in the percentage of victims in whom illicit drug use was detected. Arguments between family members and acquaintances appeared to precipitate more homicides than drug-related activities.
o Detectable alcohol levels were present in 58.7% of white victims and 42.3% of black victims.
o Homicide rates for blacks exceeded that for whites for every socio-economic stratum. For both races, the homicide rate increased steadily as the poverty level of the victim's neighborhood increased.
o The mean annual homicide rate for Orleans during the years studied was 36.2/100,000 population. US rates hovered just below 10/100,000.

Dr. Philip Lowry served as the principal investigator of the study above while he was Louisiana Epidemiology Intelligence Service (EIS) Officer from the CDC. The full study has been published in the American Journal of Epidemiology, V. 128, No. 5, 1988.

The field of intentional injury, which includes homicides, suicides, and assaults, is clearly amenable to study by standard epidemiologic techniques. The importance of investigating this topic is dramatized by comparison of prime risk 25-34 age male US rates with age-sex equivalent homicide rates in Great Britain, Japan, West Germany and France. US rates are 16 to 29 times as great as the rates in these economically comparable countries (American Journal of Public Health, V. 79, No. 10, p. 1397). Looking specifically at handgun-related homicides, the US rate was 500 times the British rate, and two-and-a-half times the rate of Northern Ireland, a country in a state of civil war (ibid.).

In the United States, homicides are the leading cause of death for black males aged 15-34. Firearm-related injuries, fatal and non-fatal, had a lifetime cost of $14,410,000,000 in 1985 in the US (MMWR 1989, p. 744).

SHIGELLA SONNEI
Vermilion Parish

On August 31, 1989, the Epidemiology Section was notified by a physician of four children from Vermilion Parish hospitalized with diarrhea caused by Shigella sonnei. The

children became ill on August 29th and were related to each other, but were from two separate households. A common exposure for these four infected children was a drainage ditch behind their homes. The water in this ditch tested positive for Shigella sonnei. Investigation and follow-up by the local health officials found that improperly treated sewerage flowed into the ditch and that the ditch was a common play site for these children. Secondary illness resulting in hospitalization occurred in two other family members.

Shigellosis is an acute bacterial disease characterized by diarrhea accompanied by fever, nausea and sometimes toxemia, vomiting, cramps and tenesmus. The severity of illness and case fatality rate are functions of the host (age and pre-existing state of nutrition), the size of the infecting dose and the serotype of the organism. Two thirds of the cases and most of the deaths are in children under 10 years of age. Secondary attack rates are high, ranging from 10%-40%. It is a potential problem where personal and environmental sanitation are deficient.

The most important measure to prevent shigellosis is the proper disposal of sewage. The Louisiana State Sanitary Code requires that everyone treat their sewage with an approved system, however, enforcement of the Code is contingent upon passage of a parish ordinance requiring health department approval for sewage systems. Unfortunately, Vermilion Parish is one of the 23 remaining parishes without such an ordinance. Other measures to prevent secondary spread to household members include frequent practicing of good handwashing after defecation and play and prior to handling and/or eating food.

ELISA VALUE REPORTING VERSUS TITER REPORTING

Historically serological testing methods measure the abilities of antibodies to participate in specific antigen-antibody reactions. Visualization of the reactions has been by fluorescence, red cell lysis and inhibition of red cell agglutination.

In order to quantitate the relative concentrations of antibody present in the serum, various serum dilutions are observed for their ability to produce a visual effect indicating an antigen-antibody reaction. Historically, two-fold serial dilutions have been utilized. The test result (titer) defines a range of possible antibody levels. For example, a specimen titer of 1:32 indicates that the antigen-antibody reaction could be visualized at a serum dilution of 1:32 but could not be confirmed in subsequent dilutions of 1:64, 1:128 or higher. Specimens whose actual antibody concentrations fall in the range between 1:32 and 1:64 will be grouped together into the titer classification 1:32. The patient is allocated to one of a limited range of discrete quantitative categories.

Due to dilution errors that are magnified by serial dilution schemes, the variation of the testing system and the subjective visual readings used to determine the endpoint of the reaction, total test variation is of the magnitude equal to at least +- a two-fold dilution. Therefore, due to the high variability of titered systems, a serum specimen demonstrating a titer of 1:32 could actually have a titer falling anywhere within the range 1:16-1:64.

Titering provided the means to semi-quantitatively measure relative antibody concentration at a time when more advanced methodologies were unavailable. Endpoint titering is used as a means to provide quantitative data from a qualitative result. As a result of its widespread application, health care providers are familiar with the concept and have become comfortable with the associated system of reporting.

With the development of ELISA, utilizing an enzyme-substrate reaction to visualize the antigen-antibody reaction, the need for serial dilution schemes disappears. Quantitative results are obtained from a single serum dilution. Because results are read spectrophotometrically, it is possible not only to determine if an antigen-antibody reaction has taken place, but also to determine its extent. ELISA is able to provide a continuum of direct results throughout the full spectrum of potential antibody levels.

When comparing the semi-quantitative information which the historical methods of serological testing are able to provide with the quantitative information ELISA systems are able to provide, it becomes evident that the translation of ELISA values to titers compromises the quantitative ability of the ELISA system. There is little advantage in converting an exact antibody concentration to a titer that implies to the health care provider "somewhere between 1:16 and 1:32." Instead ELISA directly correlates to increasing antibody titers without the gaps in the information that are unavoidable in a titered system.

Though ELISA is able to provide more complete information on relative antibody concentration, when compared to titer methodologies, there are other fundamental differences between systems that prevent their successful translation. These differences include the test variation associated with each methodology, antibody populations detected and reaction kinetics.

ELISA testing provides a more exact measure of relative antibody concentration.

A number of different, yet specific antibodies develop upon antigenic stimulation. Various serological methods tend to detect different populations of these specific antibodies. Not all serologic tests are equally sensitive to the IgM and IgG antibody. The group of antibodies detected by complement fixation is not necessarily the same antibodies that cause the inhibition of agglutination in the HAI test. This fact in part accounts for the differences between serological methods observed in an antibody response curve. In addition, the methodologies that are used to measure antibody response are varied. Complement Fixation, Hemagglutination Inhibition, Indirect Fluorescent Assays and ELISA all employ different kinetic systems in order to produce a result. For these reasons, health care providers do not attempt to convert CF test titers to HAI or IFA. It is realized that these tests measure a slightly different antibody population. As with these, fundamental differences between all serological methods including ELISA prevent the successful translation of values.

Statistically a four-fold change in HAI titer produces an error in detecting an actual range in antibody concentration with a probability of 0.039 or approximately 1 in 250 paired specimens. The parameters used to calculate the critical ratio for ELISA have been fixed so that the probability of an error in detecting an actual change in antibody concentration is 0.001. Clearly the critical ratio used with ELISA indicate active infection has been associated with a higher level of confidence in predicting a significant change in antibody concentration than the four-fold change in titer that must be used with HAI.*

CAUTION

Possible Interference of Antibody Response to HDCV (Rabies) by the Use of Chloroquine

Chloroquine phosphate (administered for malaria chemoprophylaxis) and other unknown factors encountered by persons traveling to developing countries may interfere with the antibody response to HDCV. The intramuscular (IM) dose/route of pre-exposure prophylaxis, however, provides a sufficient margin of safety in this setting. HDCV should not be administered by the interdermal (ID) dose/route when chloroquine or other drugs which may interfere with the immune response are being used.

If sufficient time is available prior to departure, it is recommended that the traveler receive the rabies vaccine series (HDCV) before the initiation of chloroquine prophylaxis. This should be an infrequent problem for international travelers.**

Dr. Joel Nitzkin at helm in OPH

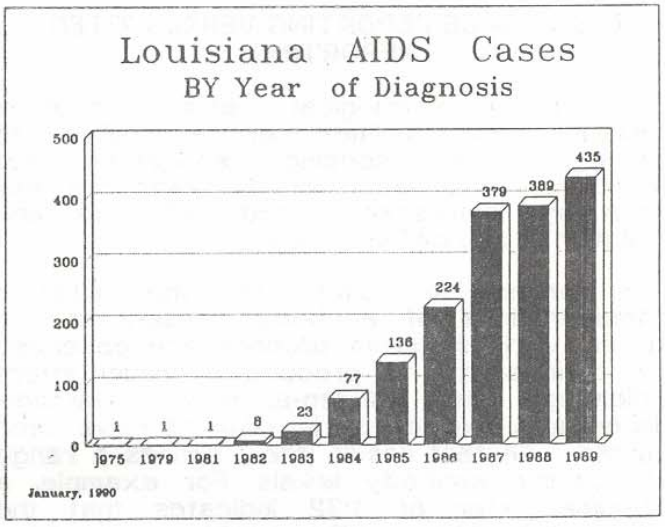
Dr. Joel Nitzkin took charge of the Office of Public Health on October 16, 1989. Dr. Nitzkin comes to us from the Monroe County Health Department (Rochester, NY), where he was Health Director for 13 years, and where his outspoken role in public health prompted a local newspaper to name him "person of the decade".

Dr. Nitzkin is originally from the Detroit, Michigan area. He holds graduate degrees in medicine (Wayne State), public health (University of California at Berkeley), and public administration (Nova University, Florida), and he is board certified in preventive medicine. His experience in public health is varied and extensive. Over the years he has served as an Epidemic Intelligence Service Officer for the Centers for Disease Control, as president of the National Association of County Health Officials, and as a member of the Advisory Council to the Secretary of Health and Human Services.

In the first months of his work at the Office of Public Health, Dr. Nitzkin has emphasized his belief in the importance of community involvement in the work of the health department. He has said that he hopes OPH can work more closely with community groups to set priorities for preventive health at the local level. We at OPH welcome him and look forward to a productive time for our agency.

Notice

The Louisiana Morbidity Report is undergoing changes in an effort to improve the quality and readability of the report. Please notice the changes in the format of the tables.



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**Montana Morbidity Report, Vol. 13:12, November, 1989.

BULLETINS

NEW SYSTEM FOR REPORTING PAP SMEARS ANNOUNCED*

A new system for reporting the results of Papanicolaou or "Pap" smears has been developed at a National Cancer Institute workshop. Named "The Bethesda System" for the location of the workshop, this new means of reporting information about Pap smears uses clear, unambiguous diagnostic terms to describe infections and precancerous and cancerous cell changes. The new system will make diagnosis more consistent and will improve quality control measures at laboratories where Pap smears are read.

The Bethesda System also reports on the adequacy of the cervical smear to identify samples that are unsuitable for interpretation and will thereby reduce reporting of false-negative results. Another recommendation from the workshop is that cytopathology reports on Pap smears should be considered as medical consultations instead of just as laboratory tests.

The International Academy of Cytology, American Pathologists, Planned Parenthood Federation, and other professional organizations have indicated support for the Bethesda System.

For more information, contact Diane Solomon, MD, Building 10, Room 2A19, National Cancer Institute, 9000 Rockville Pike, Bethesda, MD 20892; (301) 496-6653 or Robert Hutter, MD, Department of Pathology, Saint Barnabas Medical Center, 94 Old Short Hills Road, Livingston, NJ 07039; (201) 533-5760.

* Chronic Disease Notes & Reports, Vol. 2, No. 3, December 1989.

INFLUENZA-A

In mid-December Influenza A virus, the more virulent type of flu virus was isolated from four infants from New Orleans and surrounding parishes. The first isolate occurred in an eleven-month-old black male with an onset date of December 10, 1989. The remaining isolates were identified in children less than eleven months of age. Influenza occurs seasonally and often in epidemics between late December and March.

The tracking of influenza activity throughout the State is monitored by more than 18 physicians, 10 hospitals and 12 schools which are participating voluntarily in the influenza surveillance program.

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LOUISIANA FACTS

Did you know that Louisiana was the first state to establish a board of health? The establishment of the Board was the result of a popular clamor for quarantine protection against the importation of yellow fever in 1855.

DO YOU HAVE ANY INTERESTING FACTS ABOUT LOUISIANA THAT YOU WOULD LIKE TO SEE PUBLISHED IN OUR MORBIDITY REPORT? SEND FACTS AND SOURCE TO:: LOUISIANA FACTS, DHH-OPH-EPIDEMIOLOGY SECTION, P.O. BOX 60630, NEW ORLEANS, LA 70160

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Table 1. Selected diseases by parish, 11/01/89 - 12/31/89

PARISH	HEP A	HEP B	SALMO	SHIGE	VIBRI	Total
ACADIA	0	0	0	1	0	1
ALLEN	0	1	0	0	0	1
ASCENSION	0	0	1	0	0	1
AVOYELLES	0	1	0	0	0	1
BOSSIER	2	1	3	4	0	10
CADDO	6	8	20	15	0	49
CALCASIEU	0	1	3	0	0	4
CONCORDIA	0	0	2	0	0	2
DE SOTO	0	1	1	1	0	3
E. BATON ROU.	6	8	7	15	0	36
EVANGELINE	0	0	1	0	0	1
IBERIA	0	0	3	0	0	3
JEFF. DAVIS	1	0	0	0	0	1
JEFFERSON	13	6	9	10	2	40
LAFAYETTE	0	3	12	1	0	16
LAFOURCHE	0	0	2	0	0	2
LINCOLN	0	1	3	0	0	4
LIVINGSTON	0	0	2	0	0	2
MADISON	1	0	0	0	0	1
MOREHOUSE	0	1	1	0	0	2
ORLEANS	1	10	22	15	0	48
PLAQUEMINES	0	0	0	1	0	1
RAPIDES	0	0	5	0	0	5
RED RIVER	0	1	0	0	0	1
ST. BERNARD	1	1	0	0	0	2
ST. CHARLES	3	0	1	0	0	4
ST. JAMES	1	0	0	3	0	4
ST. JOHN BAP.	2	1	2	0	0	5
ST. LANDRY	1	3	0	1	0	5
ST. MARTIN	0	1	0	0	0	1
ST. MARY	0	1	0	0	0	1
ST. TAMMANY	0	2	4	0	0	6
TANGIPAHOA	1	0	1	0	0	2
TERREBONNE	1	1	4	0	0	6
UNION	0	0	1	0	0	1
VERMILION	0	0	3	0	1	4
W. BATON ROU.	1	0	0	0	0	1
WEBSTER	0	0	0	1	0	1
WINN	0	1	0	0	0	1
Total	41	54	113	68	3	279

STATEWIDE COMMUNICIABLE DISEASE SURVEILLANCE*

Table 2. Case reports of selected communicable diseases

Disease	Nov-Dec 1989	Nov-Dec 1988	Total to Date 1989	1988	% Change
Vaccine-preventable Diseases					
Measles	68	0	119	0	Und
Mumps	101	76	753	365	+106
Rubella	0	0	5	0	Und
Pertussis	6	3	33	21	+ 57
Sexually-transmitted Diseases					
Gonorrhea	2518	2810	15376	15559	- 1
Syphilis	390	177	1633	912	+ 79
Enteric Diseases					
Campylobacter	18	23	106	110	- 4
Hepatitis A	31	42	271	181	+ 50
Salmonella	80	250	645	758	- 15
Shigella	63	227	451	779	- 42
Vibrio cholera	0	0	0	1	-
Vibrio, other	3	4	34	29	+ 17
Other communicable Diseases					
Hepatitis B	48	91	380	427	- 11
Meningitis					
H. Influenza	19	35	100	126	- 21
N. Mening.	9	10	45	61	- 26
Tuberculosis	41	81	317	357	- 11

Table 3. Case reports of diseases of low frequency, 1989

	Total to Date
Blastomycosis	6
Legionellosis	11
Leprosy	3
Lyme	3
Malaria	3
Rocky Mountain Spotted Fever	1
Tetanus	1
Typhoid	1

Table 4. Cases of animal rabies, Nov-Dec 1989

Parish	Species	# Cases
Lincoln	Cat	1
Lincoln	Skunk	1

* Annual totals for 1989 are provisional and may change with subsequent reports.

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