ACUTE COMMUNICABLE DISEASE CONTROL

ANNUAL MORBIDITY REPORT
AND
SPECIAL STUDIES REPORT

2002

Los Angeles County
Department of Health Services

Public Health
James G. Haughton, MD, MPH
Medical Director

Acute Communicable Disease Control
Annual Morbidity Report
2002

● EXECUTIVE SUMMARY ●

In Los Angeles County (LAC), more than 80 diseases and conditions are reportable by law. This mandatory reporting requirement also includes unusual disease occurrences and outbreaks. Acute Communicable Disease Control (ACDC) is the lead program for the surveillance and investigation of most communicable diseases—responsibilities exclude tuberculosis, sexually transmitted diseases, and adult cases of HIV or AIDS. Surveillance is primarily passive with reports submitted by facsimile, mail, or telephone. The urgency of reporting varies according to disease and ranges from reporting required within 7 days of identification to immediate reporting by telephone to the LAC Department of Health Services (DHS).

In addition to disease surveillance and investigation, ACDC sets policy and makes procedural recommendations for DHS activities that are related to infectious and communicable diseases. Our program interprets and enforces state and federal laws and regulations, and interfaces with other jurisdictions, programs and agencies responsible for public health. ACDC frequently serves as a consultant to the medical community on issues of communicable and infectious diseases and provides professional education to medical professionals.

ACDC has several units and special projects each with unique goals and objectives for the surveillance and control of communicable disease:

- **Food and Water Safety Unit**: The aim of this unit is to decrease morbidity related to food and waterborne pathogens through surveillance to detect outbreaks and monitor trends. Diseases of special interest include: *Listeria*, norovirus and *Salmonella*.
- **Vectorborne Diseases and Special Projects Unit**: This unit conducts surveillance and provides disease consultation for a variety of vectorborne and zoonotic diseases (e.g., West Nile virus and other causes of encephalitis). Special varicella (chickenpox) surveillance studies are also conducted by this unit.
- **Hospital Outbreaks & Bloodborne Pathogens and Antimicrobial Resistance Unit**: This unit assists hospitals with outbreak investigations, consults on infection control issues, and addresses antimicrobial resistance issues.

Los Angeles County:
A description of our community

In order to fully appreciate the magnitude of responsibilities required of ACDC and the impact of communicable disease in LAC, it is important to understand the character and dynamics of the county we serve. LAC is one of the nation's largest counties covering over 4,000 square miles. While LAC enjoys fairly temperate year-round weather conditions, it encompasses a wide variety of geographic areas including mountain ranges, arid desert areas and over 80 miles of coastal regions. One of the greatest challenges of disease surveillance, response and control in our county is responding to its enormous size. In 2002, LAC had the largest population (nearly 10 million) of any county in the US and is exceeded by only eight states. Even within the large state of California, LAC is densely populated—over one-fourth of the state's population resides in our county. Accordingly, the medical community in LAC is also extensive—LAC is home to approximately 120 hospitals, 80 emergency departments, more than 30,000 licensed physicians, and over 100 infection control practitioners.

Another considerable challenge to communicable disease surveillance and control in LAC is the extensive diversity of our population coupled with our high level of immigration. Our county is home to an especially varied population; nearly half of our residents are Latino (46.3%), around one-third White (30.9%), and around one-in-ten Asian (13.1%) or Black (9.4%). Over 90 languages were recorded as a primary language spoken other than English by school children in a Los Angeles Unified School District survey. There is also substantial economic diversity within our county. While LAC is world renowned for its areas of wealth and privilege such as Beverly Hills and Bel Air, there is also considerable poverty—the 2000 US census recorded over 1.5 million residents (nearly 16% of LAC's population) living in poverty. LAC is also a major port of entry for immigrants to the US. According to the 1999 Los Angeles County Health Survey, almost one-third of respondents stated they were born outside of the US. In 2002, the Immigration Naturalization Report found that California was home to the largest number of legal immigrants to the US, and over one-third of these immigrants to California reported settling in LAC. In addition to immigration, the population in our county is highly mobile. In terms of air travel alone in 2003, almost 55 million travelers came through the Los Angeles International airport (40,346,127 domestic and 14,623,903 international)—making it the 3rd busiest airport in the nation.

- **Immunization Program**: The mission of this program is to improve the immunization coverage levels of LAC and prevent the occurrence or vaccine-preventable diseases. Program activities include perinatal hepatitis B case management and the newly developed smallpox vaccine program.
- **Pediatric HIV Projects**: These monitor pediatric human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) disease in LAC through active surveillance and research activities.
- **Bioterrorism Preparedness and Response Unit**: The aim of this unit is to enhance surveillance and epidemiology capacity to detect and respond to a bioterrorist event. Efforts include syndromic surveillance, strengthening laboratory capacity and establishing and maintaining internet-based health alert systems and training networks.

Additional information about ACDC and the aforementioned units are available at: www.lapublichealth.org/acd/index.htm.

Emerging Infectious Diseases—Los Angeles County, 2002

Every year several existing diseases acquire added prominence and new diseases emerge—2002 was no exception. One such notable development occurring in 2002 was the identification of West Nile virus (WNV) meningitis in a local resident during August 2002. This marked the advent of the virus to both California and the West Coast. The arrival of WNV to California and the Los Angeles area was inevitable. However, this first case was quite unexpected since cases were not previously identified in any contiguous states and its identification preceded all standard indicators. Typically, the first sign that WNV has entered an area is a die-off of wild birds, crows in particular. No such event was reported in LAC during 2002. In addition, none of the extensive statewide mosquitoborne virus surveillance methods revealed the presence of the virus. This included monitoring sentinel chicken flocks, dead birds and trapped mosquitoes for evidence of arbovirus infections. No other human cases were identified despite investigation of all known cases of viral encephalitis. Nationwide, the incidence of WNV disease soared from 66 confirmed cases and 9 deaths in 2001 to more than 4,000 cases and 284 deaths in 2002. Additional WNV cases in LAC are imminent and increased attention to the prevention and detection of mosquitoborne diseases is imperative.

Emerging Infectious Diseases

During 2002, Los Angeles County experienced:

- The first locally acquired case of West Nile virus disease.
- A dramatic increase in community-associated MRSA infections.
- The addition of invasive pneumococcal disease to our list of reportable diseases.
- A novel influenza B virus (not included in the season's vaccine) causing substantial illness in spring.

Another disease that gained notable prominence in 2002 was community-associated methicillin-resistant *Staphylococcus aureus* (CAMRSA). Historically, MRSA has been considered a nosocomial pathogen. But by 2002, it was evident that MRSA had spread more broadly throughout LAC affecting diverse populations. During the year, ACDC contended with several LAC outbreaks of MRSA skin infections: in one of the world's largest jail systems, among men who have sex with men (MSM), among members of an athletic team, and in a newborn nursery. All told, these investigations accounted for more than 1,000 cases of CAMRSA in 2002. Infection in many of these cases progressed to invasive disease including bacteremia, endocarditis, and osteomyelitis. The alarming rate of morbidity due to CAMRSA demonstrates that emerging drug-resistant strains of bacteria are now prevalent even outside of health-care settings.

In an effort to better assess and address increases in illnesses due to drug resistant bacteria, in 2002 invasive pneumococcal disease (IPD) became reportable in Los Angeles County.[1] The reduction of IPD is a priority of the CDC and is among the Healthy People 2010 objectives set by the US Surgeon General. Nationally, 23 states require reporting of IPD and 28 require reporting of drug-resistant *S. pneumoniae*. *S. pneumoniae* is a leading cause of illness in young children and causes substantial illness and death in the elderly. Enhanced reporting of IPD will allow ACDC to more efficiently monitor the disease, and as a consequence, will improve our ability to minimize the morbidity and mortality of this disease. Enhanced surveillance will also permit the evaluation of the pneumococcal conjugate vaccine's (PCV, Prevnar®) impact on IPD in children and the pneumococcal polysaccharide vaccine's (PPV) effect on the elderly.

New viral strains which cause a variety respiratory illnesses also emerge almost annually. While severe acute respiratory syndrome (SARS) was not recognized until spring of 2003, a year earlier, numerous cases of respiratory illness occurred across LAC due to a novel strain of influenza. As described in the 2001 ACDC Annual Morbidity Report,[2] the 2001–2002 influenza season was, overall, very mild. But in March of 2002, after influenza activity was expected to have ended, LAC experienced a late-season surge of type B influenza that extended into April. ACDC was alerted to this illness through reports of high rates of elementary and middle-school absenteeism. Throughout the county, school absenteeism rates due to flu-like symptoms ranged from 15–20%. Investigation revealed that the illness was due to a novel influenza viral strain (B/Hong Kong/330/2001) previously believed to be limited to Southeast Asia. More importantly, immunity was not provided by 2001–2002 season vaccine. Thus, the high incidence of infection can be attributed to the fact that immunity (either through natural exposure or through vaccination) was not possible.

ACDC's investigations contributed to two very important changes for the 2002–2003 influenza season. First, the vaccine was modified to provide immunity to this new viral strain. Second, since this strain accounted for substantial (and unexpected) rates of morbidity and mortality among the very young, the Advisory Committee on Immunization Practices has since modified its vaccination recommendations. As of Fall 2002, children between the ages 6 months to 23 months are now classified as "high-risk," thereby warranting routine immunization against influenza. These changes will likely decrease subsequent morbidity and mortality due to influenza among children.

Food and Waterborne Diseases

A substantial proportion of ACDC's investigations and activities involve diseases spread by food and water sources. With few exceptions, a distinct declining trend over recent years is evident among the majority of the food and waterborne diseases described in this year's report (see campylobacteriosis, cryptosporidiosis, hepatitis A, listeriosis, salmonellosis, shigellosis, typhoid fever, and vibriosis). The greatest difference between the 10-year average number of cases and incident cases for 2002 was found for viral hepatitis A infection (Table 1). The declining trend in cases is also evident among the bacterial diseases salmonellosis, campylobacteriosis and shigellosis. These findings mirror national trends depicting sustained decreases among many foodborne illnesses—particularly those of bacterial origin.[3,4] While the definitive reasons for these

Food and Waterborne Diseases

- The incidence of food and waterborne diseases, especially bacterial diseases, has been declining considerably in recent years.
- An exception to the declining trend is the increase in *E. coli* O157:H7 infections—the number of cases nearly doubled in 2002.
- Despite decreasing incidence, food and waterborne diseases continue to cause considerable morbidity and mortality.

[1] Itano A. Invasive pneumococcal disease reporting now required in Los Angeles County. The Public's Health 2002; 2(9):1–2. Available at: www.lapublichealth.org/wwwfiles/ph/ph/ph/TPH_October_2002.pdf)

[2] Reynaldo S. Late season, light season: Los Angeles County Influenza Surveillance and Elementary School Outbreaks 2000–2002. Acute Communicable Disease Control Annual Morbidity Report and Special Studies Report, 2001; 13--17. Available at: www.lapublichealth.org/acd/reports/annual/2001%20ACDC%20annual.pdf

[3] CDC. Preliminary FoodNet data on the incidence of foodborne illnesses–Selected sites, United States, 2001. MMWR 2002; 51(15); 325-329. Available at: www.cdc.gov/mmwr/preview/mmwrhtml/mm5215a4.htm

local and national trends are not known, the implementation of many control measures are believed to be important factors in the reduction of food and water-related illnesses. On a national level, these include the expansion of federal food safety and inspection services as well as increased attention to fresh produce safety. Locally, a highly publicized restaurant grading system implemented in 1998 may have also advanced food safety as well as education regarding practices to reduce foodborne disease.

A notable exception to this decreasing trend is the increase in cases of enterohemorrhagic *E. coli*. During 2002, 30 cases of *E. coli* O157:H7 were reported in LAC, nearly double the average number of cases from the previous 9 years (18 cases per year on average from 1993-2001, Table 1). Nationally, the incidence of *E. coli* O157:H7 infection varies considerably each year; a moderate increase in cases occurred during 2002 following a decline in 2001.[5,6] While many food and water sources have been implicated in the transmission of *E. coli* O157:H7, this disease is most often associated with contaminated beef products. In 2002, ACDC investigated two outbreaks due to *E. coli*—both determined to have originated from contaminated ground beef. This suggests that in spite of the decreases shown among other food and waterborne illnesses, further industry improvements and enhanced public education are still needed, especially with regard to meat processing and cooking practices.

Table 1. Food and waterborne incident cases—10-year average versus incident cases in 2002, LAC

Disease	10-year average, 1992–2001[1]	Number of cases 2002
Hepatitis A	1,089	438
Salmonellosis	1,518	956
Campylobacteriosis	1,347	1,067
Shigellosis	1147	974
Cryptosporidiosis[1, 2]	121	62
Listeriosis, nonperinatal	24	14
Listeriosis, perinatal	11	7
Vibriosis[1]	17	14
Typhoid fever, carrier	6	6
Typhoid fever, acute	28	33
E. coli O157:H7[1]	18	30

1. Since case totals are not available for 1992, 9-year averages (1993–2001) are calculated for the following diseases: cryptosporidiosis, *E.* coli, and vibriosis.
2. Advances in antiretroviral therapy can account for much of the decrease in cryptosporidiosis cases.

While the overall incidence of these diseases has been decreasing, food and waterborne diseases continue to account for considerable morbidity and mortality—thousands of preventable infections continue to occur yearly. Moreover, while the majority of people infected by these illnesses improve without complications, these diseases are potentially very detrimental especially among children, the elderly and those with certain chronic medical conditions (e.g., the immunocompromised) and account for numerous hospitalizations and fatalities every year. Accordingly, further efforts to improve food and water quality and to educate the public are needed.

Vaccine-Preventable Diseases

The incidence of many vaccine-preventable diseases has been decreasing considerably in our county. For instance, the number of incident mumps cases decreased more than 65% since its peak incidence in 1993 (N=47, N=16 in 2002). In 2002, there were no new cases of measles identified—a significant decrease compared to the 51 cases in 1993. These declines likely reflect the effectiveness of vaccine campaigns in reducing disease in the general population. Exceptions to this declining trend occurred for both perinatal hepatitis B, which has had a relatively stable rate over recent years, and pertussis, which has fluctuated noticeably. The lowest number of pertussis cases in recent years occurred in 1997 (N=32), then peaked in 1999 (N=238), and in 2002 appears to be increasing again—a 65% increase in incident cases since 2001.

Several vaccine shortages complicated efforts to reduce vaccine-preventable diseases during 2002—and may have contributed to the fluctuation in pertussis cases. This included shortages for many

[4] CDC. Preliminary FoodNet data on the incidence of foodborne illnesses–Selected sites, United States, 2002. MMWR 2003; 52(15); 340-343. Available at: www.cdc.gov/mmwr/preview/mmwrhtml/mm5115a3.htm
[5] Ibid.2
[6] Ibid.3

of the primary childhood vaccines: pneumococcal conjugate vaccine (PCV-7), diphtheria and tetanus toxoids and acellular pertussis (DTaP) vaccine, and tetanus and diphtheria toxoids (Td) vaccine.[7] CDC guidelines were issued to attempt to accommodate these shortages,[8] but it is unclear whether these were fully understood and/or enacted by practitioners as well as what impact it had on disease rates in our county. Studies providing further insight into both PCV-7 shortages and pertussis increases are included in the 2002 Special Reports.

Pediatric HIV/AIDS

Pediatric HIV and AIDS continue to be a serious public health issue, both locally and worldwide. In recent years, the number of incident cases in LAC has decreased substantially; 14 new pediatric HIV/AIDS cases were identified in 2002—down from a peak of 32 cases in 1998. This may be due to medical advances, especially treatments that reduce the likelihood of perinatal transmission of HIV infection, coupled with advances in detection and maternal education.[9,10] New cases are often born to women who have little or no prenatal care; these mothers tend to be at highest risk or HIV infection and subsequent transmission to their babies.

Pediatric HIV/AIDS

- Incidence of pediatric HIV and AIDS has declined considerably—14 cases in 2002, from a peak of 32 cases in 1998.
- In July 2002, HIV infection was added to the LAC list of reportable diseases.
- In November 2002, a rapid HIV test received FDA approval.

Two important changes in the reporting and identification of HIV took place during 2002. First, in July 2002, HIV infection was added to the LAC list of reportable diseases. This reporting requirement is in addition to mandatory AIDS reporting, which has been in effect since 1983. The reporting of HIV cases excludes personal identifiers and requires the interaction of laboratories and healthcare providers.[11] Second, in November 2002, the Food and Drug Administration (FDA) approved an innovative rapid test (OraQuick®) for the diagnosis of HIV. This test requires less than a drop of blood and can detect antibodies to HIV in as little as 20 minutes. As such, this test has the potential to greatly advance pediatric HIV prevention since testing can now more easily be completed during labor and/or delivery. Important life-saving treatment preventing mother-to-infant transmission can then be provided to mothers who would otherwise be unaware of their HIV-status—and women who do not receive prenatal care and/or are unaware of the HIV-serostatus are more likely to be infected with HIV. The impact of these changes in HIV reporting and diagnosis are presently unknown, but can clearly alter the rates of this disease in our county.

Bioterrorism Preparedness

During 2002, the groundwork for the majority of ACDC's bioterrorism surveillance and preparedness activities was constructed. Specifically, during the year, syndromic surveillance to potentially identify bioterrorist activity was established at several local hospitals (described in the 2002 Special Reports). In addition, while smallpox vaccination did not occur until 2003, during 2002 the plans to implement vaccination were designed and federally approved.

Also during 2002, many activities conducted by the bioterrorism preparedness team were carried over from the previous year. While the initiating anthrax events occurred in 2001, during 2002 our team continued to address numerous calls and concerns—these were evaluated to determine whether a full

[7] Nelson A. Update on shortages of routine childhood vaccines. The Public's Health 2002; 2(2):1–5. Available at: www.lapublichealth.org/wwwfiles/ph/ph/ph/TPH0202.pdf

[8] CDC. Notice to readers: Updated recommendations on the use of pneumococcal conjugate vaccine in a setting of vaccine shortage – Advisory Committee on Immunization Practices. MMWR 2001;50(50):1140-2.

[9] CDC. Success in implementing public health service guidelines to reduce perinatal transmission of HIV—Louisiana, Michigan, New Jersey, and South Carolina, 1993, 1995, and 1996. MMWR 1998; 47:688–691. Available at: www.cdc.gov/mmwr/preview/mmwrhtml/00054649.htm

[10] Mofenson, LM, Committee on Pediatric AIDS. Technical report: Perinatal human immunodeficiency virus testing and prevention of transmission. Pediatrics 2000; 106:1–12. Available at: www.pediatrics.aappublications.org/cgi/reprint/106/6/e88.pdf

[11] For more information about the reporting of HIV and AIDS cases in LAC, see: www.lapublichealth.org/hiv/hivreporting.htm.

investigation was warranted and provided a basis for many of the educational/informational materials that were developed.

Bioterrorism Preparedness

- The groundwork for many BT-related activities was constructed during 2002 including initiating syndromic surveillance and finalizing the smallpox vaccination plan for our county. Vaccination was implemented in 2003.
- Education and promotion of reporting changes for BT-related diseases continued since their implementation in 2001.

Also in the year prior to 2002, several substantial changes in the reporting of bioterrorism-related diseases were initiated. First, smallpox was reinstated to the mandated list of reportable diseases. In addition, seven diseases that are deemed to be significantly likely agents for bioterrorism activity (anthrax, botulism, brucellosis, plague, smallpox, tularemia and viral hemorrhagic fevers) were changed to highest priority for reporting—immediate reporting by telephone is now mandated for these diseases, and laboratories receiving specimens for the diagnosis of these diseases are required to immediately report by telephone. During 2002, the bioterrorism preparedness team continued to disseminate information to improve awareness and understanding regarding these important changes in disease reporting.

Acute Communicable Disease Control

Annual Morbidity Report

2002

Los Angeles County
Department of Health Services
Public Health

ACUTE COMMUNICABLE DISEASE MORBIDITY REPORT
2002

TABLE OF CONTENTS

Acute Communicable Disease Control
2002 Annual Morbidity Report

Table of Contents (cont.)

ACUTE COMMUNICABLE DISEASE MORBIDITY REPORT
2002

MAP LIST

ACUTE COMMUNICABLE DISEASE MORBIDITY REPORT
2002

TABLE LIST

Table List (continued)

Tables in Outbreak Summary Chapters

Pediatric HIV/AIDS Tables

OVERVIEW

ACUTE COMMUNICABLE DISEASE MORBIDITY REPORT
2002

PURPOSE

The Acute Communicable Disease Control (ACDC) **Annual Morbidity Report** of the Los Angeles County Department of Health Services, Public Health is compiled to:

1. summarize annual morbidity from several acute communicable diseases occurring in Los Angeles County (LAC);
2. assess the effectiveness of established communicable disease control programs;
3. identify patterns of disease as a means of directing future disease prevention efforts;
4. identify limitations of the data used for the above purposes and to identify means of improving that data; and
5. serve as a resource for medical and public health authorities at county, state and national levels.

Note: The 2002 ACDC Annual Morbidity Report does not include information regarding the following diseases: tuberculosis, sexually transmitted diseases, or adult HIV and AIDS. Information regarding these diseases is available from their respective departments (see the LAC Public Health website for more information www.lapublichealth.org/.)

LAC DEMOGRAPHIC DATA

Population estimates used for this report are created by the Population Estimates and Projections System (PEPS) provided to the LAC Department of Health Services, Public Health by Urban Research. There are two distinctive sets of population numbers, estimates and projections. Normally, the demographer starts off of making projections within a 5-year range based mainly on released US Census data. Then, as time elapses and when real relevant numbers become available (e.g., DMV records, Voters' registry, school enrollment and immigration records etc.), estimates are made retrospectively. The most recent PEPS data sets were completed in 2003. As such, it contains estimates up to and including the year of 2002, and projections to 2007. The 2002 LAC population data used in this report are these PEPS estimates.

National and California state counts of reportable diseases were obtained from the Centers for Disease Control and Prevention (CDC) Final 2002 Reports of Notifiable Diseases.[1] This report also includes US Census population estimates—these were used to calculate national and California rates of disease. According to that report, the population of the US in 2002 was 281,418,000 and the population of California was 33,872,000.

Long Beach and Pasadena are separate reporting jurisdictions, as recognized by the California Department of Health Services, and as such these two cities maintain their own disease reporting systems. Therefore, disease episodes occurring among residents of Long Beach and Pasadena have been excluded from LAC morbidity data, and their populations subtracted from LAC population data. Exceptions to this rule are noted in the text when they occur.

[1] CDC. Final 2002 reports of notifiable diseases. MMWR 2003; 52(31):741–750. Available at: www.cdc.gov/mmwr/preview/mmwrhtml/mm5231a7.htm

Table A. Los Angles County* population by year, 1997–2002

Year	Population	% change
1997	8,737,885	
1998	8,792,921	0.6%
1999	8,853,999	0.7%
2000	8,968,327	1.3%
2001	9,122,861	1.7%
2002	9,253,109	1.4%

* Does not include cities of Pasadena and Long Beach.

Table B. Los Angles County* population by age group, 1997–2002

Age (in years)	Population	%
<1	136,654	1.5%
1–4	548,795	5.9%
5–14	1,494,812	16.2%
15–34	2,791,607	30.2%
35–44	1,428,809	15.4%
45–54	1,150,315	12.4%
55–64	713,503	7.7%
65+	988,614	10.7%
Total	**9,253,109**	**100.0%**

* Does not include cities of Pasadena and Long Beach.

Table C. Los Angles County* population by sex, 1997–2002

Sex	Population	%
Male	4,557,725	49.3
Female	4,695,384	50.7
Total	**9,253,109**	**100.0%**

* Does not include cities of Pasadena and Long Beach.

Table D. Los Angles County* population by race, 1997–2002

Race	Population	%
Asian	1,215,121	13.1%
Black	867,699	9.4%
Latino	4,287,286	46.3%
White	2,855,471	30.9%
Other**	27,532	0.3%
Total	**9,253,109*** **	**100.0%**

* Does not include cities of Pasadena and Long Beach.
** Includes American Indian, Alaskan Native, Eskimo and Aleut.
*** Does not include individuals of two or more races.

Table E. Los Angles County* population by health district and SPA, 2002

Health District	Population
SPA1	**339,827**
Antelope valley	339,827
SPA 2	**2,051,645**
East Valley	438,642
Glendale	344,620
San Fernando	411,044
West Valley	857,339
SPA 3	**1,657,249**
Alhambra	349,356
El Monte	452,834
Foothill	304,261
Pomona	550,798
SPA 4	**1,174,118**
Central	339,195
Hollywood Wilshire	517,120
Northeast	317,803
SPA 5	**636,482**
West	636,482
SPA 6	**988,620**
Compton	282,563
South	172,465
Southeast	162,828
Southwest	370,764
SPA 7	**1,331,126**
Bellflower	359,933
East Los Angeles	209,855
San Antonio	438,565
Whittier	322,773
SPA 8	**1,074,042**
Inglewood	420,296
Harbor	201,545
Torrance	452,201
Total	**9,253,109**

* Pasadena and Long Beach are separate health jurisdictions and as such are excluded from this table.

DATA SOURCES

Data on occurrence of communicable diseases in LAC were obtained through passive and sometimes active surveillance. Every health-care provider or administrator of a health facility or clinic, and anyone in charge of a public or private school, kindergarten, boarding school, or preschool knowing of a **case or suspected case** of a communicable disease is required to report it to the local health department as specified by the California Code of Regulations (Section 2500). Immediate reporting by telephone is also required for any **outbreak** or **unusual incidence** of infectious disease and any **unusual disease** not listed in Section 2500. Laboratories have separate requirements for reporting certain communicable diseases (Section 2505). Health-care providers must also give detailed instructions to household members in regard to precautionary measures to be taken for preventing the spread of disease (Section 2514).

1. Passive surveillance relies on physicians, laboratories, and other health-care providers to report diseases of their own accord to the Department of Health Services (DHS) using the Confidential Morbidity Report (CMR) form, electronically, by telephone, or by facsimile.

2. Active surveillance entails ACDC staff regularly contacting hospitals, laboratories and physicians in an effort to identify all cases of a given disease. In 2001, ACDC did active surveillance for pediatric cases of acquired immunodeficiency syndrome. In addition, ACDC staff contacted schools, hospitals, nursing homes, student health centers and sentinel physicians to collect reports of vaccine-preventable diseases and to investigate outbreaks.

DATA LIMITATIONS

This report should be interpreted in light of the following notable limitations:

1. Underreporting.
   The proportion of cases that are not reported varies for each disease. Evidence indicates that for some diseases as many as 98% of cases are not reported.

2. Reliability of Rates.
   All vital statistics rates, including morbidity rates, are subject to random variation. This variation is inversely related to the number of events (observations, cases) used to calculate the rate. The smaller the frequency of occurrence of an event, the less stable its occurrence from observation to observation. As a consequence, diseases with only a few cases reported per year can have highly unstable rates. The observation and enumeration of these “rare events” is beset with uncertainty. The observation of zero events is especially hazardous.

   To account for these instabilities, all rates in the ACDC Annual Morbidity Report based on less than 19 events are considered “unreliable.” This translates into a relative standard error of the rate of 23% or more, which is the cut-off for rate reliability used by the National Center for Health Statistics. Therefore, rates based on less than 19 events will not be reported because their standard errors and reliability cannot be determined. Readers may calculate the rates on their own using standard population tables.

   In the Annual Morbidity Report, rates of disease for groups (e.g., Latino versus non-Latino) are said to differ significantly only when two criteria are met: 1) group rates are reliable and 2) the 95% confidence limits for these rates do not overlap. Confidence limits are calculated only those rates which are reliable.

3. Case Fatality Rates.
   Some deaths from communicable diseases may not appear on LAC's Vital Records computer files. Deaths are filed with only underlying cause of death indicated. Any contributing or otherwise significant conditions, including communicable diseases, are not indicated in the computer record. Also, case-fatality percent is based on deaths that occurred in 2001 regardless of year of disease onset; therefore, fatality data should be interpreted with caution.

4. Case Definitions.
   To standardize surveillance, CDC case definition for infectious diseases under public surveillance[2] is used with some exceptions as noted in the text of the individual diseases. Since verification by a laboratory test is required for the diagnosis of some diseases, cases reported without such verification may not be true cases. Therefore, an association between a communicable disease and a death or an outbreak possibly may not be identified.

5. Onset Date versus Report Date.
   Some cases of disease occurring in 2002 were not reported until after this annual report was completed. Slight differences in the number of cases and rates of disease for 2002 may be observed in subsequent annual reports. Any such disparities are likely to be small.

6. Population Estimates.
   Estimates of the LAC population are subject to many errors. Furthermore, the population of LAC is in constant flux. Though not accounted for in census data, visitors and other non-residents may have an effect on disease occurrences.

7. Place of Acquisition of Infections.
   Some cases of diseases reported in LAC may have been acquired outside of the county. This may be especially true for many of the diseases common in Latino and Asian populations. Therefore, some disease rates more accurately reflect the place of diagnosis than the location where an infection was acquired.

8. Health Districts and Service Planning Areas.
   In 1994, the following health district boundaries changed: Central, Compton, Glendale, Inglewood, Northeast, San Fernando, West, and Torrance. San Fernando Health District was split into Antelope Valley and San Fernando Health Districts. In 1999, the 24 individual health districts were grouped into eight Service Planning Areas (SPA): SPA 1, Antelope Valley; SPA 2, San Fernando Valley; SPA 3, San Gabriel; SPA 4, Metro; SPA 5, West; SPA 6, South; SPA 7, East; and SPA 8, South Bay.

9. Race/Ethnicity Categories.
   - **Asian** – person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands.
   - **American Indian** – person having origins in any of the original peoples of North America and who maintain cultural identification through tribal affiliation or community recognition.
   - **Black** – person having origins in any of the black racial groups of Africa.
   - **Latino** – person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.
   - **White** – person having origins in any of the original peoples of Europe, North Africa, or the Middle East.

[2] CDC. Case Definitions for Infectious Conditions under Public Health Surveillance," MMWR 1997;46(RR-10):1-57.

STANDARD REPORT FORMAT

1. Crude Data.
   - **Number of Cases**: For most diseases, this number reflects new cases of the disease with an onset in 2002. If the onset was unknown, the date of diagnosis was used.
   - **Annual Incidence Rates in LAC**: Number of new cases in 2002 divided by 2002 LAC census population (minus Long Beach and Pasadena) multiplied by 100,000.
   - **Annual Incidence Rates in the US and California**: 2002 incidence rates for the US and California were taken from the previously cited CDC publication, Morbidity and Mortality Weekly Report (MMWR). The MMWR records diseases by date of report rather than date of onset.
   - **Mean Age at Onset**: Arithmetic average age of all cases.
   - **Median Age at Onset**: The age that represents the midpoint of the sequence of all case ages.
   - **Range of Ages at Onset**: Ages of the youngest and oldest cases in 2002. For cases under one year of age, less than one (<1) was used.
   - **Case Fatality**: Number of deaths in 2002 due to disease (when data were available) divided by the number of new cases of the disease in 2002, expressed as a percentage. Note that deaths may be due to infections acquired prior to 2002.

2. Etiology.
   This includes the causative agent, mode of spread, common symptoms, potential severe outcomes, susceptible groups, and vaccine-preventability.

3. Disease Abstract.
   This provides a synopsis or the highlights of disease activity in 2002.

4. Stratified Data.
   - **Trends**: Any trends in case characteristics during recent years.
   - **Seasonality**: Number of cases that occurred during each month of 2002.
   - **Age**: Annual rate of disease for individual age groups. Race-adjusted rates are presented for some diseases.
   - **Sex**: Male-to-female rate ratio of cases.
   - **Race/Ethnicity**: Annual rate of disease for the five major racial groups. Cases of unknown race are excluded; thus, race-specific rates may be underestimates. Age-adjusted rates are presented for some diseases.
   - **Location**: Location presented most often is the health district or SPA of residence of cases. Note that "location" rarely refers to the site of disease acquisition. Age-adjusted rates by location are presented for some diseases.

5. Prevention.
   If applicable, this section includes a description of county programs and other measures that address the disease.

6. Comments.
   Describes miscellaneous information not fitting easily into above categories, as well as elaboration of some findings of interest.

7. Additional Resources.
   Provides agencies, phone numbers, websites, and other resources on the subject.

CHANGES IN DISEASE INCIDENCE

Incidence rates for several diseases monitored by ACDC in 2002 were markedly different from those in 2001. The percent change in incidence during 2002 compared to 2001 is presented in Table F for those

diseases where at least 15 cases were reported in both years, and substantial change was observed. Reasons for these changes are discussed in the individual disease reports.

Table F. Percent change in incidence of selected notifiable diseases, Los Angeles County, 2002

Disease	2001	2002	% change
Hepatitis C	0.01	0.26	2500.0
Listeriosis, perinatal	0.03	0.08	166.7
Hepatitis B	0.48	1.01	110.4
Typhoid fever, case	0.19	0.36	89.5
Pertussis	1.13	1.84	62.8
Encephalitis	0.45	0.66	46.7
Shigellosis	7.50	10.53	40.4
Listeriosis	0.30	0.15	-50.0
Cysticercosis	0.41	0.19	-53.7
Kawasaki syndrome	0.26	0.10	-61.5

LIST OF ACRONYMS

The following abbreviations and acronyms may be found throughout this report.

95%CI	95 percent confidence interval	**Hib**	*Haemophilus influenzae*, type b
ACDC	Acute Communicable Disease Control	**HIV**	Human immunodeficiency virus
AIDS	Acquired immunodeficiency syndrome	**IgG**	Immunoglobulin G
AR	Attack rate	**IgM**	Immunoglobulin M
CDC	Centers for Disease Control and Prevention	**LAC**	Los Angeles County
CDHS	California Dept. of Health Services	**MMR**	Mumps-Measles-Rubella vaccine
CMR	Confidential morbidity report	**MMWR**	Morbidity & Mortality Weekly Report
CSF	Cerebral spinal fluid	**N/A**	Not available
DHS	Department of Health Services	**NLV**	Norwalk-like virus
DTaP	Diphtheria-tetanus-acellular pertussis	**OR**	Odds ratio
DTP	Diphtheria-tetanus-pertussis vaccine	**PCP**	*Pneumocystis carinii pneumonia*
EHS	Environmental Health Services	**PHBPP**	Perinatal Hepatitis B Prevention Prgm.
GI and GE	gastrointestinal and gastroenteritis	**RR**	Rate ratio or Relative risk
HAV	Hepatitis A virus	**SNF**	Skilled nursing facility
HBIG	Hepatitis B Immunoglobulin	**sp. or spp.**	Species
HBsAg	Hepatitis B surface antigen	**SPA**	Service Planning Area
HBV	Hepatitis B virus	**US**	United States
HCV	Hepatitis C virus	**VCMR**	Visual confidential morbidity report
HD	Health District		

LOS ANGELES COUNTY HEALTH DISTRICTS:

AH	Alhambra	**FH**	Foothill	**SE**	Southeast
AV	Antelope Valley	**GL**	Glendale	**SF**	San Fernando
BF	Bellflower	**HB**	Harbor	**SO**	South
CE	Central	**HW**	Hollywood/Wilshire	**SW**	Torrance
CN	Compton	**IW**	Inglewood	**TO**	West
EL	East Los Angeles	**NE**	Northeast	**WE**	
EV	East Valley	**PO**	Pomona	**WV**	West Valley
EM	El Monte	**SA**	San Antonio	**WH**	Whittier

TABLES OF NOTIFIABLE DISEASES

Table G. Reported Cases of Selected Notifiable Diseases by Year of Onset
Los Angeles County, 1997–2002

Disease	Year of Onset						Previous 5-year Average	5-Yr 95% upper Limit[a]
	1997	1998	1999	2000	2001	2002		
Amebiasis	149	157	134	109	139	102	158	197
Botulism	3	1	3	0	2	2	2	4
Brucellosis	6	2	3	4	9	11	7	13
Campylobacteriosis	1535	1217	1089	1273	1141	1067	1464	1773
Cholera	0	3	0	0	0	0	1	3
Coccidioidomycosis	50	53	48	58	68	76	71	90
Cryptosporidiosis	85	93	71	68	77	62	91	112
Cysticercosis	34	24	28	43	37	18	37	53
Dengue	2	5	3	3	5	7	5	8
E. *coli* O157:H7	20	22	12	27	31	31	29	42
Encephalitis	42	48	39	49	41	61	56	70
Foodborne outbreaks	40	34	39	40	48	29	31	35
Giardiasis	786	672	592	509	446	441	689	933
Haemophilus influenzae type b	10	7	0	1	6	3	5	12
Hansen's Disease (Leprosy)	18	13	10	9	2	11	12	22
Hepatitis A	1582	940	1120	839	542	438	1092	1834
Hepatitis B	109	92	66	65	44	93	94	137
Hepatitis C	23	12	21	10	1	24	18	34
Hepatitis unspecified	17	13	9	11	1	0	10	22
Kawasaki syndrome	26	33	29	35	24	9	31	48
Legionellosis	32	20	16	14	18	25	25	37
Listeriosis, nonperinatal	18	24	21	19	27	14	25	33
Listeriosis, perinatal	8	7	12	8	3	7	9	14
Lyme disease	4	2	8	7	5	8	6	10
Malaria	55	50	62	43	46	38	59	74
Measles	4	3	1	5	8	0	4	9
Meningitis, viral	228	443	226	263	378	466	401	597
Meningococcal infections	74	50	49	53	58	46	66	84
Mumps	39	21	24	29	17	16	29	45
Pertussis	32	77	238	102	103	170	144	274
Psittacosis	1	0	1	0	1	0	1	2
Q-fever	0	1	0	1	1	4	1	4
Relapsing fever	0	0	1	0	0	1	0	1
Rheumatic fever, acute	1	0	1	1	6	0	2	6
Rubella	5	0	0	3	0	0	2	5
Salmonellosis	1696	1253	1101	990	1006	956	1401	1902
Shigellosis	857	784	669	849	684	974	963	1170
Strongyloidiasis	1	5	5	1	0	0	2	7
Tetanus	4	2	2	0	2	2	2	5
Trichinosis	2	3	0	0	0	0	1	3
Tularemia	1	0	0	0	0	0	0	1
Typhoid fever, case	27	17	20	21	17	33	27	38
Typhoid fever, carrier	1	12	4	6	1	6	6	13
Typhus fever	14	7	6	17	8	11	13	20
Vibrio	29	30	3	13	15	14	20	39

[a] The normal distribution assumption may not apply to some rare diseases.
[b] 2002 data over 95% upper limit.

Table H. Annual Incidence Rates of Selected Notifiable Diseases by Year of Onset
Los Angeles County, 1997–2002

Disease	Annual Incidence Rate (Cases per 100,000) [b]					
	1997	1998	1999	2000	2001	2002
Amebiasis	1.71	1.79	1.51	1.22	1.52	1.10
Botulism	0.03	0.01	0.03	-	0.02	0.02
Brucellosis	0.07	0.02	0.03	0.04	0.10	0.12
Campylobacteriosis	17.57	13.84	12.30	14.19	12.51	11.53
Cholera	-	0.03	-	-	-	-
Coccidioidomycosis	0.57	0.60	0.54	0.65	0.75	0.82
Cryptosporidiosis	0.97	1.06	0.80	0.76	0.84	0.67
Cysticercosis	0.39	0.27	0.32	0.48	0.41	0.19
Dengue	0.02	0.06	0.03	0.03	0.05	0.08
E. *coli* O157:H7	0.23	0.25	0.14	0.30	0.34	0.34
Encephalitis	0.48	0.55	0.44	0.55	0.45	0.66
Giardiasis	9.00	7.64	6.69	5.68	4.89	4.77
Haemophilus influenzae type b	0.11	0.08	-	0.01	0.07	0.03
Hansen's Disease (Leprosy)	0.21	0.15	0.11	0.10	0.02	0.12
Hepatitis A	18.11	10.69	12.65	9.36	5.94	4.73
Hepatitis B	1.25	1.05	0.75	0.72	0.48	1.01
Hepatitis C	0.26	0.14	0.24	0.11	0.01	0.26
Hepatitis unspecified	0.19	0.15	0.10	0.12	0.01	0.00
Kawasaki syndrome	0.30	0.38	0.33	0.39	0.26	0.10
Legionellosis	0.37	0.23	0.18	0.16	0.20	0.27
Listeriosis, nonperinatal	0.21	0.27	0.24	0.21	0.30	0.15
Listeriosis, perinatal	5.31	4.74	8.26	5.46	2.05	4.96
Lyme disease	0.05	0.02	0.09	0.08	0.05	0.09
Measles	0.05	0.03	0.01	0.06	0.09	-
Meningitis, viral	2.61	5.04	2.55	2.93	4.14	5.04
Meningococcal infections	0.85	0.57	0.55	0.59	0.64	0.50
Mumps	0.45	0.24	0.27	0.32	0.19	0.17
Pertussis	0.37	0.88	2.69	1.14	1.13	1.84
Psittacosis	0.01	-	0.01	-	0.01	-
Q-fever	-	0.01	-	0.01	0.01	0.04
Relapsing fever	-	-	0.01	-	-	0.01
Rheumatic fever, acute	0.01	-	0.01	0.01	0.07	-
Rubella	0.06	-	-	0.03	-	-
Salmonellosis	19.41	14.25	12.44	11.04	11.03	10.33
Shigellosis	9.81	8.92	7.56	9.47	7.50	10.53
Strongyloidiasis	0.01	0.06	0.06	0.01	-	-
Tetanus	0.05	0.02	0.02	-	0.02	0.02
Trichinosis	0.02	0.03	-	-	-	-
Tularemia	0.01	-	-	-	-	-
Typhoid fever, case	0.31	0.19	0.23	0.23	0.19	0.36
Typhoid fever, carrier	0.01	0.14	0.05	0.07	0.01	0.06
Typhus fever	0.16	0.08	0.07	0.19	0.09	0.12
Vibrio	0.33	0.34	0.03	0.14	0.16	0.15

[a] Rates for perinatal listeriosis were calculated as cases per 100,000 live births.
[b] Rates of disease based on less than 20 cases or events are considered "unreliable." A zero rate made from no events is especially hazardous and are not reported here, except with a dash ("-"). Conclusions drawn from unreliable rates should be made with caution, if they are to be made at all.

Table I. Five-Year Average of Notifiable Diseases by Month of Onset
Los Angeles County, 1998–2002

Disease	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total[a]
Amebiasis	10.4	8.2	5.0	8.6	8.6	9.0	8.4	9.4	8.0	9.0	5.2	5.6	98.4
Botulism	0.2	0.0	0.2	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.4	0.0	1.2
Brucellosis	0.0	0.2	0.0	0.2	0.4	0.0	0.2	0.2	0.2	1.0	0.4	0.2	3.0
Campylobacteriosis	60.2	53.8	54.8	73.0	86.6	99.4	106.0	93.0	90.6	83.6	70.4	48.4	920.2
Cholera	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.0	0.6
Coccidioidomycosis	3.8	2.2	2.6	3.4	2.8	2.6	4.2	2.4	3.4	4.6	3.2	2.4	37.6
Cryptosporidiosis	4.2	2.6	2.8	3.2	4.2	4.2	5.8	7.8	5.6	5.6	4.4	4.4	54.8
Cysticercosis	2.6	1.2	2.0	2.0	3.2	0.4	1.0	2.2	1.4	2.0	0.6	1.8	20.4
Dengue	0.6	0.0	0.0	0.2	0.6	0.4	0.4	0.0	0.4	0.0	0.0	0.2	2.8
E. *coli* O157:H7	1.6	0.2	0.6	0.4	1.0	2.4	5.4	1.8	2.4	1.0	1.2	0.0	18.0
Encephalitis	2.8	2.6	1.8	3.0	2.8	2.0	1.6	1.4	2.8	2.6	2.6	2.4	28.4
Giardiasis	31.6	27.6	32.0	34.6	33.0	35.2	39.6	50.4	46.2	33.6	31.8	21.6	417.2
Haemophilus influenzae type b	0.8	0.2	0.4	0.4	0.4	0.2	0.0	0.2	0.2	0.2	0.2	0.0	3.2
Hansen's Disease (Leprosy)	0.4	0.6	0.8	0.4	1.2	0.6	1.2	0.6	0.6	1.0	0.6	0.6	8.6
Hepatitis A	49.2	48.0	61.6	46.4	51.4	48.0	48.8	60.2	77.2	60.8	43.4	33.0	628.0
Hepatitis B	4.8	6.0	5.6	6.2	5.6	3.8	3.8	2.4	3.0	2.8	4.8	3.2	52.0
Hepatitis C	2.0	2.0	1.4	1.6	1.6	1.8	1.0	1.4	1.6	0.8	0.8	1.6	17.6
Hepatitis unspecified	1.0	0.0	0.6	0.4	0.8	0.2	0.0	0.2	0.4	0.2	0.0	0.4	4.2
Kawasaki syndrome	1.2	2.0	3.0	1.4	1.8	2.0	1.0	1.8	1.4	1.2	0.6	1.8	19.2
Legionellosis	1.0	1.8	0.8	1.0	0.2	1.0	1.4	0.2	1.4	1.6	0.0	0.8	11.2
Listeriosis, nonperinatal	1.0	0.8	1.4	0.6	2.4	5.0	1.6	1.8	2.6	1.8	1.0	1.0	21.0
Listeriosis, perinatal	0.6	0.2	0.2	1.2	0.8	1.0	1.0	0.6	0.8	0.6	0.2	0.2	7.4
Lyme disease	0.2	0.0	0.4	0.4	0.2	0.6	0.2	0.8	0.4	0.4	0.0	0.2	3.8
Malaria	2.6	3.0	3.0	2.6	3.2	2.8	4.8	5.0	2.8	2.6	1.2	3.2	36.8
Measles	0.2	0.4	0.6	0.4	0.6	0.6	0.2	0.2	0.0	0.2	0.0	0.0	3.4
Meningitis, viral	12.0	9.8	11.6	13.2	17.6	24.8	28.4	33.0	33.0	24.2	14.0	11.2	232.8
Meningococcal infections	7.2	5.0	5.4	4.8	1.6	4.2	2.0	0.8	1.6	2.0	1.4	2.4	38.4
Mumps	2.6	2.0	2.2	1.2	2.0	3.4	1.0	0.8	1.0	2.4	0.8	2.0	21.4
Pertussis	8.4	7.0	5.8	9.2	10.2	12.2	14.2	16.8	18.2	14.8	8.4	12.6	137.8
Psittacosis	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.4
Q-fever	0.2	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
Relapsing fever	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2
Rheumatic fever, acute	0.6	0.2	0.4	0.0	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.0	1.6
Rubella	0.0	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.6
Salmonellosis	58.8	40.0	57.4	67.6	70.8	78.0	92.0	94.6	88.0	76.6	59.0	41.6	824.4
Shigellosis	52.6	23.6	28.4	28.0	33.6	39.8	77.0	96.8	72.6	55.4	39.0	27.2	574.0
Strongyloidiasis	0.2	0.4	0.0	0.2	0.2	0.0	0.2	0.2	0.0	0.2	0.0	0.0	1.6
Tetanus	0.0	0.0	0.2	0.2	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.1	1.0
Trichinosis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tularemia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Typhoid fever, case	0.8	1.0	2.2	1.6	1.8	1.6	0.8	1.0	1.8	1.4	0.0	0.4	14.4
Typhoid fever, carrier	0.4	0.4	0.4	0.0	0.6	0.0	0.2	0.4	0.2	0.6	0.4	0.0	3.6
Typhus fever	0.2	0.0	0.2	0.8	1.0	1.0	0.4	0.6	0.2	0.8	1.2	0.6	7.0
Vibrio	0.6	0.2	0.4	0.2	0.6	2.2	2.8	2.0	0.8	0.6	0.2	0.0	10.6

[a] Rates for perinatal listeriosis were calculated as cases per 100,000 live births.
[b] Rates of disease based on less than 20 cases or events are considered "unreliable." A zero rate made from no events is especially hazardous and are not reported here, except with a dash ("-"). Conclusions drawn from unreliable rates should be made with caution, if they are to be made at all.

Table J. Number of Cases of Selected Notifiable Diseases by Age Group
Los Angeles County, 2002

Disease	<1	1–4	5–14	15–34	35–44	45–54	55–64	65+	Total
Amebiasis	0	3	10	33	26	10	14	6	102
Botulism	0	0	0	0	1	1	0	0	2
Brucellosis	1	0	1	2	2	2	1	2	11
Campylobacteriosis	43	155	162	307	136	110	74	80	1067
Cholera	0	0	0	0	0	0	0	0	0
Coccidioidomycosis	0	1	2	14	14	25	6	14	76
Cryptosporidiosis	0	4	4	14	26	9	4	1	62
Cysticercosis	1	0	1	9	4	1	1	1	18
Dengue	0	0	1	3	0	3	0	0	7
E. *coli* O157:H7	1	7	9	3	2	2	1	5	31
Encephalitis	6	8	13	10	4	4	7	9	61
Giardiasis	8	73	113	85	81	48	19	14	441
Haemophilus influenzae type b	1	1	1	0	0	0	0	0	3
Hansen's Disease (Leprosy)	0	0	0	5	1	2	2	1	11
Hepatitis A	0	12	51	133	73	61	33	75	438
Hepatitis B	0	0	1	34	33	14	4	7	93
Hepatitis C	1	0	0	5	8	6	3	1	24
Hepatitis unspecified	0	0	0	0	0	0	0	0	0
Kawasaki syndrome	1	6	2	0	0	0	0	0	9
Legionellosis	0	0	0	0	1	2	7	15	25
Listeriosis, nonperinatal	0	0	0	0	0	2	6	6	14
Listeriosis, perinatal	0	0	0	5	2	0	0	0	7
Lyme disease	0	0	1	3	1	1	1	1	8
Malaria	1	1	1	14	10	7	2	2	38
Measles	0	0	0	0	0	0	0	0	0
Meningitis, viral	47	18	112	161	66	31	13	18	466
Meningococcal infections	7	5	6	10	5	3	5	5	46
Mumps	0	5	9	2	0	0	0	0	16
Pertussis	126	10	16	8	5	3	0	2	170
Psittacosis	0	0	0	0	0	0	0	0	0
Q-fever	0	0	0	2	0	0	0	2	4
Relapsing fever	0	0	1	0	0	0	0	0	1
Rheumatic fever, acute	0	0	0	0	0	0	0	0	0
Rubella	0	0	0	0	0	0	0	0	0
Salmonellosis	80	168	156	221	89	79	57	105	956
Shigellosis	12	277	304	161	109	49	27	35	974
Strongyloidiasis	0	0	0	0	0	0	0	0	0
Tetanus	0	0	0	0	0	0	1	1	2
Trichinosis	0	0	0	0	0	0	0	0	0
Tularemia	0	0	0	0	0	0	0	0	0
Typhoid fever, case	1	5	8	14	3	1	0	1	33
Typhoid fever, carrier	0	0	0	3	1	0	1	1	6
Typhus fever	0	0	2	4	2	2	1	0	11
Vibrio	0	0	1	3	3	3	2	2	14

[a] Totals include cases with unknown age.

Table K. Incidence Rates of Selected Notifiable Diseases by Age Group
Los Angeles County, 2002

Disease	Age-group Rates (Cases per 100,000) [b]							
	<1	1–4	5–14	15–34	35–44	45–54	55–64	65+
Amebiasis	-	0.5	0.7	1.2	1.8	0.9	2.0	0.6
Botulism	-	-	-	-	0.1	0.1	-	-
Brucellosis	0.7	-	0.1	0.1	0.1	0.2	0.1	0.2
Campylobacteriosis	31.5	28.2	10.8	11.0	9.5	9.6	10.4	8.1
Cholera	-	-	-	-	-	-	-	-
Coccidioidomycosis	-	0.2	0.1	0.5	1.0	2.2	0.8	1.4
Cryptosporidiosis	-	0.7	0.3	0.5	1.8	0.8	0.6	0.1
Cysticercosis	0.7	-	0.1	0.3	0.3	0.1	0.1	0.1
Dengue	-	-	0.1	0.1	-	0.3	-	-
E. *coli* O157:H7	0.7	1.3	0.6	0.1	0.1	0.2	0.1	0.5
Encephalitis	4.4	1.5	0.9	0.4	0.3	0.3	1.0	0.9
Giardiasis	5.9	13.3	7.6	3.0	5.7	4.2	2.7	1.4
Haemophilus influenzae type b	0.7	0.2	0.1	-	-	-	-	-
Hansen's Disease (Leprosy)	-	-	-	0.2	0.1	0.2	0.3	0.1
Hepatitis A	-	2.2	3.4	4.8	5.1	5.3	4.6	7.6
Hepatitis B	-	-	0.1	1.2	2.3	1.2	0.6	0.7
Hepatitis C	0.7	-	-	0.2	0.6	0.5	0.4	0.1
Hepatitis unspecified	-	-	-	-	-	-	-	-
Kawasaki syndrome	0.7	1.1	0.1	-	-	-	-	-
Legionellosis	-	-	-	-	0.1	0.2	1.0	1.5
Listeriosis, nonperinatal	-	-	-	-	-	0.2	0.8	0.6
Listeriosis, perinatal	-	-	-	4.3	8.4	-	-	-
Lyme disease	-	-	0.1	0.1	0.1	0.1	0.1	0.1
Malaria	0.7	0.2	0.1	0.5	0.7	0.6	0.3	0.2
Measles	-	-	-	-	-	-	-	-
Meningitis, viral	34.4	3.3	7.5	5.8	4.6	2.7	1.8	1.8
Meningococcal infections	5.1	0.9	0.4	0.4	0.3	0.3	0.7	0.5
Mumps	-	0.9	0.6	0.1	-	-	-	-
Pertussis	92.2	1.8	1.1	0.3	0.3	0.3	-	0.2
Psittacosis	-	-	-	-	-	-	-	-
Q-fever	-	-	-	0.1	-	-	-	0.2
Relapsing fever	-	-	0.1	-	-	-	-	-
Rheumatic fever, acute	-	-	-	-	-	-	-	-
Rubella	-	-	-	-	-	-	-	-
Salmonellosis	58.5	30.6	10.4	7.9	6.2	6.9	8.0	10.6
Shigellosis	8.8	50.5	20.3	5.8	7.6	4.3	3.8	3.5
Strongyloidiasis	-	-	-	-	-	-	-	-
Tetanus	-	-	-	-	-	-	0.1	0.1
Trichinosis	-	-	-	-	-	-	-	-
Tularemia	-	-	-	-	-	-	-	-
Typhoid fever, case	0.7	0.9	0.5	0.5	0.2	0.1	-	0.1
Typhoid fever, carrier	-	-	-	0.1	0.1	-	0.1	0.1
Typhus fever	-	-	0.1	0.1	0.1	0.2	0.1	-
Vibrio	-	-	0.1	0.1	0.2	0.3	0.3	0.2

[a] Rates for perinatal listeriosis were calculated as cases per 100,000 live births.
[b] Rates of disease based on less than 20 cases or events are considered "unreliable." A zero rate made from no events is especially hazardous and are not reported here, except with a dash ("-"). Conclusions drawn from unreliable rates should be made with caution, if they are to be made at all.

Table L. Number of Cases of Selected Notifiable Diseases by Race/Ethnicity
Los Angeles County, 2002

Disease	Asian	Black	Latino	White	Other[a]	Unknown
Amebiasis	4	6	56	34	1	1
Botulism	0	1	0	0	0	1
Brucellosis	0	0	9	1	0	1
Campylobacteriosis	125	49	526	349	6	12
Cholera	0	0	0	0	0	0
Coccidioidomycosis	14	17	21	21	0	3
Cryptosporidiosis	0	7	15	37	0	3
Cysticercosis	2	0	15	1	0	0
Dengue	0	0	3	1	0	3
E. *coli* O157:H7	3	2	11	15	0	0
Encephalitis	10	4	26	19	0	2
Giardiasis	43	19	185	159	8	27
Haemophilus influenzae type b	1	0	2	0	0	0
Hansen's Disease (Leprosy)	1	0	8	1	1	0
Hepatitis A	59	22	151	145	11	50
Hepatitis B	13	15	30	22	3	10
Hepatitis C	2	1	9	6	0	6
Hepatitis unspecified	0	0	0	0	0	0
Kawasaki syndrome	1	2	3	1	0	2
Legionellosis	3	1	9	11	0	1
Listeriosis, nonperinatal	1	0	4	9	0	0
Listeriosis, perinatal	1	0	5	1	0	0
Lyme disease	1	0	0	7	0	0
Malaria	6	19	6	7	0	0
Measles	0	0	0	0	0	0
Meningitis, viral	16	43	183	134	4	86
Meningococcal infections	5	5	24	12	0	0
Mumps	3	1	8	1	1	2
Pertussis	7	17	107	38	0	1
Psittacosis	0	0	0	0	0	0
Q-fever	0	0	2	2	0	0
Relapsing fever	0	0	0	1	0	0
Rheumatic fever, acute	0	0	0	0	0	0
Rubella	0	0	0	0	0	0
Salmonellosis	86	77	499	263	7	16
Shigellosis	27	85	646	202	2	11
Strongyloidiasis	0	0	0	0	0	0
Tetanus	0	0	0	2	0	0
Trichinosis	0	0	0	0	0	0
Tularemia	0	0	0	0	0	0
Typhoid fever, case	11	1	17	2	1	1
Typhoid fever, carrier	1	0	3	0	0	0
Typhus fever	0	2	5	4	0	0
Vibrio	4	0	7	2	0	1

[a] Other includes Native American and any additional racial group that cannot be categorized as Asian, Black, Latino, and White.

Table M. Incidence Rates of Selected Notifiable Diseases by Race/Ethnicity
Los Angeles County, 2002

Disease	Race/Ethnicity Rates (Cases per 100,000) [b]			
	Asian	Black	Latino	White
Amebiasis	0.3	0.7	1.3	1.2
Botulism	-	0.1	-	-
Brucellosis	-	-	0.2	-
Campylobacteriosis	10.3	5.6	12.3	12.2
Cholera	-	-	-	-
Coccidioidomycosis	1.2	2.0	0.5	0.7
Cryptosporidiosis	-	0.8	0.3	1.3
Cysticercosis	0.2	-	0.3	-
Dengue	-	-	0.1	-
E. *coli* O157:H7	0.2	0.2	0.3	0.5
Encephalitis	0.8	0.5	0.6	0.7
Giardiasis	3.5	2.2	4.3	5.6
Haemophilus influenzae type b	0.1	-	0.0	-
Hansen's Disease (Leprosy)	0.1	-	0.2	-
Hepatitis A	4.9	2.5	3.5	5.1
Hepatitis B	1.1	1.7	0.7	0.8
Hepatitis C	0.2	0.1	0.2	0.2
Hepatitis unspecified	-	-	-	-
Kawasaki syndrome	0.1	0.2	0.1	-
Legionellosis	0.2	0.1	0.2	0.4
Listeriosis, nonperinatal	0.1	-	0.1	0.3
Listeriosis, perinatal	6.9	-	5.6	3.9
Lyme disease	0.1	-	-	0.2
Malaria	0.5	2.2	0.1	0.2
Measles	-	-	-	-
Meningitis, viral	1.3	5.0	4.3	4.7
Meningococcal infections	0.4	0.6	0.6	0.4
Mumps	0.2	0.1	0.2	-
Pertussis	0.6	2.0	2.5	1.3
Psittacosis	-	-	-	-
Q-fever	-	-	-	0.1
Relapsing fever	-	-	-	-
Rheumatic fever, acute	-	-	-	-
Rubella	-	-	-	-
Salmonellosis	7.1	8.9	11.6	9.2
Shigellosis	2.2	9.8	15.1	7.1
Strongyloidiasis	-	-	-	-
Tetanus	-	-	-	0.1
Trichinosis	-	-	-	-
Tularemia	-	-	-	-
Typhoid fever, case	0.9	0.1	0.4	0.1
Typhoid fever, carrier	0.1	-	0.1	-
Typhus fever	-	0.2	0.1	0.1
Vibrio	0.3	-	0.2	0.1

[a] Rates for perinatal listeriosis were calculated as cases per 100,000 live births.
[b] Rates of disease based on less than 20 cases or events are considered "unreliable." A zero rate made from no events is especially hazardous and are not reported here, except with a dash ("-"). Conclusions drawn from unreliable rates should be made with caution, if they are to be made at all.

Table N. Number of Cases and Annual Incidence Rate of Selected Notifiable Diseases by Sex Los Angeles County, 2002

Disease	Male		Female	
	Cases	Rate (Cases per 100,000) [b]	Cases	Rate (Cases per 100,000) [b]
Amebiasis	57	1.3	44	0.9
Botulism	1	0.0	1	0.0
Brucellosis	6	0.1	5	0.1
Campylobacteriosis	581	12.7	486	10.4
Cholera	0	-	0	-
Coccidioidomycosis	60	1.3	16	0.3
Cryptosporidiosis	50	1.1	12	0.3
Cysticercosis	12	0.3	6	0.1
Dengue	3	0.1	4	0.1
E. *coli* O157:H7	14	0.3	17	0.4
Encephalitis	40	0.9	21	0.4
Giardiasis	264	5.8	173	3.7
Haemophilus influenzae type b	1	0.0	2	0.0
Hansen's Disease (Leprosy)	7	0.2	4	0.1
Hepatitis A	243	5.3	194	4.1
Hepatitis B	54	1.2	39	0.8
Hepatitis C	20	0.4	4	0.1
Hepatitis unspecified	0	-	0	-
Kawasaki syndrome	6	0.1	3	0.1
Legionellosis	18	0.4	7	0.1
Listeriosis, nonperinatal	8	0.2	6	0.1
Listeriosis, perinatal	0	-	7	10.1
Lyme disease	2	0.0	6	0.1
Malaria	27	0.6	11	0.2
Measles	0	-	0	-
Meningitis, viral	204	4.5	245	5.2
Meningococcal infections	17	0.4	28	0.6
Mumps	10	0.2	6	0.1
Pertussis	82	1.8	88	1.9
Psittacosis	0	-	0	-
Q-fever	3	0.1	1	0.0
Relapsing fever	0	-	1	0.0
Rheumatic fever, acute	0	-	0	-
Rubella	0	-	0	-
Salmonellosis	459	10.1	497	10.6
Shigellosis	470	10.3	501	10.7
Strongyloidiasis	0	-	0	-
Tetanus	1	0.0	1	0.0
Trichinosis	0	-	0	-
Tularemia	0	-	0	-
Typhoid fever, case	15	0.3	18	0.4
Typhoid fever, carrier	2	0.0	4	0.1
Typhus fever	5	0.1	6	0.1
Vibrio	13	0.3	1	0.0

[a] Rates for perinatal listeriosis were calculated as cases per 100,000 live births.
[b] Rates of disease based on less than 20 cases or events are considered "unreliable." A zero rate made from no events is especially hazardous and are not reported here, except with a dash ("-"). Conclusions drawn from unreliable rates should be made with caution, if they are to be made at all.

Table O-1. Selected Notifiable Diseases
SPA 1. Antelope Valley Area
Los Angeles County, 2002

Disease	Frequency	Rate (Cases per 100,000) [b]
	Antelope	Antelope
Amebiasis	2	0.6
Botulism	0	-
Brucellosis	0	-
Campylobacteriosis	19	5.6
Cholera	0	-
Coccidioidomycosis	11	3.2
Cryptosporidiosis	0	-
Cysticercosis	0	-
Dengue	0	-
E. *coli* O157:H7	1	0.3
Encephalitis	2	0.6
Giardiasis	11	3.2
Haemophilus influenzae type b	0	-
Hansen's Disease (Leprosy)	0	-
Hepatitis A	15	4.4
Hepatitis B	2	0.6
Hepatitis C	3	0.9
Hepatitis unspecified	0	-
Kawasaki syndrome	0	-
Legionellosis	1	0.3
Listeriosis, nonperinatal	0	-
Listeriosis, perinatal	0	-
Lyme disease	1	0.3
Malaria	1	0.3
Measles	0	-
Meningitis, viral	48	14.1
Meningococcal infections	1	0.3
Mumps	1	0.3
Pertussis	10	2.9
Psittacosis	0	-
Q-fever	0	-
Relapsing fever	0	-
Rheumatic fever, acute	0	-
Rubella	0	-
Salmonellosis	16	4.7
Shigellosis	8	2.4
Strongyloidiasis	0	-
Tetanus	0	-
Trichinosis	0	-
Tularemia	0	-
Typhoid fever, case	4	1.2
Typhoid fever, carrier	1	0.3
Typhus fever	0	-
Vibrio	0	-

[a] Rates for perinatal listeriosis were calculated as cases per 100,000 live births.
[b] Rates of disease based on less than 20 cases or events are considered "unreliable." A zero rate made from no events is especially hazardous and are not reported here, except with a dash ("-"). Conclusions drawn from unreliable rates should be made with caution, if they are to be made at all.

Table O-2. Selected Notifiable Diseases
SPA 2. San Fernando Area
Los Angeles County, 2002

Disease	Frequency					Rate (Cases per 100,000) [b]				
	EV	GL	SF	WV	TOTAL	EV	GL	SF	WV	TOTAL
Amebiasis	2	7	10	11	30	0.5	2.0	2.4	1.3	1.5
Botulism	0	0	0	1	1	-	-	-	0.1	0.0
Brucellosis	0	1	0	0	1	-	0.3	-	-	0.0
Campylobacteriosis	40	45	66	110	261	9.1	13.1	16.1	12.8	12.7
Cholera	0	0	0	0	0	-	-	-	-	-
Coccidioidomycosis	2	1	2	16	21	0.5	0.3	0.5	1.9	1.0
Cryptosporidiosis	4	3	0	6	13	0.9	0.9	-	0.7	0.6
Cysticercosis	0	0	1	4	5	-	-	0.2	0.5	0.2
Dengue	0	0	0	3	3	-	-	-	0.3	0.1
E. *coli* O157:H7	0	1	3	7	11	-	0.3	0.7	0.8	0.5
Encephalitis	1	6	2	5	14	0.2	1.7	0.5	0.6	0.7
Giardiasis	28	32	21	40	121	6.4	9.3	5.1	4.7	5.9
Haemophilus influenzae type b	0	0	0	0	0	-	-	-	-	-
Hansen's Disease (Leprosy)	0	0	1	2	3	-	-	0.2	0.2	0.1
Hepatitis A	14	30	26	47	117	3.2	8.7	6.3	5.5	5.7
Hepatitis B	1	5	2	12	20	0.2	1.5	0.5	1.4	1.0
Hepatitis C	0	2	2	1	5	-	0.6	0.5	0.1	0.2
Hepatitis unspecified	0	0	0	0	0	-	-	-	-	-
Kawasaki syndrome	0	0	0	2	2	-	-	-	0.2	0.1
Legionellosis	0	2	1	1	4	-	0.6	0.2	0.1	0.2
Listeriosis, nonperinatal	1	2	0	2	5	0.2	0.6	-	0.2	0.2
Listeriosis, perinatal	0	1	0	0	1	-	0.7	-	-	0.1
Lyme disease	0	0	0	2	2	-	-	-	0.2	0.1
Malaria	2	0	2	4	8	0.5	-	0.5	0.5	0.4
Measles	0	0	0	0	0	-	-	-	-	-
Meningitis, viral	13	13	25	22	73	3.0	3.8	6.1	2.6	3.6
Meningococcal infections	3	4	0	1	8	0.7	1.2	-	0.1	0.4
Mumps	1	3	2	0	6	0.2	0.9	0.5	-	0.3
Pertussis	3	4	12	13	32	0.7	1.2	2.9	1.5	1.6
Psittacosis	0	0	0	0	0	-	-	-	-	-
Q-fever	1	0	0	1	2	0.2	-	-	0.1	0.1
Relapsing fever	0	0	0	0	0	-	-	-	-	-
Rheumatic fever, acute	0	0	0	0	0	-	-	-	-	-
Rubella	0	0	0	0	0	-	-	-	-	-
Salmonellosis	17	39	48	83	187	3.9	11.3	11.7	9.7	9.1
Shigellosis	30	29	44	75	178	6.8	8.4	10.7	8.7	8.7
Strongyloidiasis	0	0	0	0	0	-	-	-	-	-
Tetanus	0	1	0	0	1	-	0.3	-	-	0.0
Trichinosis	0	0	0	0	0	-	-	-	-	-
Tularemia	0	0	0	0	0	-	-	-	-	-
Typhoid fever, case	1	1	2	4	8	0.2	0.3	0.5	0.5	0.4
Typhoid fever, carrier	0	0	1	1	2	-	-	0.2	0.1	0.1
Typhus fever	0	1	0	0	1	-	0.3	-	-	0.0
Vibrio	0	0	0	1	1	-	-	-	0.1	0.0

[a] Rates for perinatal listeriosis were calculated as cases per 100,000 live births.
[b] Rates of disease based on less than 20 cases or events are considered "unreliable." A zero rate made from no events is especially hazardous and are not reported here, except with a dash ("-"). Conclusions drawn from unreliable rates should be made with caution, if they are to be made at all.

Table O-3. Selected Notifiable Diseases
SPA 3. San Gabriel Area
Los Angeles County, 2002

Disease	Frequency					Rate (Cases per 100,000) [b]				
	AH	EM	FH	PO	TOTAL	AH	EM	FH	PO	TOTAL
Amebiasis	4	1	5	2	12	1.1	0.2	1.6	0.4	0.7
Botulism	0	0	0	1	1	-	-	-	0.2	0.1
Brucellosis	0	1	0	2	3	-	0.2	-	0.4	0.2
Campylobacteriosis	45	14	34	54	147	12.9	3.1	11.2	9.8	8.9
Cholera	0	0	0	0	0	-	-	-	-	-
Coccidioidomycosis	4	0	0	3	7	1.1	-	-	0.5	0.4
Cryptosporidiosis	0	0	1	3	4	-	-	0.3	0.5	0.2
Cysticercosis	0	1	1	3	5	-	0.2	0.3	0.5	0.3
Dengue	0	0	1	0	1	-	-	0.3	-	0.1
E. *coli* O157:H7	1	0	5	1	7	0.3	-	1.6	0.2	0.4
Encephalitis	1	1	2	5	9	0.3	0.2	0.7	0.9	0.5
Giardiasis	29	6	13	19	67	8.3	1.3	4.3	3.4	4.0
Haemophilus influenzae type b	0	0	0	0	0	-	-	-	-	-
Hansen's Disease (Leprosy)	0	1	1	2	4	-	0.2	0.3	0.4	0.2
Hepatitis A	19	10	13	25	67	5.4	2.2	4.3	4.5	4.0
Hepatitis B	3	0	5	1	9	0.9	-	1.6	0.2	0.5
Hepatitis C	1	0	1	3	5	0.3	-	0.3	0.5	0.3
Hepatitis unspecified	0	0	0	0	0	-	-	-	-	-
Kawasaki syndrome	0	1	1	0	2	-	0.2	0.3	-	0.1
Legionellosis	1	0	0	0	1	0.3	-	-	-	0.1
Listeriosis, nonperinatal	1	2	0	0	3	0.3	0.4	-	-	0.2
Listeriosis, perinatal	1	0	0	0	1	0.7	-	-	-	0.1
Lyme disease	1	0	1	0	2	0.3	-	0.3	-	0.1
Malaria	0	0	1	2	3	-	-	0.3	0.4	0.2
Measles	0	0	0	0	0	-	-	-	-	-
Meningitis, viral	22	6	31	42	101	6.3	1.3	10.2	7.6	6.1
Meningococcal infections	2	1	1	6	10	0.6	0.2	0.3	1.1	0.6
Mumps	1	1	0	1	3	0.3	0.2	-	0.2	0.2
Pertussis	8	3	7	3	21	2.3	0.7	2.3	0.5	1.3
Psittacosis	0	0	0	0	0	-	-	-	-	-
Q-fever	0	0	0	0	0	-	-	-	-	-
Relapsing fever	0	0	0	0	0	-	-	-	-	-
Rheumatic fever, acute	0	0	0	0	0	-	-	-	-	-
Rubella	0	0	0	0	0	-	-	-	-	-
Salmonellosis	43	13	24	62	142	12.3	2.9	7.9	11.3	8.6
Shigellosis	21	2	40	47	110	6.0	0.4	13.1	8.5	6.6
Strongyloidiasis	0	0	0	0	0	-	-	-	-	-
Tetanus	0	0	0	0	0	-	-	-	-	-
Trichinosis	0	0	0	0	0	-	-	-	-	-
Tularemia	0	0	0	0	0	-	-	-	-	-
Typhoid fever, case	3	0	1	2	6	0.9	-	0.3	0.4	0.4
Typhoid fever, carrier	0	0	1	0	1	-	-	0.3	-	0.1
Typhus fever	4	0	0	0	4	1.1	-	-	-	0.2
Vibrio	0	1	2	1	4	-	0.2	0.7	0.2	0.2

[a] Rates for perinatal listeriosis were calculated as cases per 100,000 live births.
[b] Rates of disease based on less than 20 cases or events are considered "unreliable." A zero rate made from no events is especially hazardous and are not reported here, except with a dash ("-"). Conclusions drawn from unreliable rates should be made with caution, if they are to be made at all.

Table O-4. Selected Notifiable Diseases
SPA 4. Metro Area
Los Angeles County, 2002

Disease	Frequency				Rate (Cases per 100,000) [b]			
	CE	HW	NE	TOTAL	CE	HW	NE	TOTAL
Amebiasis	6	15	0	21	1.8	2.9	-	1.8
Botulism	0	0	0	0	-	-	-	-
Brucellosis	0	0	0	0	-	-	-	-
Campylobacteriosis	44	53	33	130	13.0	10.2	10.4	11.1
Cholera	0	0	0	0	-	-	-	-
Coccidioidomycosis	1	3	1	5	0.3	0.6	0.3	0.4
Cryptosporidiosis	4	14	2	20	1.2	2.7	0.6	1.7
Cysticercosis	1	0	0	1	0.3	-	-	0.1
Dengue	0	0	0	0	-	-	-	-
E. *coli* O157:H7	0	1	0	1	-	0.2	-	0.1
Encephalitis	2	1	1	4	0.6	0.2	0.3	0.3
Giardiasis	14	39	11	64	4.1	7.5	3.5	5.5
Haemophilus influenzae type b	0	0	1	1	-	-	0.3	0.1
Hansen's Disease (Leprosy)	0	0	0	0	-	-	-	-
Hepatitis A	21	54	8	83	6.2	10.4	2.5	7.1
Hepatitis B	4	21	1	26	1.2	4.1	0.3	2.2
Hepatitis C	1	0	0	1	0.3	-	-	0.1
Hepatitis unspecified	0	0	0	0	-	-	-	-
Kawasaki syndrome	0	0	1	1	-	-	0.3	0.1
Legionellosis	3	2	2	7	0.9	0.4	0.6	0.6
Listeriosis, nonperinatal	0	0	0	0	-	-	-	-
Listeriosis, perinatal	0	1	0	1	-	0.4	-	0.2
Lyme disease	0	0	0	0	-	-	-	-
Malaria	0	3	0	3	-	0.6	-	0.3
Measles	0	0	0	0	-	-	-	-
Meningitis, viral	5	8	12	25	1.5	1.5	3.8	2.1
Meningococcal infections	2	3	3	8	0.6	0.6	0.9	0.7
Mumps	1	1	0	2	0.3	0.2	-	0.2
Pertussis	14	8	6	28	4.1	1.5	1.9	2.4
Psittacosis	0	0	0	0	-	-	-	-
Q-fever	0	0	0	0	-	-	-	-
Relapsing fever	0	0	0	0	-	-	-	-
Rheumatic fever, acute	0	0	0	0	-	-	-	-
Rubella	0	0	0	0	-	-	-	-
Salmonellosis	42	60	32	134	12.4	11.6	10.1	11.4
Shigellosis	63	80	42	185	18.6	15.5	13.2	15.8
Strongyloidiasis	0	0	0	0	-	-	-	-
Tetanus	0	0	0	0	-	-	-	-
Trichinosis	0	0	0	0	-	-	-	-
Tularemia	0	0	0	0	-	-	-	-
Typhoid fever, case	2	1	0	3	0.6	0.2	-	0.3
Typhoid fever, carrier	0	0	0	0	-	-	-	-
Typhus fever	3	0	0	3	0.9	-	-	0.3
Vibrio	0	0	0	0	-	-	-	-

[a] Rates for perinatal listeriosis were calculated as cases per 100,000 live births.
[b] Rates of disease based on less than 20 cases or events are considered "unreliable." A zero rate made from no events is especially hazardous and are not reported here, except with a dash ("-"). Conclusions drawn from unreliable rates should be made with caution, if they are to be made at all.

Table 0-5. Selected Notifiable Diseases
SPA 5. West Area
Los Angeles County, 2002

Disease	Frequency	Rate (Cases per 100,000) [b]
	West	West
Amebiasis	14	2.2
Botulism	0	-
Brucellosis	0	-
Campylobacteriosis	120	18.9
Cholera	0	-
Coccidioidomycosis	3	0.5
Cryptosporidiosis	7	1.1
Cysticercosis	0	-
Dengue	2	0.3
E. *coli* O157:H7	2	0.3
Encephalitis	3	0.5
Giardiasis	46	7.2
Haemophilus influenzae type b	0	-
Hansen's Disease (Leprosy)	0	-
Hepatitis A	21	3.3
Hepatitis B	4	0.6
Hepatitis C	0	-
Hepatitis unspecified	0	-
Kawasaki syndrome	0	-
Legionellosis	1	0.2
Listeriosis, nonperinatal	2	0.3
Listeriosis, perinatal	0	-
Lyme disease	1	0.2
Malaria	5	0.8
Measles	0	-
Meningitis, viral	16	2.5
Meningococcal infections	4	0.6
Mumps	1	0.2
Pertussis	14	2.2
Psittacosis	0	-
Q-fever	0	-
Relapsing fever	1	0.2
Rheumatic fever, acute	0	-
Rubella	0	-
Salmonellosis	55	8.6
Shigellosis	78	12.3
Strongyloidiasis	0	-
Tetanus	1	0.2
Trichinosis	0	-
Tularemia	0	-
Typhoid fever, case	0	-
Typhoid fever, carrier	0	-
Typhus fever	0	-
Vibrio	1	0.2

[a] Rates for perinatal listeriosis were calculated as cases per 100,000 live births.
[b] Rates of disease based on less than 20 cases or events are considered "unreliable." A zero rate made from no events is especially hazardous and are not reported here, except with a dash ("-"). Conclusions drawn from unreliable rates should be made with caution, if they are to be made at all.

Table O-6. Selected Notifiable Diseases
SPA 6. South Area
Los Angeles County, 2002

Disease	Frequency					Rate (Cases per 100,000) [b]				
	CN	SO	SE	SW	TOTAL	CN	SO	SE	SW	TOTAL
Amebiasis	2	0	2	2	6	0.7	-	1.2	0.5	0.6
Botulism	0	0	0	0	0	-	-	-	-	-
Brucellosis	0	0	0	0	0	-	-	-	-	-
Campylobacteriosis	21	21	23	25	90	7.4	12.2	14.1	6.7	9.1
Cholera	0	0	0	0	0	-	-	-	-	-
Coccidioidomycosis	0	0	2	4	6	-	-	1.2	1.1	0.6
Cryptosporidiosis	0	2	1	3	6	-	1.2	0.6	0.8	0.6
Cysticercosis	1	0	1	1	3	0.4	-	0.6	0.3	0.3
Dengue	0	0	1	0	1	-	-	0.6	-	0.1
E. *coli* O157:H7	0	0	0	0	0	-	-	-	-	-
Encephalitis	3	0	2	3	8	1.1	-	1.2	0.8	0.8
Giardiasis	4	5	14	12	35	1.4	2.9	8.6	3.2	3.5
Haemophilus influenzae type b	0	0	0	0	0	-	-	-	-	-
Hansen's Disease (Leprosy)	0	0	0	0	0	-	-	-	-	-
Hepatitis A	13	3	4	17	37	4.6	1.7	2.5	4.6	3.7
Hepatitis B	1	5	2	5	13	0.4	2.9	1.2	1.3	1.3
Hepatitis C	1	0	0	2	3	0.4	-	-	0.5	0.3
Hepatitis unspecified	0	0	0	0	0	-	-	-	-	-
Kawasaki syndrome	1	0	0	0	1	0.4	-	-	-	0.1
Legionellosis	0	1	2	1	4	-	0.6	1.2	0.3	0.4
Listeriosis, nonperinatal	0	0	0	0	0	-	-	-	-	-
Listeriosis, perinatal	0	2	0	0	2	-	2.5	-	-	0.4
Lyme disease	0	0	0	0	0	-	-	-	-	-
Malaria	1	0	0	4	5	0.4	-	-	1.1	0.5
Measles	0	0	0	0	0	-	-	-	-	-
Meningitis, viral	24	11	6	8	49	8.5	6.4	3.7	2.2	5.0
Meningococcal infections	2	1	0	3	6	0.7	0.6	-	0.8	0.6
Mumps	0	0	0	0	0	-	-	-	-	-
Pertussis	7	4	5	6	22	2.5	2.3	3.1	1.6	2.2
Psittacosis	0	0	0	0	0	-	-	-	-	-
Q-fever	0	0	0	0	0	-	-	-	-	-
Relapsing fever	0	0	0	0	0	-	-	-	-	-
Rheumatic fever, acute	0	0	0	0	0	-	-	-	-	-
Rubella	0	0	0	0	0	-	-	-	-	-
Salmonellosis	27	30	36	66	159	9.6	17.4	22.1	17.8	16.1
Shigellosis	37	48	55	39	179	13.1	27.8	33.8	10.5	18.1
Strongyloidiasis	0	0	0	0	0	-	-	-	-	-
Tetanus	0	0	0	0	0	-	-	-	-	-
Trichinosis	0	0	0	0	0	-	-	-	-	-
Tularemia	0	0	0	0	0	-	-	-	-	-
Typhoid fever, case	1	1	0	1	3	0.4	0.6	-	0.3	0.3
Typhoid fever, carrier	0	0	0	0	0	-	-	-	-	-
Typhus fever	0	1	0	0	1	-	0.6	-	-	0.1
Vibrio	2	0	0	1	3	0.7	-	-	0.3	0.3

[a] Rates for perinatal listeriosis were calculated as cases per 100,000 live births.
[b] Rates of disease based on less than 20 cases or events are considered "unreliable." A zero rate made from no events is especially hazardous and are not reported here, except with a dash ("-"). Conclusions drawn from unreliable rates should be made with caution, if they are to be made at all.

Table O-7. Selected Notifiable Diseases
SPA 7. East Area
Los Angeles County, 2002

Disease	Frequency					Rate (Cases per 100,000) [b]				
	BF	EL	SA	WH	TOTAL	BF	EL	SA	WH	TOTAL
Amebiasis	5	1	4	1	11	1.4	0.5	0.9	0.3	0.8
Botulism	0	0	0	0	0	-	-	-	-	-
Brucellosis	0	1	3	0	4	-	0.5	0.7	-	0.3
Campylobacteriosis	25	35	59	45	164	6.9	16.7	13.5	13.9	12.3
Cholera	0	0	0	0	0	-	-	-	-	-
Coccidioidomycosis	2	2	0	3	7	0.6	1.0	-	0.9	0.5
Cryptosporidiosis	0	3	1	2	6	-	1.4	0.2	0.6	0.5
Cysticercosis	0	0	0	3	3	-	-	-	0.9	0.2
Dengue	0	0	0	0	0	-	-	-	-	-
E. *coli* O157:H7	1	1	3	0	5	0.3	0.5	0.7	-	0.4
Encephalitis	3	1	3	3	10	0.8	0.5	0.7	0.9	0.8
Giardiasis	6	6	18	7	37	1.7	2.9	4.1	2.2	2.8
Haemophilus influenzae type b	0	0	0	0	0	-	-	-	-	-
Hansen's Disease (Leprosy)	0	1	1	1	3	-	0.5	0.2	0.3	0.2
Hepatitis A	20	12	9	17	58	5.6	5.7	2.1	5.3	4.4
Hepatitis B	0	2	4	5	11	-	1.0	0.9	1.5	0.8
Hepatitis C	0	0	3	0	3	-	-	0.7	-	0.2
Hepatitis unspecified	0	0	0	0	0	-	-	-	-	-
Kawasaki syndrome	0	0	1	2	3	-	-	0.2	0.6	0.2
Legionellosis	2	0	2	1	5	0.6	-	0.5	0.3	0.4
Listeriosis, nonperinatal	1	1	0	0	2	0.3	0.5	-	-	0.2
Listeriosis, perinatal	0	0	1	0	1	-	-	0.5	-	0.2
Lyme disease	0	0	0	0	0	-	-	-	-	-
Malaria	3	0	2	1	6	0.8	-	0.5	0.3	0.5
Measles	0	0	0	0	0	-	-	-	-	-
Meningitis, viral	35	1	29	20	85	9.7	0.5	6.6	6.2	6.4
Meningococcal infections	1	2	1	1	5	0.3	1.0	0.2	0.3	0.4
Mumps	1	0	1	1	3	0.3	-	0.2	0.3	0.2
Pertussis	4	4	8	5	21	1.1	1.9	1.8	1.5	1.6
Psittacosis	0	0	0	0	0	-	-	-	-	-
Q-fever	2	0	0	0	2	0.6	-	-	-	0.2
Relapsing fever	0	0	0	0	0	-	-	-	-	-
Rheumatic fever, acute	0	0	0	0	0	-	-	-	-	-
Rubella	0	0	0	0	0	-	-	-	-	-
Salmonellosis	24	36	39	40	139	6.7	17.2	8.9	12.4	10.4
Shigellosis	22	37	62	39	160	6.1	17.6	14.1	12.1	12.0
Strongyloidiasis	0	0	0	0	0	-	-	-	-	-
Tetanus	0	0	0	0	0	-	-	-	-	-
Trichinosis	0	0	0	0	0	-	-	-	-	-
Tularemia	0	0	0	0	0	-	-	-	-	-
Typhoid fever, case	2	1	1	0	4	0.6	0.5	0.2	-	0.3
Typhoid fever, carrier	0	0	1	0	1	-	-	0.2	-	0.1
Typhus fever	0	0	2	0	2	-	-	0.5	-	0.2
Vibrio	0	0	1	0	1	-	-	0.2	-	0.1

[a] Rates for perinatal listeriosis were calculated as cases per 100,000 live births.
[b] Rates of disease based on less than 20 cases or events are considered "unreliable." A zero rate made from no events is especially hazardous and are not reported here, except with a dash ("-"). Conclusions drawn from unreliable rates should be made with caution, if they are to be made at all.

Table O-8. Selected Notifiable Diseases
SPA 8. South Bay Area
Los Angeles County, 2002

Disease	Frequency				Rate (Cases per 100,000) [b]			
	HB	IW	TO	TOTAL	HB	IW	TO	TOTAL
Amebiasis	1	1	3	5	0.5	0.2	0.7	0.5
Botulism	0	0	0	0	-	-	-	-
Brucellosis	2	1	0	3	1.0	0.2	-	0.3
Campylobacteriosis	25	47	64	136	12.4	11.2	14.2	12.7
Cholera	0	0	0	0	-	-	-	-
Coccidioidomycosis	2	7	6	15	1.0	1.7	1.3	1.4
Cryptosporidiosis	0	1	4	5	-	0.2	0.9	0.5
Cysticercosis	0	1	0	1	-	0.2	-	0.1
Dengue	0	0	0	0	-	-	-	-
E. *coli* O157:H7	1	1	2	4	0.5	0.2	0.4	0.4
Encephalitis	0	6	3	9	-	1.4	0.7	0.8
Giardiasis	25	18	14	57	12.4	4.3	3.1	5.3
Haemophilus influenzae type b	1	1	0	2	0.5	0.2	-	0.2
Hansen's Disease (Leprosy)	0	0	1	1	-	-	0.2	0.1
Hepatitis A	8	18	13	39	4.0	4.3	2.9	3.6
Hepatitis B	0	5	2	7	-	1.2	0.4	0.7
Hepatitis C	1	1	1	3	0.5	0.2	0.2	0.3
Hepatitis unspecified	0	0	0	0	-	-	-	-
Kawasaki syndrome	0	0	0	0	-	-	-	-
Legionellosis	0	1	1	2	-	0.2	0.2	0.2
Listeriosis, nonperinatal	2	0	0	2	1.0	-	-	0.2
Listeriosis, perinatal	0	0	1	1	-	-	0.5	0.2
Lyme disease	0	0	2	2	-	-	0.4	0.2
Malaria	0	4	3	7	0.0	1.0	0.7	0.7
Measles	0	0	0	0	-	-	-	-
Meningitis, viral	22	22	22	66	10.9	5.2	4.9	6.1
Meningococcal infections	2	2	0	4	1.0	0.5	-	0.4
Mumps	0	0	0	0	-	-	-	-
Pertussis	8	6	8	22	4.0	1.4	1.8	2.0
Psittacosis	0	0	0	0	-	-	-	-
Q-fever	0	0	0	0	-	-	-	-
Relapsing fever	0	0	0	0	-	-	-	-
Rheumatic fever, acute	0	0	0	0	-	-	-	-
Rubella	0	0	0	0	-	-	-	-
Salmonellosis	39	39	46	124	19.4	9.3	10.2	11.5
Shigellosis	19	46	10	75	9.4	10.9	2.2	7.0
Strongyloidiasis	0	0	0	0	-	-	-	-
Tetanus	0	0	0	0	-	-	-	-
Trichinosis	0	0	0	0	-	-	-	-
Tularemia	0	0	0	0	-	-	-	-
Typhoid fever, case	1	1	2	4	0.5	0.2	0.4	0.4
Typhoid fever, carrier	1	0	0	1	0.5	-	-	0.1
Typhus fever	0	0	0	0	-	-	-	-
Vibrio	0	1	3	4	-	0.2	0.7	0.4

[a] Rates for perinatal listeriosis were calculated as cases per 100,000 live births.
[b] Rates of disease based on less than 20 cases or events are considered "unreliable." A zero rate made from no events is especially hazardous and are not reported here, except with a dash ("-"). Conclusions drawn from unreliable rates should be made with caution, if they are to be made at all.

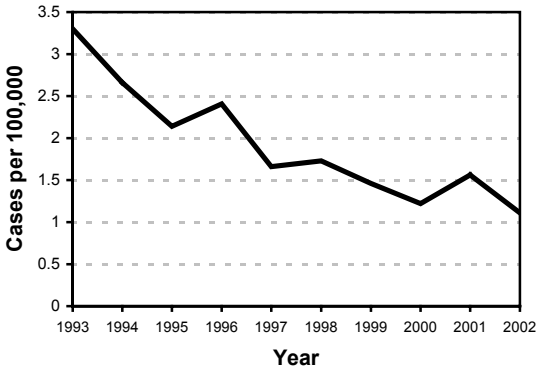
DISEASE SUMMARIES
2002

AMEBIASIS

CRUDE DATA	
Number of Cases	103
Annual Incidence[a]	
LA County	1.1
United States	N/A
Age at Diagnosis	
Mean	37
Median	37
Range	2–76 years
Case Fatality	
LA County	0.0%
United States	N/A

[a] Cases per 100,000 population.

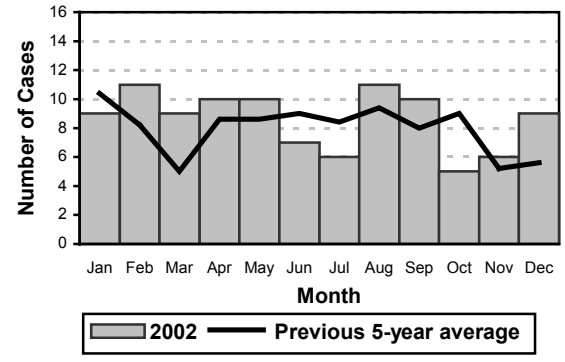
Figure 1
Amebiasis
Incidence Rates by Year
LAC, 1993–2002



DESCRIPTION

Amebiasis is caused by the protozoan parasite *Entamoeba histolytica*. Cysts shed in human feces may contaminate food or drinking water or be transferred sexually, on hands, or on fomites. Recreational waters such as lakes and pools may also serve as transmission vehicles, since cysts are relatively chlorine-resistant. While intestinal disease is often asymptomatic, symptoms may range from acute abdominal pain, fever, chills, and bloody diarrhea to mild abdominal discomfort with diarrhea alternating with constipation. Extraintestinal infection occurs when organisms become bloodborne, leading to amebic abscesses in the liver, lungs or brain. Complications include colonic perforation. There is no vaccine. The most commonly ordered parasite test (microscopy of stool for ova and parasites) cannot distinguish *E. histolytica* from *E. dispar*, a non-pathogenic amebic species.

Figure 2
Amebiasis
Cases by Month of Onset
LAC, 2002



DISEASE ABSTRACT

- Amebiasis incidence has decreased substantially over the past 10 years—a decrease of more than 62% since a peak occurring in 1993 (275 cases).
- Decreasing numbers of refugees and immigrants from endemic regions or a reduction in testing may account for the decrease in cases.
- No amebiasis outbreaks were reported during 2002.

STRATIFIED DATA

Trends: Amebiasis incidence reached an all-time low during 2002, decreasing more than 62% since a peak occurring in 1993 (275 cases, Figure 1).

Seasonality: While amebiasis incidence usually peaks during the summer months, there was only a minor summer increase seen during August and September of 2002—substantial seasonal changes were not evident (Figure 2).

Age: While amebiasis is ubiquitous, it is a disease more often contracted among young adults (Figure 3). More than half of the cases occurring in LAC during 2002 were among those aged 15–44 (n=60, 58%). Amebiasis is rare among those below age 5, and especially rare among those below age 2—dysentery in infants is more typically due to shigellae.

Sex: Males continue to be more likely to contract amebiasis than females (1.4:1).

Race/Ethnicity: Rates for White and Latino cases were virtually unchanged from the previous year (Figure 4). The rates for Asians and Blacks were too low to be compared.

Location: Three health districts had rates greater than the county mean rate: SPA 2 San Fernando (1.5), SPA 4 Metro (1.8) and SPA 5 West (2.2)—the rate in SPA 5 was more than twice the county mean rate.

Figure 3
Amebiasis
Number of Cases by Age Group
LAC, 2002

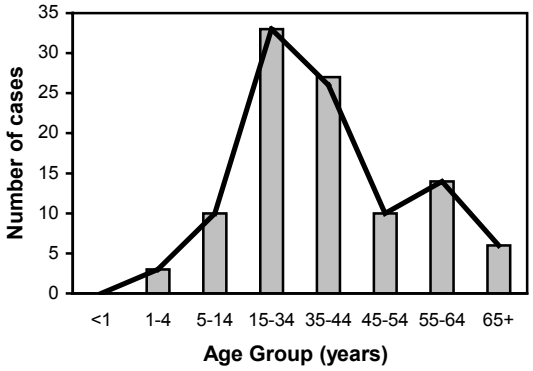
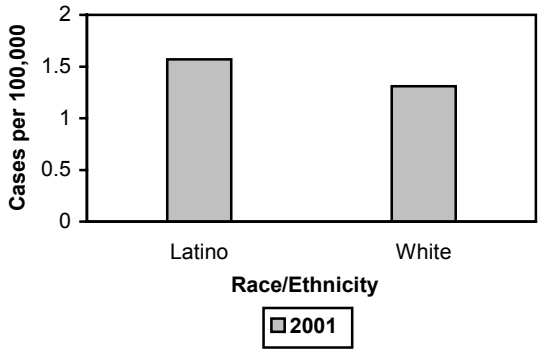


Figure 4
Amebiasis
Incidence Rates by Race/Ethnicity
LAC, 2001



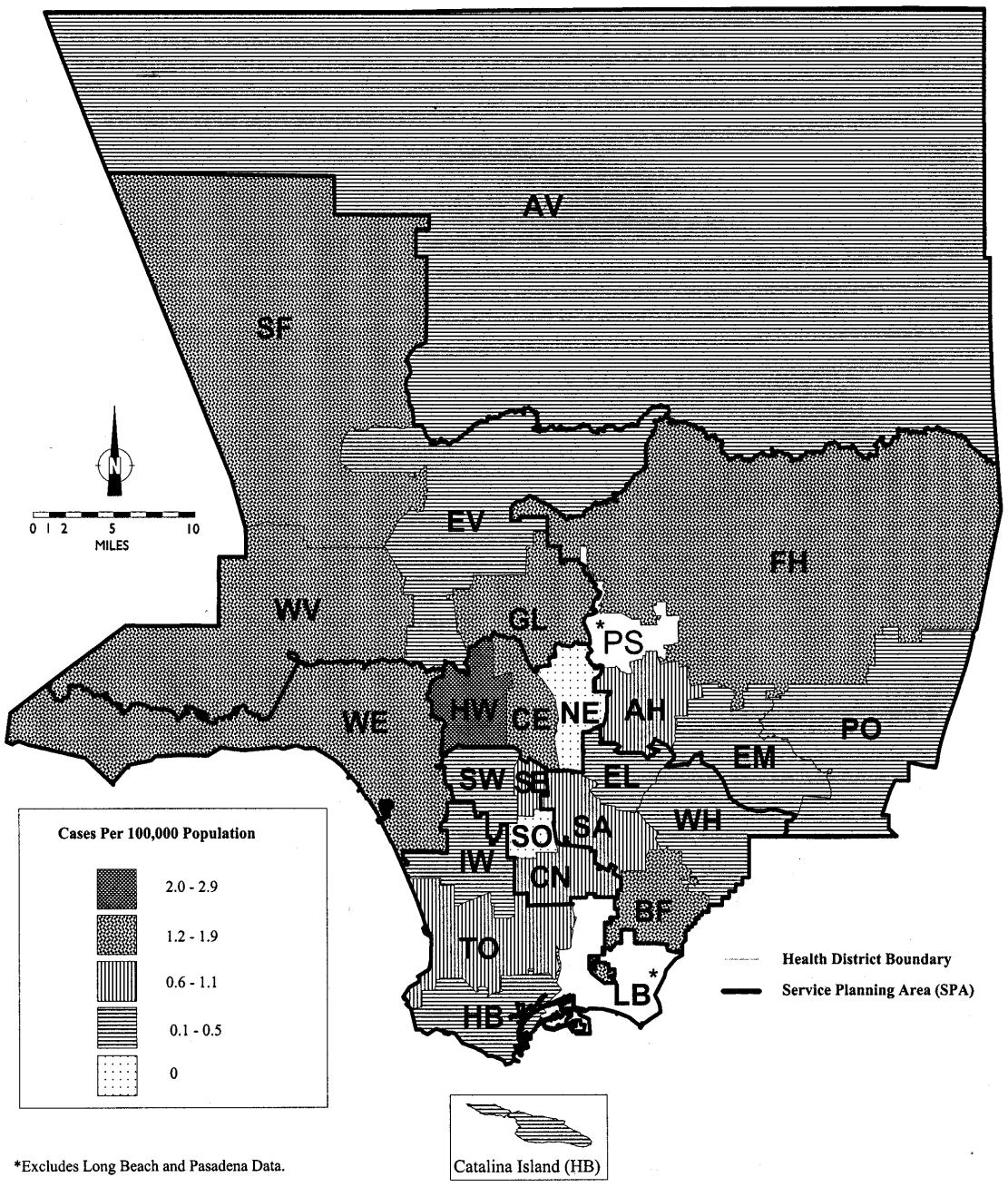
COMMENTS

Amebiasis is no longer nationally reportable, so there are no current national rates for comparison. The disease remains reportable in California because a large proportion of the population travels to endemic countries in Asia and Central America. The impact of new tests that distinguish *E. histolytica* from *E. dispar* is unknown since such tests are rarely ordered. It is believed that many reported amebiasis cases are actually not infected with pathogenic *E. histolytica*.

ADDITIONAL RESOURCES

Amebiasis—Health Information for International Travel, 2001–2002. Available at:
www.cdc.gov/travel/diseases/amebiasis.htm

MAP 1. Amebiasis
Rates by Health District, Los Angeles County, 2002*

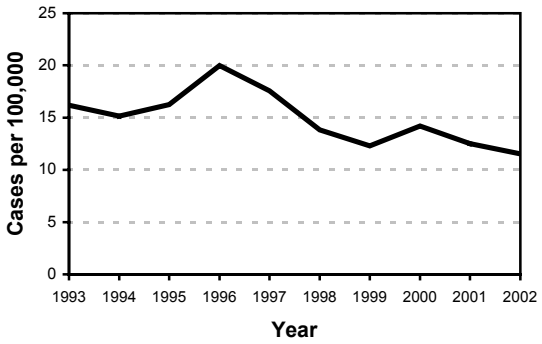


*Excludes Long Beach and Pasadena Data.

CAMPYLOBACTERIOSIS

CRUDE DATA	
Number of Cases	1,068
Annual Incidence[a]	
LA County	11.5
United States	N/A
Age at Diagnosis	
Mean	29
Median	27
Range	0–90
Case Fatality	
LA County	<1%
United States	11%

Figure 1
Campylobacteriosis
Incidence Rates by Year of Onset
LAC, 1993–2002



[a] Cases per 100,000 population.

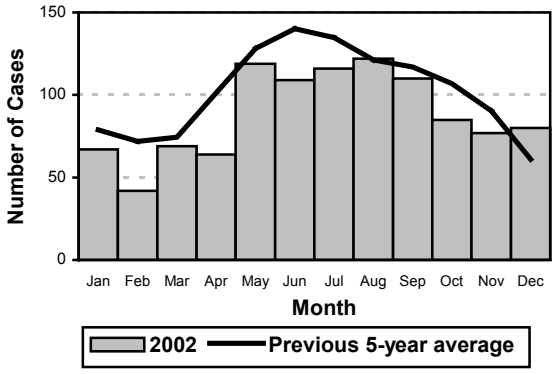
DESCRIPTION

Campylobacteriosis is a bacterial disease transmitted through ingestion of contaminated foods of animal origin, especially raw or undercooked poultry, or contaminated water. Common symptoms include watery or bloody diarrhea, fever, abdominal cramps, myalgia, and nausea. Species include *C. jejuni, C. upsaliensis, C. coli* and *C. fetus*. Sequelae include Guillain-Barré syndrome and Reiter syndrome, which occur in a limited number of cases.

DISEASE ABSTRACT

- The campylobacteriosis rate has continued to decrease following a peak during 1996.
- In 2002, the majority of cases were reported among Latinos, however, Latino rates were similar to White rates.
- Incidence is highest among infants and children. Age/race adjusted incidence rates continue to be highest among Latino infants.

Figure 2
Campylobacteriosis
Cases by Month of Onset
LAC, 2002



STRATIFIED DATA

Trends: Figure 1 shows the highest incidence rate occurred in 1996, followed by a decline in rates from 1997 to 1999. In 2000, there was a slight increase and since then the downward trend resumed.

Seasonality: As in previous years, the number of cases increased in the spring and summer. In 2002, incidence peaked May through September (Figure 2).

Age: The highest rates continued to be among infants aged <1 year and children, aged 1–4 years. All age groups are similar to the 5-year average (Figure 3).

Sex: The male-to-female ratio was 1.2:1. The preponderance of males is typical and the reason for this is not known [1].

Race/Ethnicity: In 2002, Latinos and Whites had similar crude rates. Latino infants continued to have higher age-adjusted rates compared to other race/ethnicities (Figure 4).

Location: Although SPA 2 had the highest number of cases (n=261, 24%), SPA 5 had the highest rate with 19 per 100,000. SPAs 2, 7 and 8 had a rate of 13 per 100,000. The higher rate in SPA 5 is consistent with previous years.

Severity of Illness: Many campylobacteriosis cases (13%, n=135) were hospitalized. There was one campylobacteriosis-associated death in a patient with multiple medical problems and one report of Guillain-Barré syndrome subsequent to a campylobacteriosis diagnosis.

Figure 3
Campylobacteriosis
Incidence Rates by Age Group
LAC, 2002

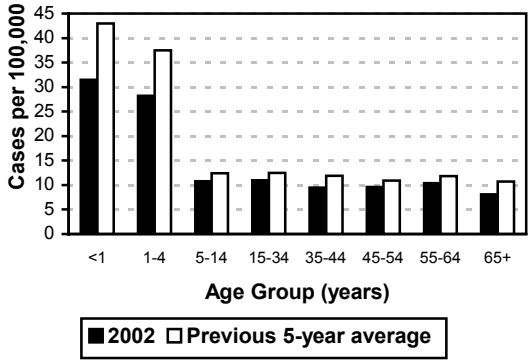
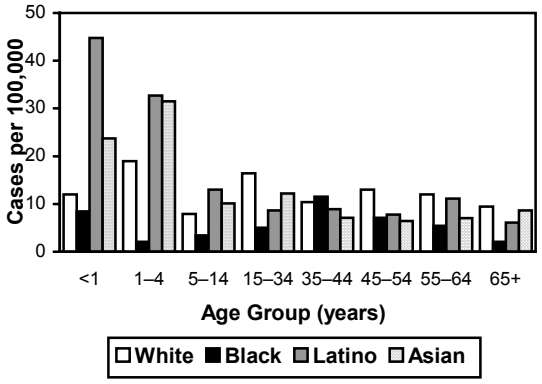


Figure 4
Campylobacteriosis Incidence Rates by
Age Group and Race/Ethnicity
LAC, 2002 (N=1068)



PREVENTION

To reduce the likelihood of contracting campylobacteriosis, all food derived from animal sources should be thoroughly cooked, particularly poultry. Cross contamination may be avoided by making sure utensils, counter tops, cutting boards and sponges are cleaned or do not come in contact with raw poultry or meat. Hands should be thoroughly washed before, during and after food preparation. The juices from raw poultry or meat should not be allowed to drip on other foods in the refrigerator or in the shopping cart. In addition, it is recommended to drink only pasteurized milk or juices.

COMMENTS

Although *Campylobacter* remains one of the most commonly identified bacterial causes of gastroenteritis, rates of this disease have been steadily decreasing in LAC. The reasons for this are not known.

In 2002, 233 cases (22%) reported travel during the incubation period. Of these, 34% traveled within the US. Travel may be associated with visiting countries where food safety is questionable. Travel may also be a marker for eating in restaurants more often.

There were two campylobacteriosis outbreaks in 2002; both were community outbreaks. One outbreak involved consumption of raw milk at a dairy farm and the other involved eating raw meats as part of a

party game. Eating at a specific restaurant serving an ethnic dish consisting of intentionally undercooked chicken was a risk for three sporadic cases.

The majority of all confirmed cases (65%) were speciated. Of these, 99% were identified as *C. jejuni*; 0.3% *C. coli,* 0.3% *C.fetus, and* 0.7% *C. laridis* .

REFERENCES

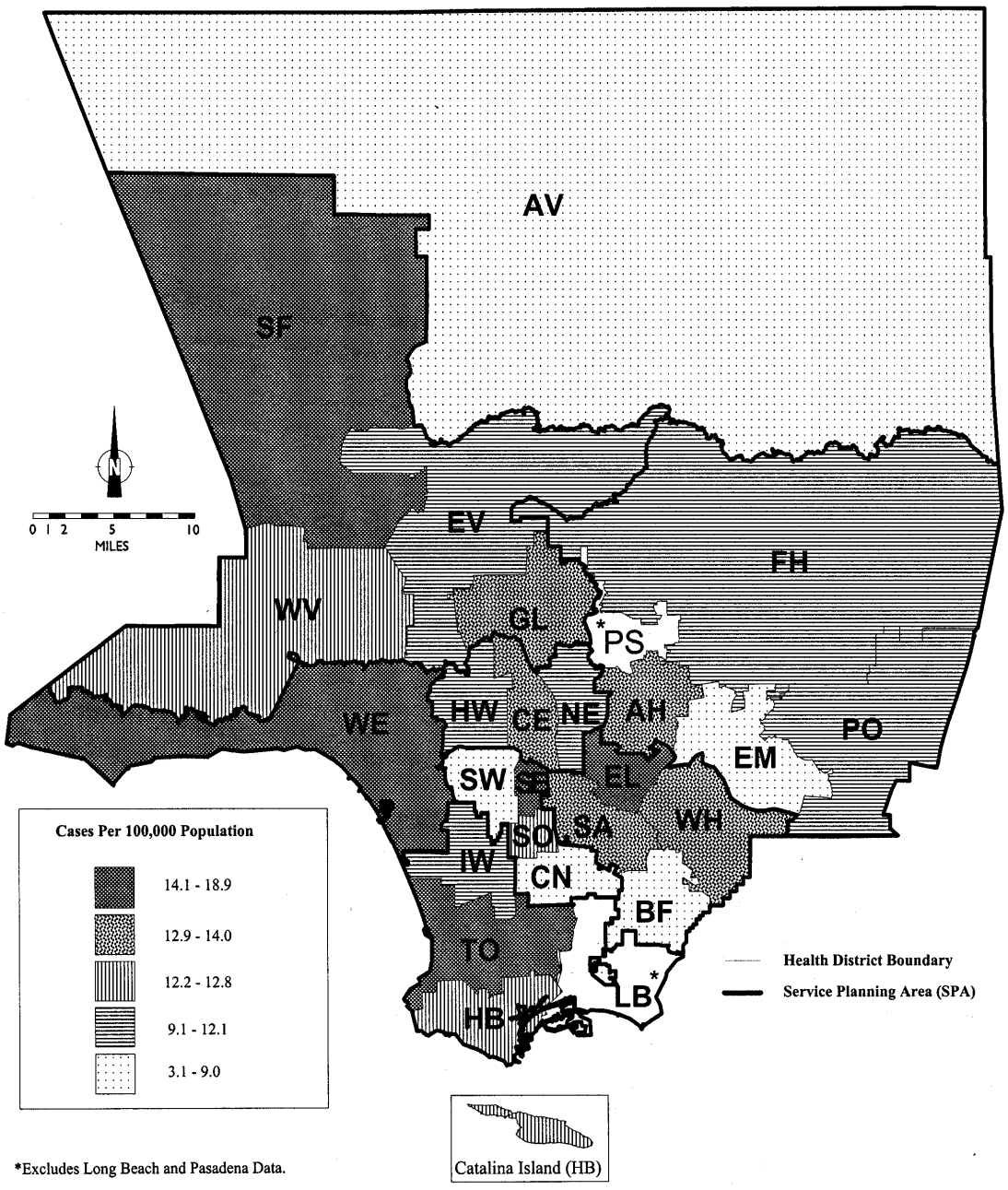
1. Allos, B.M. Campylobacter jejuni infections: update on emerging issues and trends. Clinical Infectious Diseases 2001; 32:1201–6.

ADDITIONAL RESOURCES

Disease information is available from the CDC at:
www.cdc.gov/ncidod/abmd/diseaseinfo/campylobacter_g.htm

General information and reporting information about this and other foodborne diseases in LAC is available at: www.lapublichealth.org/acd/food.htm

MAP 2. Campylobacteriosis
Rates by Health District, Los Angeles County, 2002*

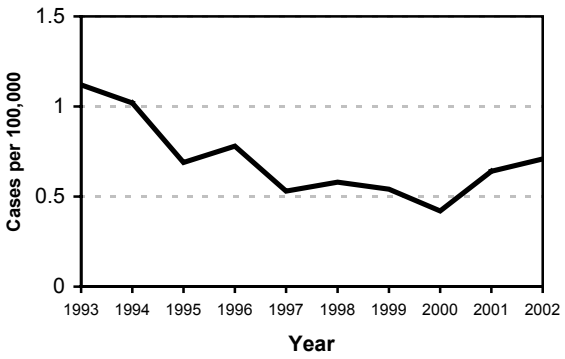


*Excludes Long Beach and Pasadena Data.

COCCIDIOIDOMYCOSIS

CRUDE DATA	
Number of Cases	66
Annual Incidence	
LA County	0.7
California[b]	5.1
United States	1.8
Age at Diagnosis	
Mean	46
Median	45
Range	17–86 years
Case Fatality	
LA County	12%
United States	N/A

Figure 1
Coccidioidomycosis
Incidence Rates by Year of Onset
LAC, 1993–2002

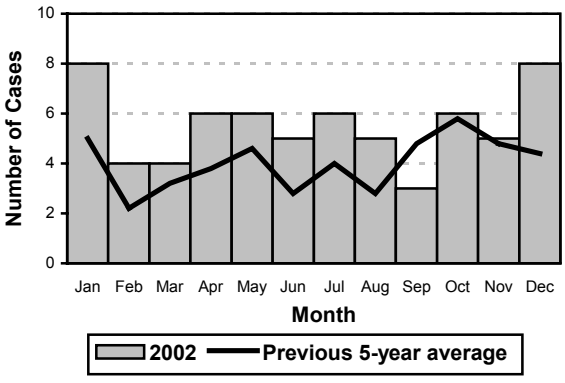


[a] Cases per 100,000 population.

[b] California Department of Health Services Surveillance and Statistics Section.

DESCRIPTION

Figure 2
Coccidioidomycosis
by Month of Onset
LAC, 2002 (N=66)



Coccidioidomycosis, or "Valley Fever," is a common fungal disease transmitted through the inhalation of infective spores from *Coccidiodes immitis* that are carried in dust. Environmental conditions conducive to an increased occurrence of coccidioidomycosis are as follows: arid to semi-arid regions, dust storms, lower altitude, hotter summers, warmer winters, and sandy, alkaline soils. It is endemic in the southwestern US and parts of Mexico and South America. Southern California is a known endemic area.

Most infected individuals exhibit no symptoms or have a mild respiratory illness, but a few individuals develop a severe illness such as pneumonia, meningitis, or dissemination when the fungus spreads to many parts of the body. Because of the wide range of clinical presentations, only the most severe cases are usually reported to the health department. Laboratory diagnosis is made by demonstrating the fungus with microscopic examination or culture or by serologic testing. Blacks, Latinos, Native Americans, Filipinos, males, pregnant women, the very young (<5 years), elderly, and immunocompromised individuals are at high risk for severe disease.

DISEASE ABSTRACT

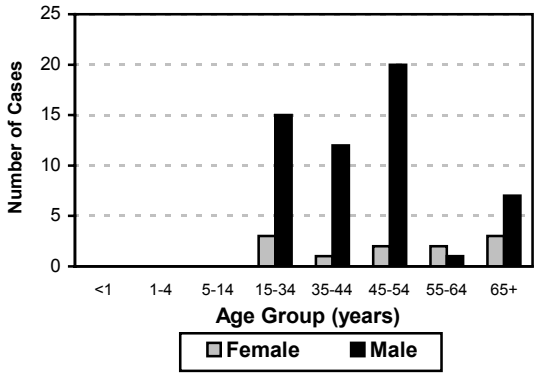
- The incidence rate for coccidioidomycosis has been increasing since 2000, which was at its lowest point in 10 years in LAC.
- Cost in terms of disease severity and hospitalization was substantial. The case fatality rate was higher and the incidence of coccidioidomycosis was greater than last year. Adults, males, Blacks, and residents of the West Valley and Antelope Valley are at higher risk for disease.

STRATIFIED DATA

Trends: The incidence rate was 0.71 cases per 100,000 population for 2002 which was higher than last year (Figure 1).

Seasonality: The highest number of cases per month was observed in January (n=8) and December (n=8). For most of the year, the number of cases per month was above the previous 5-year average (Figure 2). Although not reflected in LAC, cases commonly occur in the summer after a rainy winter or spring, especially after wind and dust storms. Perhaps because of LAC's temperate climate, the monthly fluctuation of cases is not great.

Figure 3
Coccidioidomycosis
Incidence by Age and Sex
LAC, 2002 (N=66)

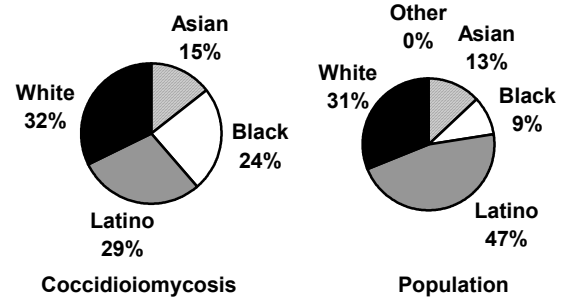


Age: For 2002, males once again have the highest incidence in all age groups where cases occurred except for persons aged 55–64 years (two female cases). The greatest numbers of cases reported were in persons aged 45–54 years (Figure 3). The youngest case was 17 years of age.

Sex: The male-to-female rate ratio was 5.2:1. The mean age for males was 45 years and for females it was 52 (Figure 3). The gender difference is likely due to occupational and recreational dust exposure of males although this is not clearly evident from the information collected. No female cases reported being pregnant.

Race/Ethnicity: A higher incidence rate was observed among Blacks (1.73 cases per 100,000) compared to the other groups although the rates were unstable due to small numbers. Whites and Latinos had the greatest number of cases with 20 and 18, respectively (Figure 4).

Figure 4
Coccidioidomycosis
Percent Cases by Race/Ethnicity
LAC, 2002

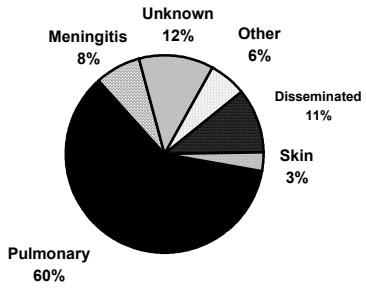


Location: West Valley (n=14) and Antelope Valley (n=11) districts had the highest number of cases reported.

Travel: Of the 20 cases where travel was known, 14 reported travel within four weeks before onset of illness: 9 traveled within California (Agoura, Saugus, Lancaster, and San Joaquin Valley) and 5 traveled outside California to Arizona and Texas. Coccidioidomycosis is known to be endemic in all these areas.

Immunosuppression: Of 16 cases known to be immunosuppressed, 5 cases had HIV, 4 were diabetic, 1 had a malignancy, 1 had an organ transplant and 5 had other diagnoses (hyperthyroidism, liver failure, infected hip prosthesis, renal failure, and disseminated TB). An HIV case also had tuberculosis and one of the diabetic cases also had a malignancy.

Figure 5
Coccidioidomycosis
by Infection Site
LAC, 2002 (N=66)



Severity of Disease: Sites of infection were reported as primary pulmonary 60% (n=40), disseminated 9% (n=7), meningitis 8% (n=5), skin 3% (n=2), other (bone, finger, neck lump, and synovial fluid) 6% (n=4), and; in 12% (n=8) of the cases infection site was not stated (Figure 5). More than half of the were cases culture-confirmed (58%, n=38) and 26 cases were diagnosed by serological, histopathological, or molecular evidence. Of the 55 cases where information was available, 84% (n=46) were hospitalized. Eight cases died. The 2002 case fatality rate (12%) was almost twice as high as last year (7%) but lower than 2000's rate (16%).

COMMENTS

In LAC, the 2002 incidence for coccidioidomycosis was higher than the previous year. Overall, the rate has been increasing since 2000. Although the number of cases reported is small compared to other diseases, the costs in terms of disease severity, hospitalization, and mortality are great. As in past years, males, Blacks, and residents of the Antelope Valley and the West Valley are at higher risk for severe disease. Unlike previous years, more middle-aged adults were affected instead of the elderly, who are normally at high risk for illness.

A documented peak occurred in 1992 to 1994 probably as a result of a 5-year drought (1986–1990) with heavy rainfall in 1991, 1992, and 1993. It appears that the organisms competing with *C. immitis* decrease in the soil during a drought and, after a heavy rain, dormant *C. immitis* spores multiply because of lack of competing organisms. Also, there was increased media attention and reporting because of a Simi Valley outbreak resulting from increased dust exposure related to the Northridge earthquake in 1994.

PREVENTION

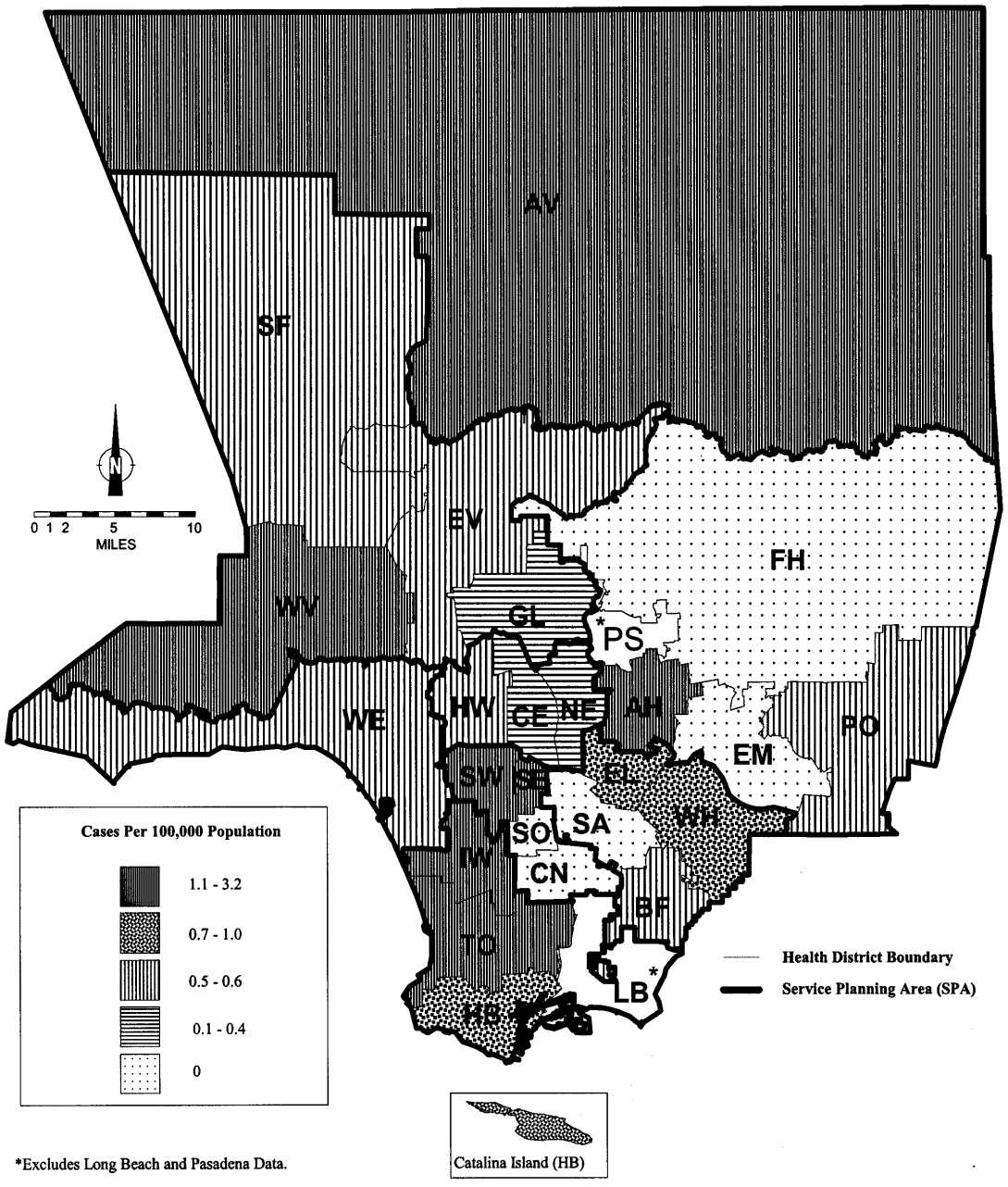
There is no safe and effective vaccine or drug to prevent coccidioidomycosis; prevention lies mainly in dust control such as planting grass in dusty areas, putting oil on roadways, wetting down soil, air conditioning homes, and wearing masks or respirators. Other options may be to warn individuals who are at high risk for severe disease not to travel to endemic areas when conditions are most dangerous for exposure.

ADDITIONAL RESOURCES

More information about coccidiomycosis is available from the CDC at:
www.cdc.gov/ncidod/dbmd/diseaseinfo/coccidioidomycosis_t.htm

Kirkland TN, Fierer J. Coccidioidomycosis: A reemerging infectious disease. Emerg Infect Dis 1996; 2(3):192–9.

MAP 3. Coccidioidomycosis
Rates by Health District, Los Angeles County, 2002*



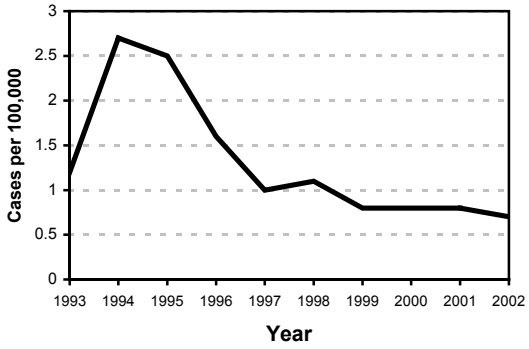
*Excludes Long Beach and Pasadena Data.

CRYPTOSPORIDIOSIS

CRUDE DATA	
Number of Cases	62
Annual Incidence[a]	
LA County	0.7
California[b]	0.6
United States[b]	1.1
Age at Diagnosis	
Mean	36
Median	38
Range	1–68 years
Case Fatality	
LA County	0.0%
United States	N/A

[a] Cases per 100,000 population.

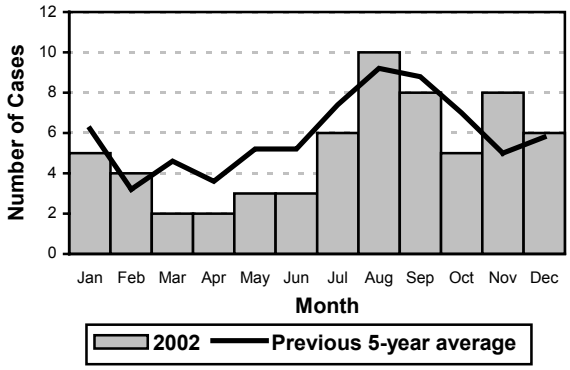
Figure 1
Cryptosporidiosis
Incidence Rates by Year of Onset
LAC, 1993–2002



DESCRIPTION

Cryptosporidiosis is fecal-orally transmitted when by cysts of the parasite *Cryptosporidium parvum* are ingested. Common causes include unprotected sexual contact, particularly among men who have sex with men (MSM), and by swallowing contaminated recreational or untreated water. The usual incubation period is 2–10 days with typical symptoms of watery diarrhea, abdominal cramps, and low-grade fever; however, asymptomatic infection is also common. Symptoms last up to 2 weeks in healthy individuals. Those who have a weakened immune system may experience prolonged illness. Immunocompromised individuals (e.g., HIV/AIDS patients, cancer patients, transplant patients), young children and pregnant women are at risk for more severe illness.

Figure 2
Cryptosporidiosis
Cases by Month of Onset
LAC, 2002



DISEASE ABSTRACT

- The incidence rate for this disease has been decreasing since it peaked during 1994. The last outbreak of this disease occurred during 1998.
- HIV infection and AIDS are the most common identified risk factors for cryptosporidiosis. Cryptosporidiosis has been an AIDS-defining disease since 1983. The number of reported cases has decreased since the advent of highly active antiretroviral therapy.

STRATIFIED DATA

Trends: The rate of cryptosporidiosis (0.7 cases per 100,000) decreased slightly in 2002 (Figure 1), after a plateau from 1999 to 2000.

Seasonality: In 2002, there was a peak in August coinciding with the previous 5-year average peak (Figure 2).

Age: The 35–44 age group had the highest incidence rate (Figure 3).

Sex: The male-to-female rate ratio was 3.7:1. This is due to the high rate of cryptosporidiosis in MSM.

Race/Ethnicity: Whites had the most cases (36) and the highest rate (Figures 4). Blacks had the next highest rate, followed by Latinos. There were no cases reported among Asians. This variable was unknown for 4 cases (6%).

Location: Location information was available for all 62 cases. Many cases (21%, n=13) lived in the Hollywood-Wilshire Health District, or in the West District (13%, n=8).

Risk Factors: Complete risk factor data was not available for all cases; more than one-fourth of all cases (26%, n=12) were either unable to be located or refused to be interviewed (Figure 5). HIV infection and AIDS accounted for 50% of the cases, only one of these cases was female. Animal contact (34%) and outdoor activities (21%) including swimming, camping and hiking, were the two highest risk factors besides HIV status. Nearly one out of every five cases (19%) had a history of international travel and 16% were immigrants (recent or otherwise). Reports of plumbing problems were indicated in 8% of cases. Many cases had more than one risk factor.

Figure 3
Cryptosporidiosis
Incidence Rates by Age Group
LAC, 2002

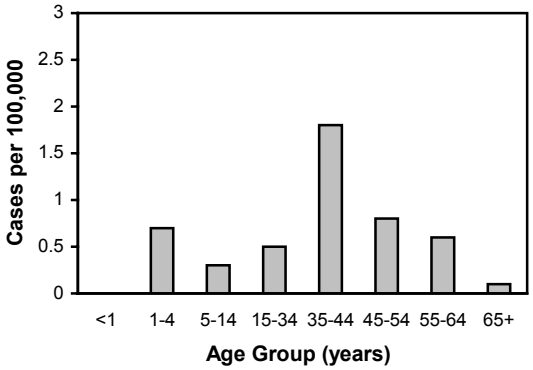


Figure 4
Cryptosporidiosis
Incidence Rate by Race/Ethnicity
LAC, 2002

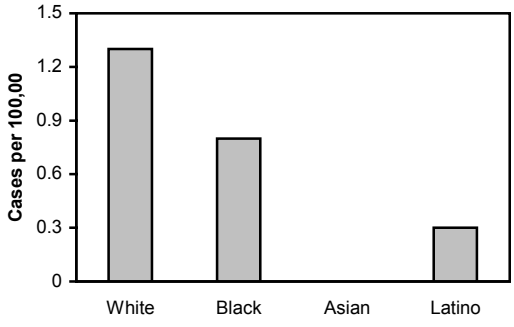
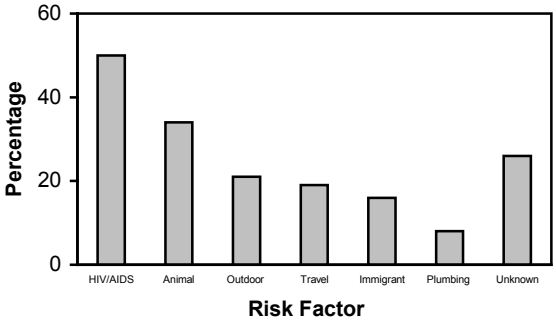


Figure 5
Cryptosporidiosis
by Reported Risk Factor
LAC, 2002



COMMENTS

It should be noted that the risk factors were self reported and were not proven to be the actual source of infection. A large percentage (48%) of the cryptosporidiosis cases were among HIV positive men. The actual percentage is probably higher since 12 cases had unknown HIV status. Accordingly, this group, specifically white males (who comprised 66% of the HIV positive group), would be a prime audience for preventive education. Cryptosporidiosis can become a chronic infection among immunocompromised patients and cases are often reported multiple times; however, within this report, cases are counted only once. There has not been

an outbreak of cryptosporidiosis in LAC since 1988, which involved contaminated swimming pool water [1].

RESOURCES

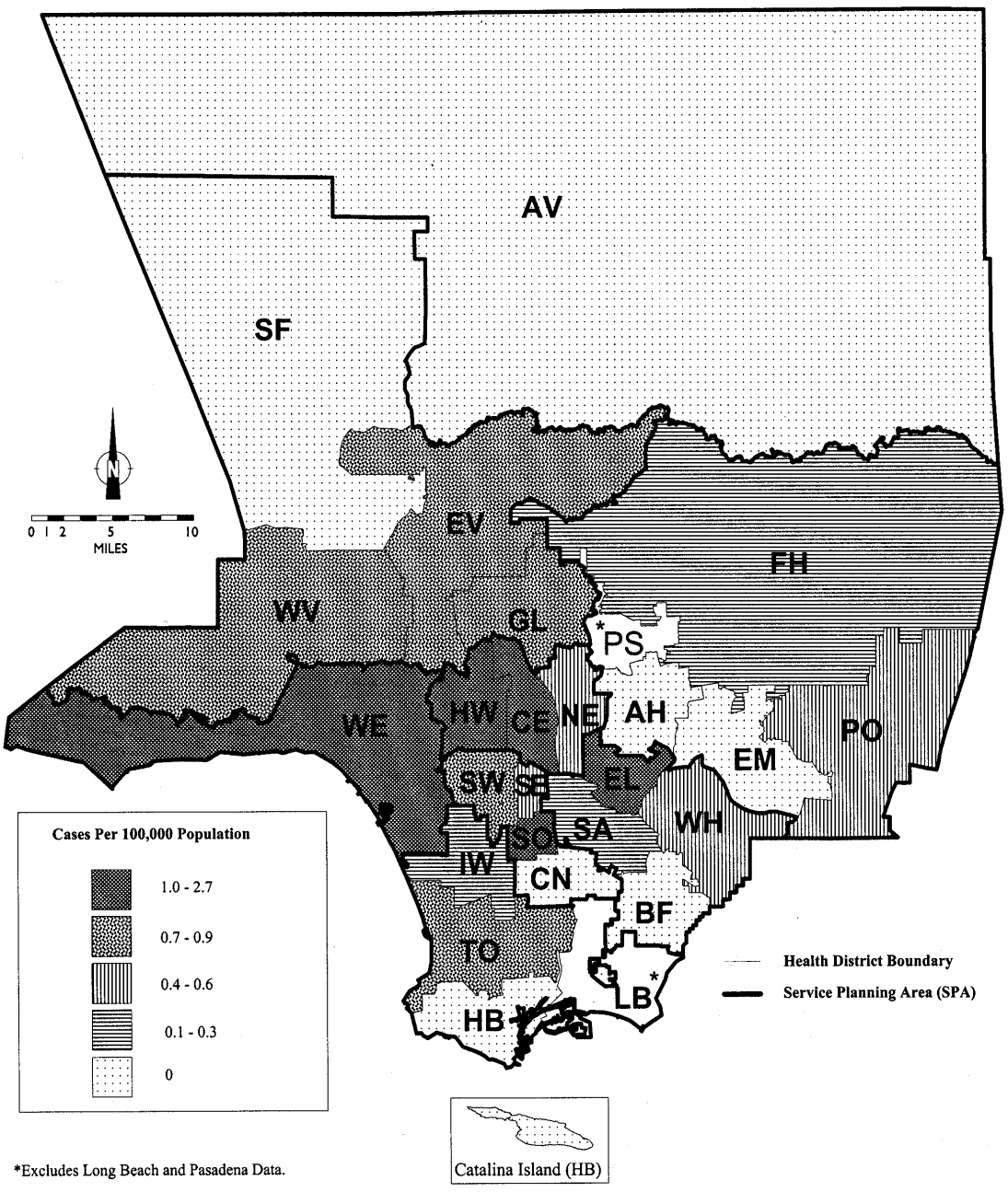
1. Sorvillo FJ, Fujioka K, Nahlen B, Tormey MP, Kebabjian R, Mascola L. Swimming-associated cryptosporidiosis. Am J Public Health 1992; 82(5):742–4.

ADDITIONAL RESOURCES

General disease information is available from the CDC at:
www.cdc.gov/ncidod/dpd/parasites/cryptosporidiosis/default.htm

General information and reporting information about this and other foodborne diseases in LAC is available at: www.lapublichealth.org/acd/food.htm

MAP 4. Cryptosporidiosis
Rates by Health District, Los Angeles County, 2002*



*Excludes Long Beach and Pasadena Data.

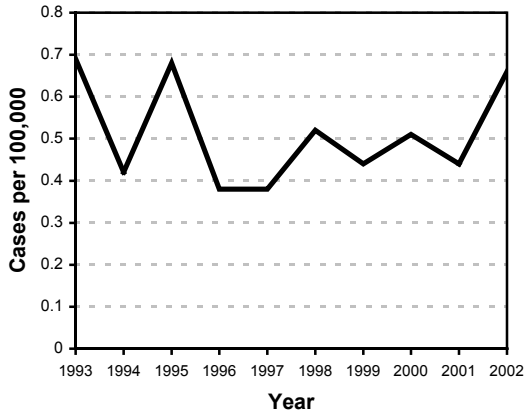
ENCEPHALITIS

CRUDE DATA	
Number of Cases	61
Annual Incidence[a]	
LA County	0.7
California	N/A
United States	N/A
Age at Diagnosis	
Mean	30
Median	18
Range	0–91 years
Case Fatality	
LA County[b]	16.0%
United States	N/A

[a] Cases per 100,000 population.

[b] Excludes AIDS encephalopathy cases.

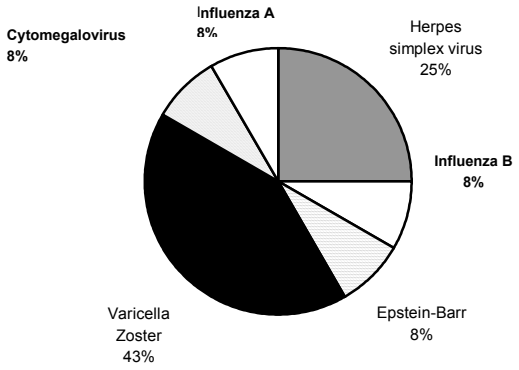
Figure 1
Encephalitis
Incidence Rates by Year of Onset
LAC 1993–2002



DESCRIPTION

Encephalitis, an inflammation of parts of the brain, spinal cord and meninges, causes headache, stiff neck, fever and altered mental status. It can result from infection with a number of different agents including viral, parasitic, fungal, rickettsial, bacterial and chemical. Public health surveillance is limited to cases of suspected or confirmed viral etiology, which includes primary and post-infectious encephalitis—but excludes individuals with underlying Human Immunodeficiency Virus (HIV) infection. Of special concern is arboviral (mosquitoborne) encephalitis, which can be prevented by personal protection and mosquito control. The etiologies of cases with known cause reported in 2002 are shown in Figure 2.

Figure 2
Encephalitis by Etiology
LAC, 2002 (N=12)



DISEASE ABSTRACT

- The incidence of viral encephalitis in 2002 was 0.66 cases per 100,000 population (Figure 1).
- The 2002 case fatality of 16 % is lower than in 2001, 22 %, and also from prior years where case fatality has been as high as 38% in 1997. The 2002 LAC case fatality rate is comparable to that seen in the California Encephalitis Project in 2002, reported as 15%.
- 27 (45%) were in children less than 15 years of age, 14 (22%) were in those from 15 to 44 and 20 (33%) occurred in those more than 55 years.
- There were 40 male cases (65%) and 21 (35%) female cases.

- Cases of encephalitis occurred throughout LAC; SPA 2 had 14 cases, followed by SPA 7 with 10 and SPA 3 and SPA 8 with 9 cases.
- The underlying viral etiology of encephalitis was identified only in 12 (20%) cases. The etiologies identified included 5 of cases caused by Varicella Zoster Virus (VZV), three cases caused by Herpes Simplex Virus (HSV) and 1 case each of encephalitis caused by Influenza A, Influenza B and Epstein-Barr viruses (Figure 2).

COMMENTS

The reported annual incidence of acute encephalitis has varied from 3.5–7.4 cases per 100,000 person-years. Using 2002 US census data, LAC viral encephalitis rate of 0.6 per 100,000 person-years is far lower that rates quoted in the surveillance literature. Reasons to explain our lower rate could be the exclusion of other infectious etiologies of encephalitis, reporting of seriously ill patients by medical facilities and misclassification of aseptic meningitis as encephalitis cases in earlier surveillance reports from the 1950–1990's. The mortality ratio in LAC from encephalitis has ranged from a high of 38 % in 1997 to a low of 16% in 2002. LAC mortality data is consistent with data from the California Encephalitis Project with an overall reported mortality ratio of 15 % in 2002. In both LAC an the California Encephalitis Project, reporting may be biased to the more severely ill individuals.

The underlying etiologies of encephalitis are diverse in both infectious etiologies as well as non-infectious etiologies. Encephalitis surveillance at ACDC is focused on acute viral etiologies excluding underlying HIV infection. Even with exhaustive testing, the underlying etiology of encephalitis is difficult to determine. Reviewing their 291 encephalitis cases from 1998–2000, the California Encephalitis Project found confirmed or probable infectious etiologies in only 15% of their encephalitis characterized as due to infectious etiology despite exhaustive viral, bacterial, fungal and parasitic testing. In 2002, 27 (45%) encephalitis cases reported to ACDC were enrolled in the California (CA) Encephalitis Project. The etiology was identified in only 3 cases (11%) enrolled in the CA Encephalitis Project. Of the 61 total cases reported to ACDC in 2002, the etiology was identified for 20% (Figure 2). Determining the etiology of encephalitis allows public health to follow disease trends, to notify the community of increased disease risk and to implement prevention efforts.

Of particular public health concern in LAC are the arthropodborne (arboviral) encephalitides, St. Louis encephalitis (SLE), Western equine encephalitis (WEE) and West Nile (WN) viruses. Since 1985, sporadic cases of SLE have been reported, following an outbreak of 16 cases in 1984. The last confirmed SLE case in LAC was in 1997. The potential for another SLE outbreak exists, as sporadic cases in previous years and identification of SLE in sentinel chicken populations indicate that the virus is now endemic in LAC. Beginning in 2001, surveillance has included West Nile (WN) virus, in addition to SLE and WEE. The mosquitoborne encephalitis surveillance program includes of surveillance for equine cases of WEE and WN viral infections, monitoring of mosquito populations, laboratory testing of mosquitoes, and twice monthly testing of sentinel chicken flocks for SLE, WEE and WN virus seroconversion. Beginning in 2001, the LAC PHL provided human testing for West Nile virus. In 2002, no arthropodborne etiology was found in cases of encephalitis reported to ACDC.

Prevention measures for arboviral infections consist of personal protection, including use of screens on windows, avoiding mosquito-infested areas, especially at dusk when most mosquitoes are active, wearing protective clothing and use of insect repellants containing DEET. Elimination of standing water and proper maintenance of ponds and swimming pools decrease the available sites for hatching and maturation of mosquito larvae. Five local mosquito abatement districts monitor and control populations of these insects, especially in areas used by the public.

Future Directions: There will be increased surveillance for WNV infection in humans. Research is underway in development of a WNV vaccine and treatment for humans. No human vaccine is available for SLE and WEE. Licensed equine (horse) vaccines are available for WEE, EEE, and WN viruses.

ADDITIONAL RESOURCES

Glaser CA, Gilliam S, Schnurr D, Bagher F, Honarmand S, et al. In search of encephalitis etiologies: Diagnostic challenges in the California Encephalitis Project, 1998–2000. CID 2003; 36:731–42.

Khetsuriani H, Holman RC, Anderson LJ. Burden of encephalitis-associated hospitalizations in the United States, 1988–1997. CID 2002; 25:175–82.

Johnston RT. Acute Encephalitis. CID 1996; 23:219–26.

Nicolosi A. Hauser WA, Beghi E, Kurland LT. Epidemiology of central nervous system infections in Olmsted County, Minnesota, 1950–1981. J Inf Ds 1986; 154:399–498.

For information on mosquitoborne encephalitis: www.cdc.gov/ncidod/dvbid/arbor/index.htm

For information for consumers: www.nlm.nih.gov/medlineplus/encephalitis.html

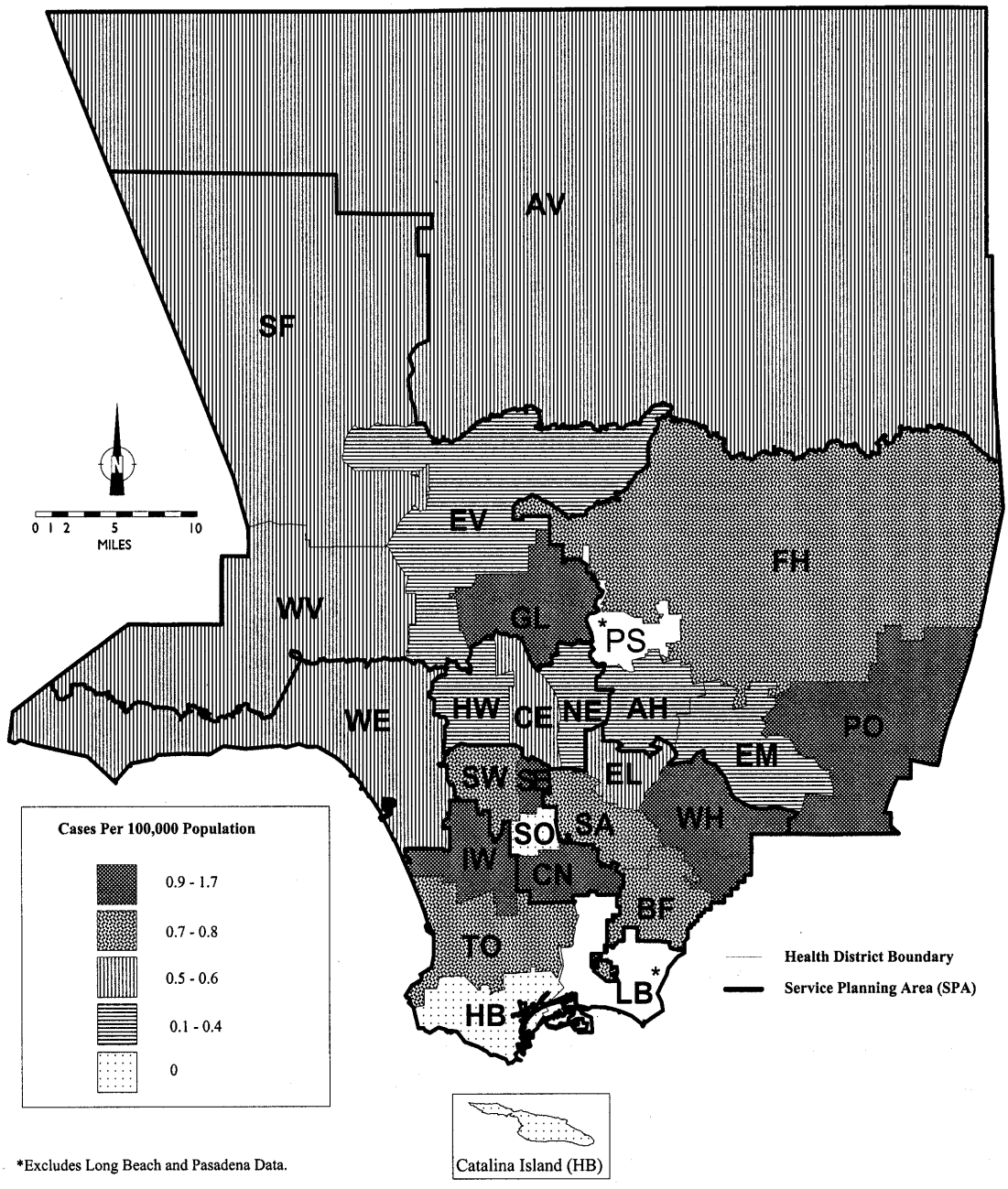
For more detailed information such as causal information and effective management strategies: www.postgradmed.com/issues/1998/03_98/guti.htm

Information about case investigation of encephalitis in LAC is available at: www.lapublichealth.org/acd/procs/b73/b73index.htm

CDC website—Q & A about West Nile virus: www.cdc.gov/ncidod/dvbid/westnile/q&a.htm

Mosquito and Vector Control Association of California: www.mvcac.org

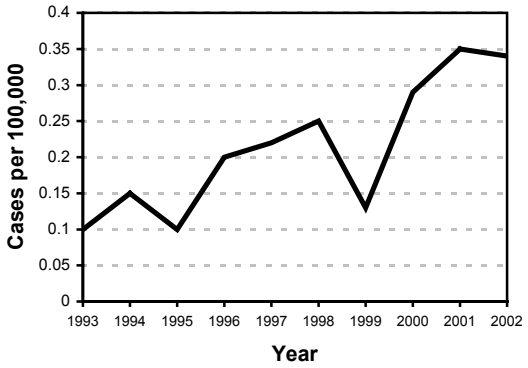
MAP 5. Encephalitis
Rates by Health District, Los Angeles County, 2002*



ESCHERICHIA COLI O157:H7 / HEMOLYTIC UREMIC SYNDROME

CRUDE DATA	
Number of Cases	30
Annual Incidence[a]	
LA County	0.3
California[b]	0.9
United States[b]	1.4
Age at Diagnosis	
Mean	29
Median	9
Range	1–99 years
Case Fatality	
LA County	3.2%
United States	N/A

Figure 1
Escherichia coli O157:H7
Incidence by Year of Onset
LAC, 1993–2002



[a] Cases per 100,000 population.
[b] Data via the National Electronic Telecommunications System for Surveillance.

DESCRIPTION

Escherichia coli O157:H7, a gram-negative bacillus, is a specific serotype of the Shiga-toxin producing class of *E. coli* (STEC). Shiga-toxins cause abdominal cramps and watery diarrhea often developing into bloody diarrhea; fever is uncommon. Likely modes of transmission include foodborne (e.g., undercooked ground beef, unpasteurized juice, raw milk) and person-to-person (e.g., day-care settings). There also have been outbreaks associated with recreational water exposure.

Children younger than five years of age are at highest risk for hemolytic uremic syndrome (HUS), a clinical complication consisting of hemolytic anemia, thrombocytopenia, and kidney failure. Adults may acquire thrombotic thrombocytopenic purpura (TTP) after infection.

DISEASE ABSTRACT

- The total number of confirmed cases remained stable in 2002.
- Two outbreaks were identified in LAC during 2002; there were no outbreaks identified in 2000 or 2001.

STRATIFIED DATA

Trends: The number and rate of confirmed cases remained stable in 2002, ending a 3-year trend of increasing incidence.

Seasonality: In 2002, the greatest number of cases again occurred during the summer with a peak in July (10 cases). This was, in part, due to two outbreaks occurring in that month. Five sporadic cases also occurred in that month.

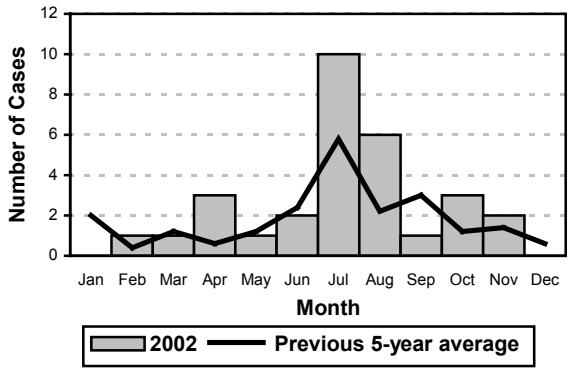
Age: The greatest number of cases occurred among persons under age 14 years. The number of confirmed cases in persons aged 65 years and older was greater than the 5-year average, partly due to an outbreak occurring in a senior living facility.

Sex: The male to female rate ratio was 1:1.3.

Race/Ethnicity: The highest percentage of cases was again among Whites (50%). Latinos and Asians represented a larger percentage in 2002 than 2001, with 33% and 10% respectively. Both outbreaks involved only Whites.

Location: SPA 2 had 35 % of all confirmed cases followed by SPA 3 (23%) and SPA 7 (16%). SPA 6 had no cases. One outbreak (three cases) occurred in SPAs 1 and 2. The other outbreak (two cases) occurred in SPA 5.

Figure 2
Esherichia coli O157:H7
Cases by Month of Onset
LAC, 2002

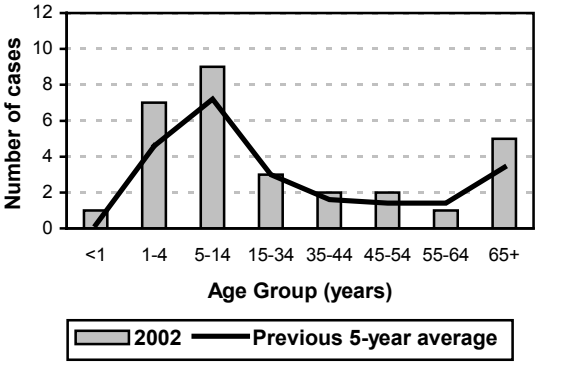


COMMENTS

E. coli O157:H7 was first recognized as an important human pathogen causing foodborne illness in 1982. In 1994, LAC requested laboratories and health care providers to voluntarily report suspected *E. coli* O157:H7 cases. Mandatory reporting of *E. coli* O157:H7 cases in California began in July 1995.

During 2002, confirmed cases had symptoms of diarrhea (93%), abdominal cramps (86%), bloody diarrhea (80%), vomiting (60%), and fever (43%; mean temperature was 100.8^{0}F). One confirmed case was asymptomatic; testing of this case was conducted since the case was a household contact to a confirmed case. Two cases were on antibiotics the week prior to onset; of these, one person developed HUS. Most confirmed cases (47%, n=14) required hospitalization.

Figure 3
Esherichia coli O157:H7
Cases by Age Group
LAC, 2002



In 2002, there were three LAC cases with confirmed *E. coli* O157:H7 and HUS and three reported cases of HUS without lab confirmation of *E. coli* O157:H7. Of these six cases of diagnosed HUS, one with lab confirmation died and two without lab confirmation died. The confirmed case was a 99 year-old man who was part of an outbreak.

Regarding the two outbreaks of confirmed *E. coli* O157:H7 investigated in LAC during 2002, both were associated with ground beef; one outbreak occurred at a senior living facility, the other was connected to a national outbreak of recalled ground beef.

Collaborative efforts among physicians, laboratories and the health department are important for enhancement of surveillance activities. It is important that physicians request testing for *E. coli* O157:H7 on all bloody stools. Physicians should consider *E. coli* O157:H7 in their diagnoses by asking about consumption of high-risk foods, attendance at day-care centers or farms and exposure to other

individuals with diarrhea. Lab analysis through PFGE has been notable in detecting clusters of *E. coli* O157:H7. PulseNet is a nationwide network of laboratories that performs PFGE, or "DNA fingerprinting" of foodborne bacteria. This network permits rapid comparison of the fingerprint patterns to identify clusters and enhance outbreak investigation.

PREVENTION

Increased public education to prevent *E. coli* infection is needed. Information should focus on safe food handling practices, proper hygiene and identifying high-risk foods and activities. To avoid infection, beef products should be cooked thoroughly, one should drink only treated water and avoid swallowing water during swimming or wading. Careful handwashing is essential, especially before eating and after handling raw beef products or coming in contact with animals. The collection of detailed food histories is important to understand underlying sources of infection. The strengthening of national food processing regulations to decrease contamination is also important to reduce infection.

ADDITIONAL RESOURCES

Information from the Foodborne and Diarrheal Diseases Branch of the CDC is available at: www.cdc.gov/ncidod/dbmd/foodborne.htm

Information about outbreaks (nationwide) is available from the Outbreak Response and Surveillance Unit of the CDC at: www.cdc.gov/ncidod/dbmd/outbreak

Foodborne disease active surveillance is available from FoodNet (CDC) at: www.cdc.gov/foodnet/

Information from Center for Food Safety and Applied Nutrition is available at: www.vm.cfsan.gov/list.html

Information from the Gateway to Government Food Safety is available at: www.foodsafety.gov

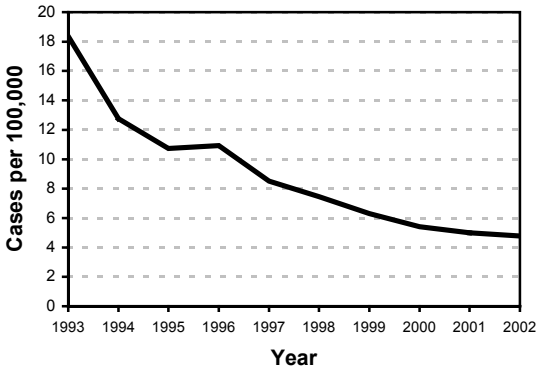
General information and reporting information about this and other foodborne diseases in LAC is available at: www.lapublichealth.org/acd/food.htm

GIARDIASIS

CRUDE DATA	
Number of Cases	441
Annual Incidence[a]	
LA County	4.8
United States	N/A
Age at Diagnosis	
Mean	25
Median	22
Range	<1–85 years
Case Fatality	
LA County	0.0%
United States	N/A

[a] Cases per 100,000 population.

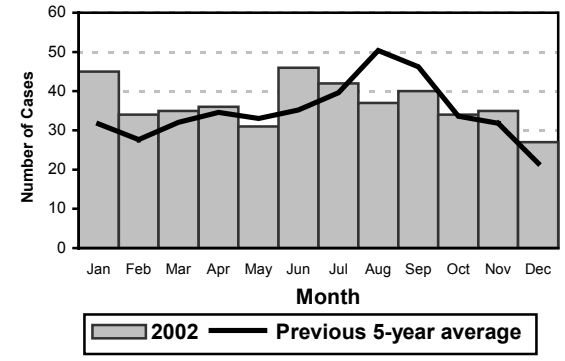
Figure 1
Giardiasis
Incidence Rates by Year
LAC, 1993–2002



DESCRIPTION

Giardiasis is an intestinal infection caused by the zoonotic protozoan parasite *Giardia intestinalis* (previously *G. lamblia*). *Giardia* cysts shed in animal or human feces may contaminate food or drinking water or be transferred on hands or fomites; recreational waters such as lakes and pools may also serve as vehicles of transmission. While usually asymptomatic, symptoms can include chronic diarrhea, bloating, cramps, fatigue, and weight loss. Complications are rare, but may include malabsorption of fats and fat-soluble vitamins. Children in day care represent a reservoir of disease in developed countries. There is no vaccine.

Figure 2
Giardiasis
Cases by Month of Onset
LAC, 2002



DISEASE ABSTRACT

- The incidence of *Giardia* has reached an all-time low; more than 74% fewer cases were reported in 2002 (N=441) as compared to 1993 (N=1,563).
- Incidence tends to increase during summer months when high-risk activities such as recreational water exposure also increase.

STRATIFIED DATA

Trends: Giardiasis incidence in LAC reached an all-time low during 2002; the number of cases reported decreased more than 74% over the past 10 years (1,563 cases reported in 1993, Figure 1).

Seasonality: While the number of cases typically increases during summer months when recreational exposure is more likely (i.e., swimming in infected pools, lakes, etc.), there were only minor seasonal changes during 2002 (Figure 2).

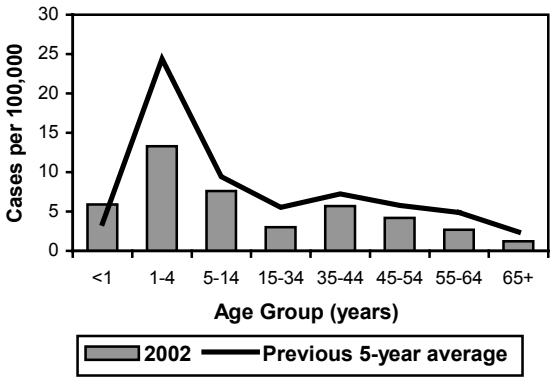
Age: As in previous years, the highest age-specific incidence rate occurred among children aged 1–4 years (13.3 cases per 100,00).

Sex: Males continue to be more likely to contract amebiasis than females (1.4:1).

Race/Ethnicity: Latinos and Whites continue to have higher race/ethnicity specific incidence rates than Asians and Blacks.

Location: Of the eight SPAs across LAC, four had rates that were higher than the overall county mean rate for this disease: SPA 2, San Fernando area (5.9 per 100,000); SPA 4 Metro area (5.5 per 100,000); SPA 5 West (7.2 per 100,000); and lastly, SPA 8, South Bay (5.3 per 100,000).

Figure 3
Giardiasis
Incidence Rates by Age Group
LAC, 2002

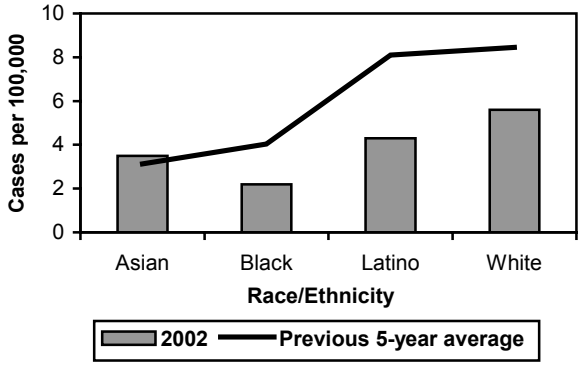


COMMENTS

There has been a considerable decline in incidence of *Giardia* over the past decade. While the specific reasons for this decrease is unknown, several factors may have contributed including advances in food and water safety as well as improved education about safety regarding recreational water (i.e., avoiding drinking lake and pool water, keeping babies in diapers and individuals with diarrhea from swimming in public facilities).

There were no outbreaks reported in 2002.

Figure 4
Giardiasis
Incidence Rates by Race/Ethnicity
LAC, 2002



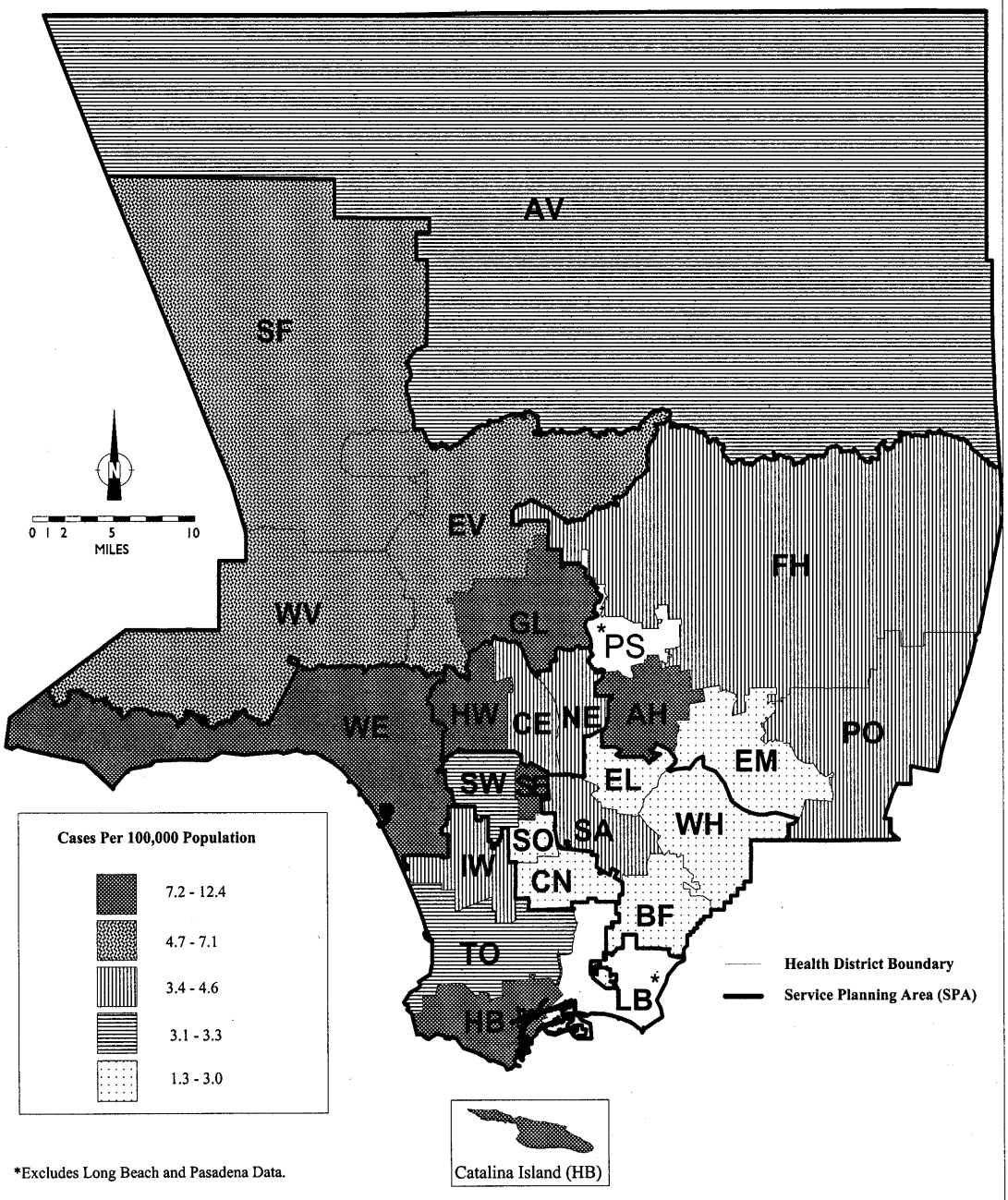
ADDITIONAL RESOURCES

CDC. Giardiasis Surveillance—United States, 1992–1997. MMWR 2000; 49(SS07);1–13. Available at: www.cdc.gov/epo/mwr/preview/mmwrhtml/ss4907a1.htm

CDC. Parasitic Disease Information Fact Sheet—Giardiasis. Available at: www.cdc.gov/ncidod/dpd/parasities/giardiasis/factsht_giardia.htm

CDC. Surveillance for Waterborne Disease Outbreaks—United States, 1997–1998. MMWR 2000; 49(SS04);1–35. Available at: www.cdc.gov/epo/mmwr/review/mmwrhtml/ss4904a1.htm

MAP 6. Giardiasis
Rates by Health District, Los Angeles County, 2002*



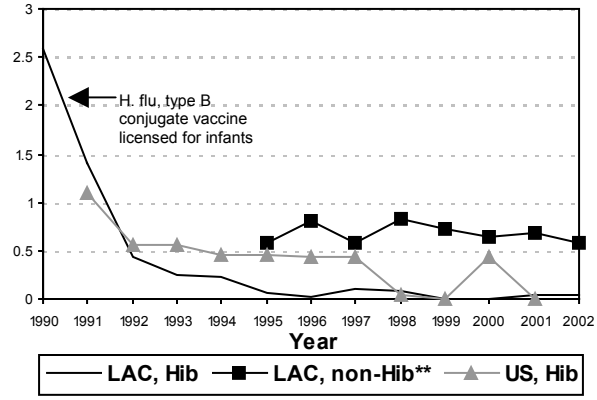
*Excludes Long Beach and Pasadena Data.

HAEMOPHILUS INFLUENZAE INVASIVE DISEASE

CRUDE DATA	
Number of Cases	75
Annual Incidence	
LA County	0.8
California[b]	0.1
United States	0.6
Age at Diagnosis	
Mean	40
Median	38
Range	<1–97 years
Case Fatality	
LA County	6.7%
United States	N/A

[a] Cases per 100,000 population.
[b] Cases per 100,000 persons, aged less than 30 years. In California, *H. influenzae* among persons > 29 years of age is not reportable.

Figure 1
H. influenzae Invasive Disease
Incidence Rates by Year
LAC and US,* 1990–2002

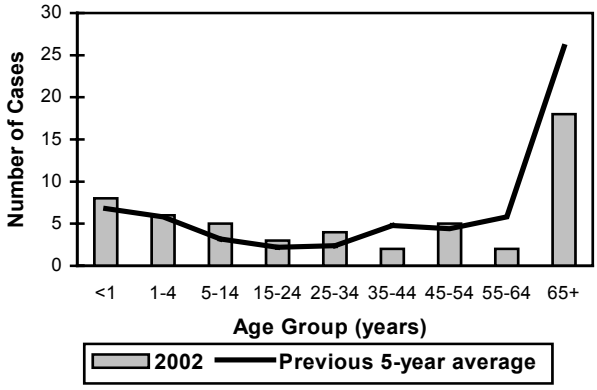


* Hib not nationally notifiable until 1991; no national data for non-b types
** Surveillance became mandated in 1995. Excludes unknown serotypes

DESCRIPTION

Haemophilus influenzae is a gram-negative coccobacillus that can cause both invasive and non-invasive disease. *H. influenzae* invasive disease includes meningitis, sepsis, pneumonia, cellulitis, and septic arthritis. The disease primarily affects infants and the elderly, as well as immunocompromised individuals and those who have abnormal splenic function. *H. influenzae* can be transmitted by respiratory secretions of individuals colonized with the organism. There are six encapsulated, typable strains (a–f) and unencapsulated, nontypable strains of *H. influenzae*. Prior to the introduction of the H. *influenzae* type b (Hib) conjugate vaccine in 1990, most cases of invasive disease in children were caused by type b. *H. influenzae* type b is the only serotype that is vaccine-preventable.

Figure 5
H. influenzae Invasive Disease
Serotype Non-b Cases by Age Group
LAC, 2002 (N=53)



DISEASE ABSTRACT

- The widespread use of the Hib vaccine since 1990 has dramatically decreased the incidence of *H. influenzae* type b disease in LAC.
- The epidemiology of H. *influenzae* invasive disease is now being shaped by non-b and unknown serotypes.

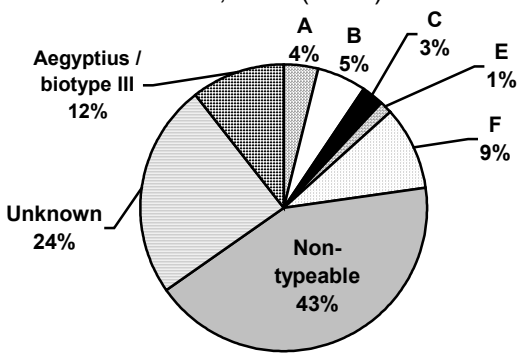
Table 1: *H. influenzae* Crude Data by Serotype, 2002

	B	Non-b	Unknown type
Number of Cases	4	53	18
LAC Incidence	N/A	0.58	0.19
Age at Onset			
Mean	20	39	49
Median	5	36	57
Range	1–70	Birth–92	Birth–97
LAC Case Fatality	25%	3.8%	11.1%

IMMUNIZATION RECOMMENDATIONS

- All infants, including those born prematurely, can receive a primary series of conjugate Hib vaccine beginning at 2 months of age. The number of doses in the series depends on the brand of vaccine used. A booster is recommended at 12-15 months regardless of which brand of vaccine is used for the primary series.
- Individuals older than 59 months of age do not need Hib vaccination unless they have a health condition that puts them at increased risk for invasive Hib disease.

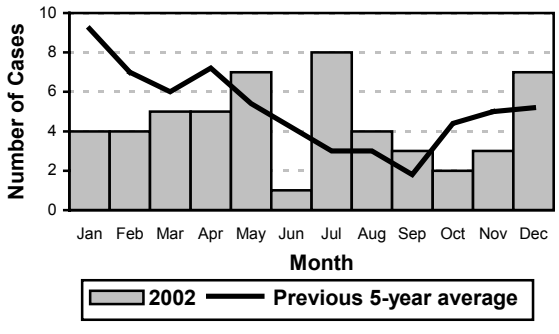
Figure 3
H. influenzae Invasive Disease
Percent of Cases by Serotype
LAC, 2002 (N=75)



STRATIFIED DATA

Seasonality: A bimodal temporal pattern has been evidenced in the US, with a peak in cases from September through December and a second peak between March and May. However, 50% of Hib cases in LAC occurred in February and March, while the other half of the cases occurred in the summer months. Non-Hib cases in 2002 seemed to follow an unusual pattern in comparison to previous years, with case counts starting at a 57% low in January and steadily increasing into the mid-summer (Figure 4).

Figure 4
H. influenzae Invasive Disease
Cases Due to Non-b Serotype
by Month of Onset
LAC, 2002 (N=53)



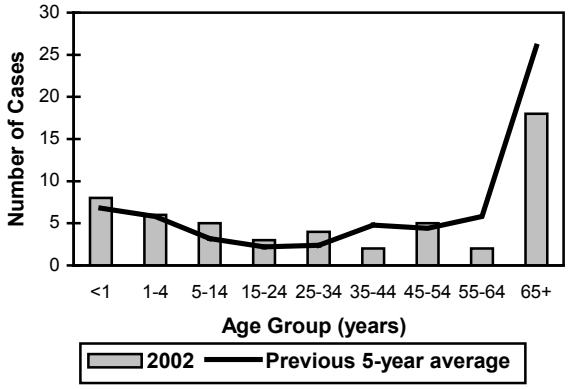
Sex: The male-to-female ratio of non-Hib and Hib cases was 1:0.9 and 1:1, respectively.

Age: The number of cases by age follows the trend of previous years—the 65+ age group remaining the most affected by non-Hib invasive disease over the last six years (Figure 5). Half of non-Hib cases in 2002 were individuals older than 35 years (n=27, 51%), with 59% of these cases identified as a non-typeable serotype. Three of the 4 Hib cases were under 7 years of age and the fourth case was 70 years old. Of the 18 cases with unknown serotype, 14 (77%) were over the age of 30 and were not actively investigated for serotype as detailed in LAC's priority investigation criteria.

Race/Ethnicity: In cases where the race/ethnicity was known, the majority of Hib and non-Hib cases were reported among Latinos (n=2, n=13, respectively) followed by Whites among the non-Hib cases (n=13) and Asians (n=2) among the Hib cases (Figure 6.)

Location: Half of the Hib cases resided in SPA 8, with the other 2 cases residing in SPA 3 and 4. Seventy percent of the Non-Hib cases resided in 4 SPAs: San Fernando (SPA 2), San Gabriel (SPA 3), Metro (SPA 4), and East (SPA 7). Twenty-three percent of Non-Hib cases resided in West (SPA 5), South (SPA 6), and South Bay (SPA 8). Seven percent of cases did not have a residence indicated.

Figure 5
H. influenzae Invasive Disease
Serotype Non-b Cases by Age Group
LAC, 2002 (N=53)

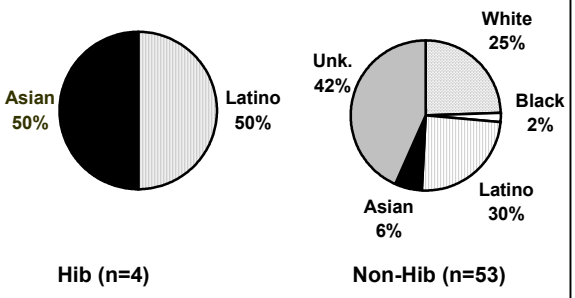


COMMENTS

The only cases of *H. influenzae* investigated in LAC are those in persons less than 30 years of age. Contacts of these cases are investigated and chemoprophylaxis is given when appropriate.

Rates of invasive Hib disease in children have decreased to extremely low levels since Hib vaccines became available. None of the cases were in infants too young to have been immunized or in children with medical conditions, which might predispose them to Hib disease.

Figure 6
H. influenzae Invasive Disease
Percent Cases by Race/Ethnicity
LAC, 2002



Case Fatalities: There were five fatalities among H. influenzae cases: one case was typed as serotype B, one as serotype A, one as Aegyptius biotype III, and the last two were of unknown serotype. Four cases had sepsis and one case had an unspecified complication. Three fatalities were among children younger than 15 years, and males accounted for four of the total case fatalities. Three of the fatalities were Latino, one was Asian, and one was Black.

ADDITIONAL RESOURCES

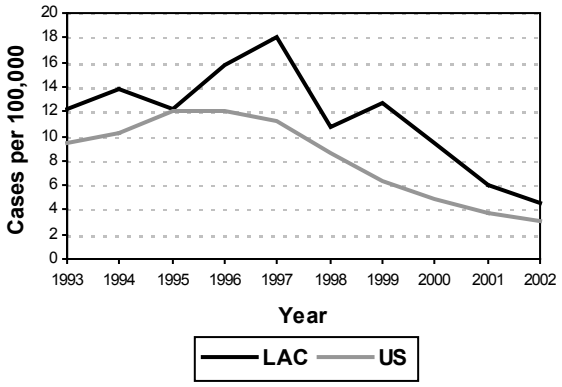
Information about immunization is available through the National Immunization Program at: www.cdc.gov/nip and the Immunization Action Coalition at: www.immunize.org

Information specific the LAC is available from the LAC DHS Immunization Program at: www.lapublichealth.org/ip and the LAC DHS Acute Communicable Disease Control Unit at: www.lapublichealth.org/acd/procs/b73/b73index.htm

HEPATITIS A

CRUDE DATA	
Number of Cases	433
Annual Incidence[a]	
LA County	4.6
California	4.3
United States	3.1
Age at Diagnosis	
Mean	39
Median	38
Range	1–91 years
Case Fatality	
LA County	<1%
United States	N/A

Figure 1
Hepatitis A
Incidence Rates by Year
LAC and US, 1993–2002



[a] Cases per 100,000 population.

DESCRIPTION

Hepatitis A virus (HAV), a RNA-virus of the Picornaviridae family, is a vaccine-preventable disease transmitted fecal-orally, person-to-person, or through vehicles such as food. Signs and symptoms of acute hepatitis A include fever, malaise, dark urine, anorexia, nausea, and abdominal discomfort, followed by jaundice. Many cases, especially in children, are mild or asymptomatic. Sexual and household contacts of HAV-infected persons are at increased risk for getting the disease. The average incubation period is 28 days (range 15–50 days).

For surveillance, a case of acute hepatitis A is defined as having a positive laboratory test for the IgM antibody to HAV, which can indicate recent infection. A case meets the clinical definition if it occurs in a person who has an epidemiologic link with a person who has laboratory-confirmed hepatitis A (i.e., in a household or sexual contact of an infected person during the 15–50 days before the onset of symptoms).

DISEASE ABSTRACT

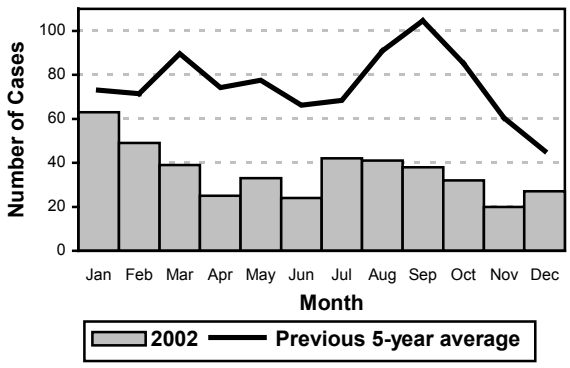
- The annual incidence rate of hepatitis A cases reported in LAC showed a steady decrease in 2002.
- With the exception of a decreased incidence in Latinos aged 5–14, and an increased incidence in persons aged 65+, the demographic characteristics of 2002 cases were similar to the last five years.
- An increase in incidence occurred during winter while fewer new cases occurred during summer.
- Hospitalization rates were highest among young adults.

STRATIFIED DATA

Trends: There has been a steady decrease of hepatitis A cases in LAC since 1995. From 1993–1997, the rate ranged between 10–16 cases per 100,000 (Figure 1). From 1997 to 2002, the rate decreased from 18 to 6 per 100,000. In 2002, 433 cases were reported, a rate of 4.6 cases per 100,000.

Seasonality: Historically, there is an increase of hepatitis A cases in the summer and decrease in the winter. This trend did not occur in 2002 (Figure 2).

Figure 2
Hepatitis A
Cases by Month of Onset
LAC, 2002



Age: During 2002, the overall mean age for hepatitis A cases in LAC was 39 years. The mean age differed significantly by race and ethnic groups. The mean age for Latinos was 24 years while, White, Asian and Black cases had mean ages of 43, 45, and 37 years, respectively. These mean ages among the various racial/ethnic groups were similar to the previous year. Historically, the age specific rate has been highest in children aged 5–14 years. However, in 2002, the rate was highest among those 65 and older (7.4 per 100,000, Figure 3).

Sex: The overall HAV male-to-female rate ratio was 1.2:1. The male-to-female ratio for those aged greater than 18 years was 1.4:1. Among Latino cases, the male-to-female rate ratio was 1.08:1, while among White, Asian, and Black cases, incidence rates ratios were higher among males, at 1.6:1, 1.03:1, and 2.5:1, respectively.

Race/Ethnicity: The overall hepatitis A crude rate decreased for all ethnic groups in 2002 (4.6 per 100,000). As shown in Figure 4, the highest rate in 2002 was among Whites (5.3 per 100,000), followed by Asians (4.9), Latinos (3.4) and Blacks (2.5).

Location: The following map shows district-specific HAV rates for 2002. The highest rate occurred in the Hollywood-Wilshire district (9.7 cases per 100,000) closely followed by Glendale (8.4), San Fernando, Central (5.9), Bellflower (5.6), and West Valley (5.4). Looking at distribution by Service Planning Area (SPA, Figure 5), SPAs 4 and 2 have the highest rates (6.6 and 5.7 per 100,000, respectively), while SPAs 5,6, and 8 have rates lower than the county average.

Severity of Illness: Among all HAV cases in 2002, there were two fatalities (case-fatality rate=0.5%) aged 27 and 56 years. More than 48% reported jaundice and 10% were hospitalized for their illness. Hospitalization was most prevalent among young adults; increased liver enzymes and jaundice were

Figure 3
Hepatitis A Incidence Rates
by Age Group LAC, 2002 (N=433)

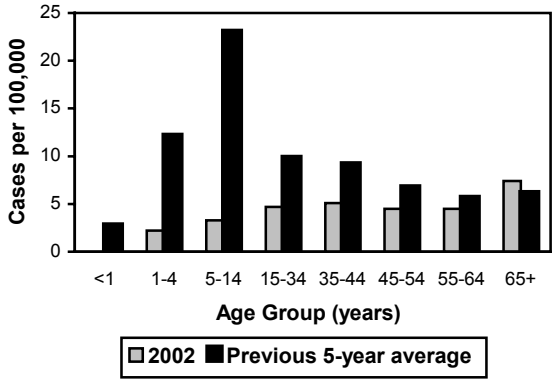
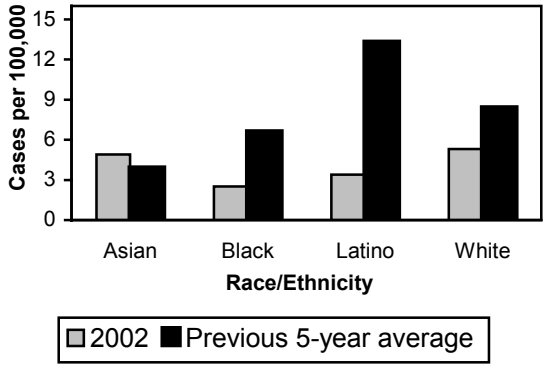


Figure 4
Hepatitis A Incidence Rates
by Race/Ethnicity
LAC, 2002



reported by over 70% of hospitalized cases.

Risk Factors: Recent travel outside of the US (n=90, 21%) was the most common risk factor reported in 2002. MSM are also at high risk for infection (9.4%). Other risk factors include eating raw shellfish (8%) and being a contact to another case (6%). For many cases (38%) risk factors were unknown or not reported. Among travelers, South and Central American destinations (62%) were most frequently cited.

Figure 5
Hepatitis A Rates
by Location
LAC, 2002

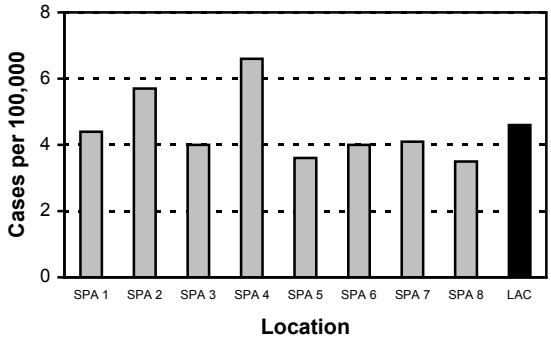
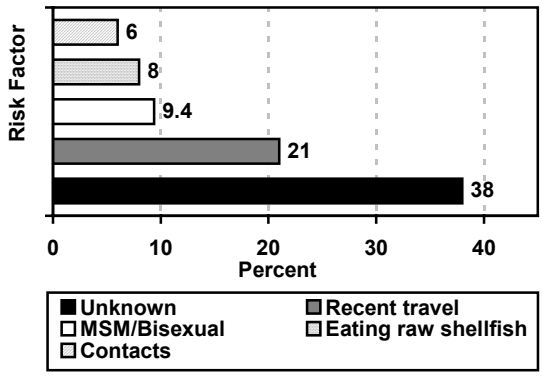


Figure 6
Hepatitis A Reported Risk Factors
LAC, 2002



*Includes cases identifying multiple risks.

PREVENTION

In LAC, most infections occur among international travelers, followed by MSM, those who eat raw shellfish, and those who report contact with a household member or sexual partner who has HAV. Casual contact, such as that in the office, factory, or school setting, does not spread the virus. Good personal hygiene and proper sanitation can prevent HAV. Immune globulin is recommended for certain short-term pre-exposure situations and post-exposure prophylaxis.

Since 1995, vaccines have been available for the permanent prevention of HAV infection in persons aged 2 years and older. In 1999, the ACIP recommended universal childhood vaccination in states and communities (including LAC) with rates equal to or greater than twice the national average (20 cases per 100,000) during 1987–1997. LAC began providing the vaccine to children aged 2–18 in August 1999.

Post-exposure prophylaxis with immune globulin is used to control outbreaks in Los Angeles County. Since HAV vaccination has become available and in more routine use, it has been recommended by Advisory Council on Immunization Practices (ACIP) that outbreaks of HAV could be effectively controlled through vaccine use (CDC, 1999), leading to a sustained reduction in disease incidence.

COMMENTS

There was a significant decrease in the number of cases of hepatitis A reported in LAC since 1997—though, this decrease may be due to the cyclical nature of hepatitis A and a future increase may be expected. Other potential reasons for the decrease may be the ACIP recommendation (CDC, 1999) to provide hepatitis A vaccine for children, greater public awareness or improved hygiene and food sanitation. Underreporting and underdiagnosis by physicians cannot be excluded as a reason for the decrease.

Hepatitis A is a mandated laboratory reportable disease in California. The 433 hepatitis A cases reported in 2002 were confirmed by IgM antibody to HAV, which may indicate recent infection. Studies have shown that many children who acquired HAV are asymptomatic and not tested for HAV-IgM. Even when these children's laboratory results are confirmed IgM positive, many private health care providers and

laboratories may not report HAV cases to county health officials. Therefore, support and encouragement for physician reporting and compliance with the ACIP recommendations should continue.

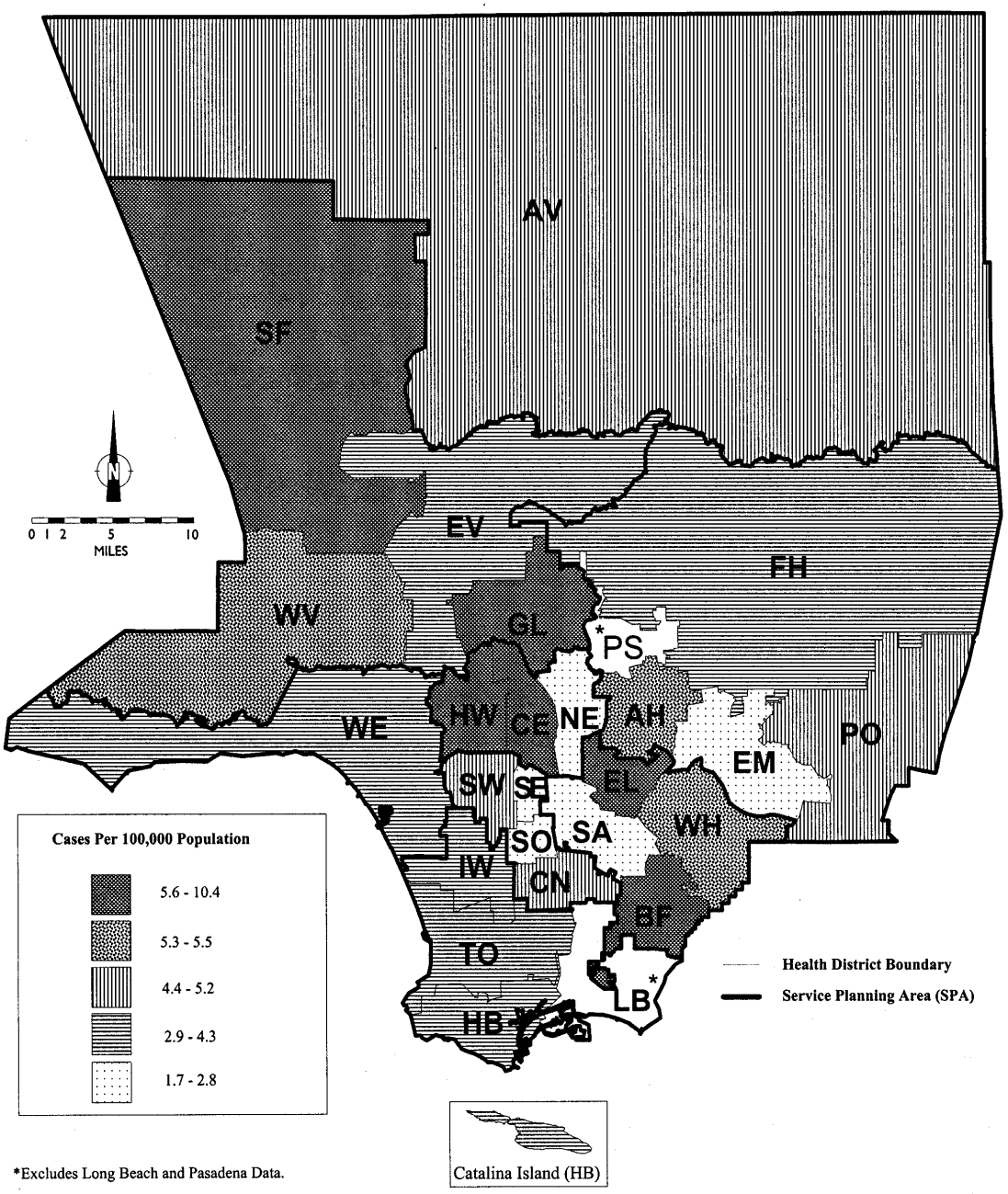
Most cases of hepatitis A result from person-to-person transmission in areas with high and intermediate rates of hepatitis A. In LAC, there were no outbreaks of hepatitis A reported in 2002.

ADDITIONAL RESOURCES

General information about hepatitis is available from the CDC at:

- www.cdc.gov/ncidod/diseases/hepatitis/slideset/bibliography.htm
- www.cdc.gov/ncidod/diseases/hepatitis/a/index.htm

MAP 7. Hepatitis A
Rates by Health District, Los Angeles County, 2002*



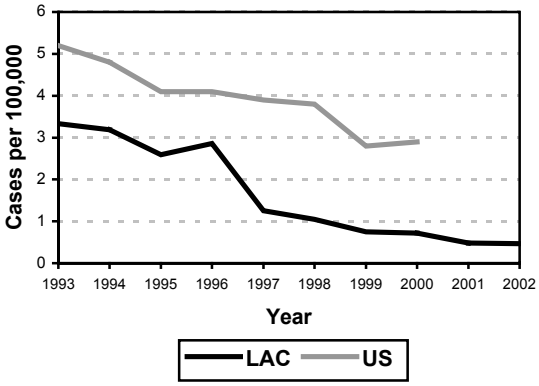
*Excludes Long Beach and Pasadena Data.

HEPATITIS B, ACUTE (NON-PERINATAL)

CRUDE DATA	
Number of Cases	32
Annual Incidence[a]	
LA County	0.5
United States	N/A
Age at Diagnosis	
Mean	40
Median	36
Range	19–92 years
Case Fatality	
LA County	0.0%
United States	N/A

[a] Cases per 100,000 population.

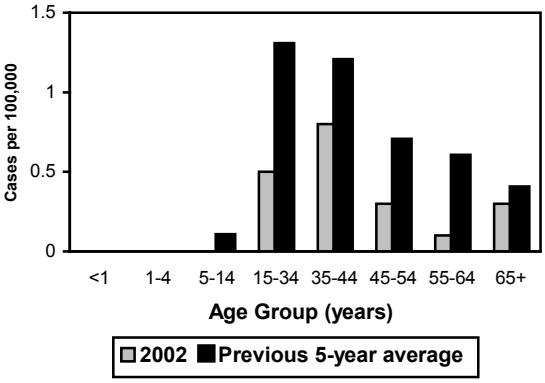
Figure 1
Hepatitis B
Incidence Rates by Year
LAC and US, 1993–2002



DESCRIPTION

Hepatitis B is more prevalent and infectious than AIDS. Hepatitis B is a vaccine-preventable disease transmitted through parenteral or mucous membrane exposure to the blood and other bodily fluids of individuals infected with the hepatitis B virus (HBV), a DNA-virus of the Hepadnaviridae family. It is also spread from mother to child at birth or soon after birth. The CDC/CSTE criteria necessary for diagnosis of acute hepatitis B include: 1) discrete onset of symptoms, with 2) jaundice *or* elevated aminotransferase levels, and 3) appropriate laboratory tests to confirm acute hepatitis B diagnosis (i.e., HBsAg positive or anti-HBc IgM positive, if done, *and* anti-HAV IgM negative, if done). Symptoms, which occur in less than half of those acutely infected, may be very mild and flu-like: anorexia, nausea, fatigue, abdominal pain, muscle or joint aches, jaundice and mild fever.

Figure 2
Acute Hepatitis B
Incidence Rates by Age Group
LAC, 2002

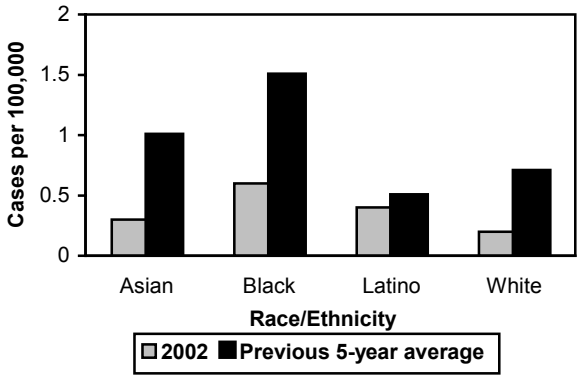


The number of reported acute hepatitis B cases in the US has declined from an average of 24,000 per year in the 1980's to about 7,844 in 2001. Approximately 2–10% of adults infected with HBV are unable to clear the virus within six months and become chronic carriers. Death from cirrhosis or liver cancer is estimated to occur in 15–25% of those with chronic infection.

DISEASE ABSTRACT

- For a full discussion of all reported acute hepatitis B cases occurring in LAC, see the following report describing perinatal hepatitis B.
- A 27% decrease in number of cases occurred in 2002 from the previous year.
- All acute cases were among adults aged 19 years or older and the majority of cases were young, adult males.
- Cases have been decreasing among all age groups since 2001.
- Multiple partners, predominately in MSM (men who have sex with men) remain the most frequently identified risk (Figure 5). Nearly 25% of all acute cases denied all risk factors.
- There were 7,953 chronic hepatitis B cases reported in LAC in 2002. The majority of cases (75%) cases were among men.

Figure 3
Acute Hepatitis B
Incidence Rates by Race/Ethnicity*
LAC, 2002



* Excludes 7 perinatal cases.

STRATIFIED DATA

Seasonality: None.

Age: Cases range in age from 19 to 92 years, median age 36 years. A decrease has been seen in the number of cases across all age groups (Figure 2).

Sex: The male-to-female rate ratio was 3:1. The number of cases in males exceeded those in females in all ethnic groups.

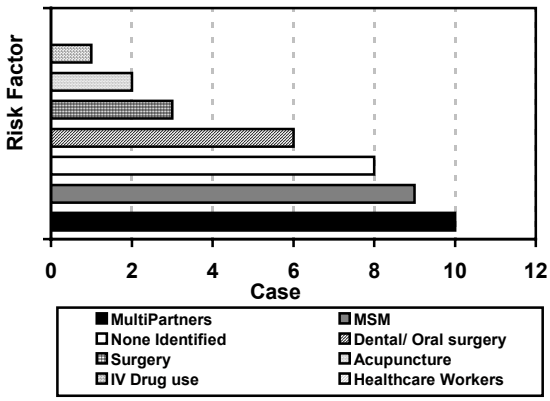
Race/Ethnicity: The highest rates occurred among Blacks (0.6 per 100,000) followed by Latinos (0.4 per 100,000), Asians (0.3 per 100,000) and Whites (0.2 per 100,000), respectively (Figure 3).

Location: SPA 4 (n=8) and SPA 7 (n=6) had the most cases, respectively, followed by SPA 2 (n=5), SPA 5 (n=4), SPA 8 (n=4), SPA 6 (n=2), SPA 3 (n=2), and SPA 1 (n=1).

Severity of Illness: Among all acute hepatitis B cases in 2002, there was one nosocomial fatality (case fatality rate=0.3%). Most cases (62%) reported jaundice and elevated liver enzymes.

Risk Factors: Risk factors were reported for 75% of the cases (including some cases with multiple risk factors). Having multiple sexual partners (n=10, 30%) was the most common risk factor, followed by MSM (28%), and recent dental or surgical procedures (18%, Figure 4).

Figure 4
Hepatitis B Reported Risk Factors
LAC, 2002



* Includes cases identifying multiple risks.

PREVENTION

Since 1992, rates of acute hepatitis B have been decreasing among those under age 15. This suggests that the strategy of prophylaxis of newborns of chronic carrier mothers and universal hepatitis B immunization of all infants is succeeding.

The current approach of vaccination for adolescents and others at high risk, as well as education aimed at eliminating, reducing, or mitigating high-risk behaviors in sexually active adults, should continue. Ongoing improvements in data collection and analysis will provide a more accurate description of this infection in the future.

COMMENTS

Excluding perinatal cases, in 2002, there were 32 cases designated as acute hepatitis B following investigation. All were aged 19 years or older. Based on crude frequencies of reported risk factors by both men and women, MSM and people with multiple sexual partners continue to be at greatest risk for hepatitis B; thus, preventive efforts should continue to focus on these high risk populations.

The decrease in the number of non-perinatal acute hepatitis B cases in 2002 is likely attributable to the changes in the criteria for investigation and classification rather than a true reduction in infection. Surveillance for hepatitis B is passive and dependent solely upon reports from providers and laboratories. Additional information is obtained through patient interview and further investigation. Only when a case report meets both the clinical case definition and is laboratory confirmed can it then be diagnosed as an acute case. However, the majority of these case reports do not provide supporting clinical or demographic information, thus presenting difficulties for public health follow-up.

Healthcare workers are also at substantial occupational risk of acquiring the hepatitis B virus. Over 12,999 cases of HBV infection occur among healthcare workers each year in the US and 200 die. The risk of acquiring HBV after needle stick exposure to an HBV carrier is estimated to range from 27% to 43%. During 2002, there were no reported cases in LAC among healthcare workers.

In 2002, there was one nosocomial hepatitis B outbreak—a cluster of three nosocomial acute hepatitis B cases was reported at a long-term care facility. All three case-patients were laboratory-confirmed with acute hepatitis B and were insulin-dependent type-2 diabetics, residents in long-term care and admitted to the same unit. One of the cases died during the acute phase of the HBV infection; moreover, the attending geriatrician attributed the death to fulminant liver failure secondary to acute hepatitis B infection. Although poor glove use appears to have contributed to this outbreak, a shared contaminated glucometer was the most likely vehicle for transmission.

There were 7,953 chronic hepatitis B reports in LAC in 2002; chronic cases, unlike acute cases, are not routinely investigated or interviewed, so risk factor information is unavailable.

ADDITIONAL RESOURCES

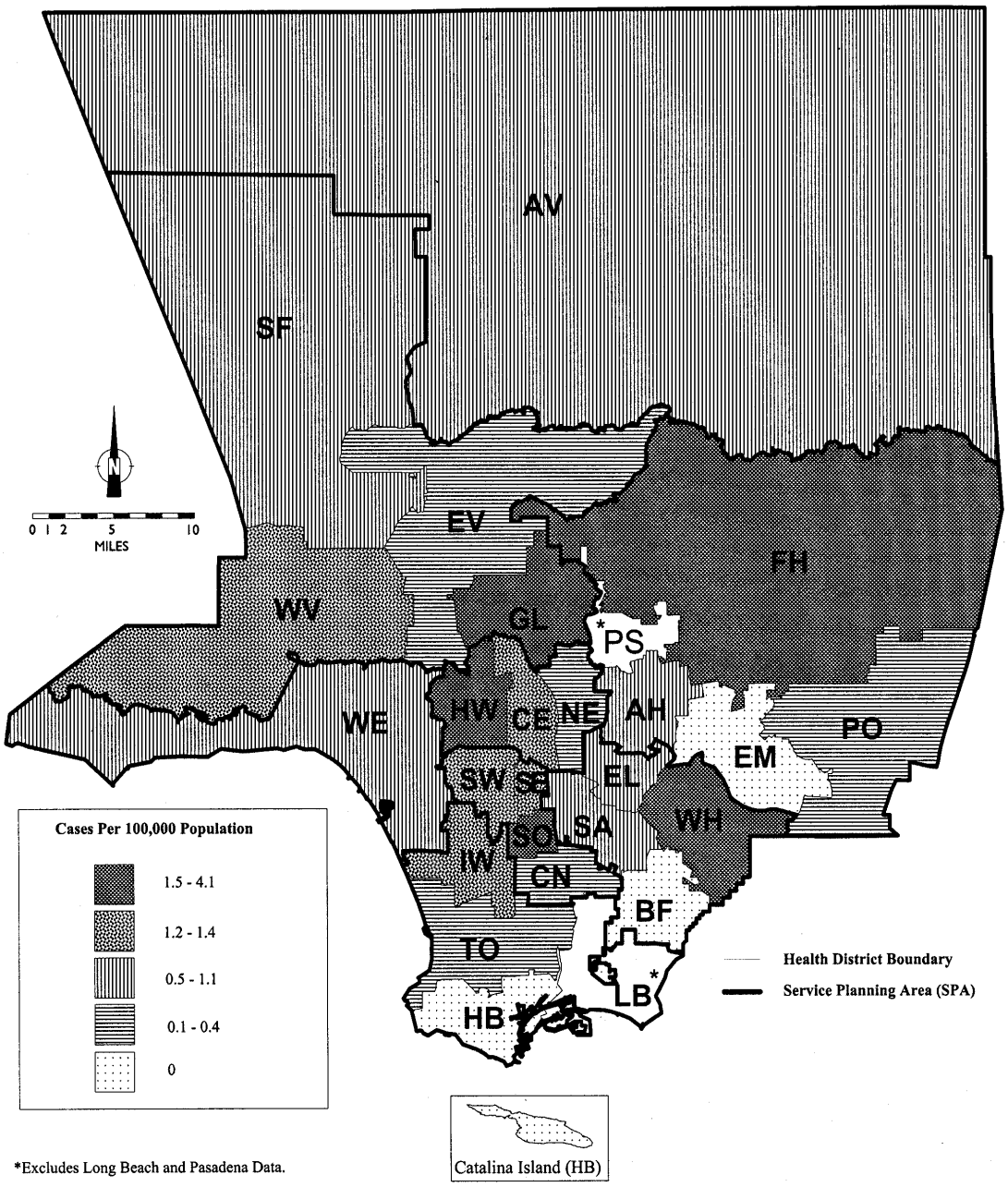
Epidemiology and Prevention of Viral Hepatitis slide set available at:
www.cdc.gov/ncidod/diseases/hepatitis/slideset/hep_b/slide1.htm

CDC Publications regarding viral hepatitis at: www.cdc.gov/ncidod/diseases/hepatitis/resource/pubs.htm

General information available at: www.cdc.gov/ncidod/diseases/hepatitis/b/index.htm and www.hepb.org

Immunization information available at: www.immunize.org

MAP 8. Hepatitis B
Rates by Health District, Los Angeles County, 2002*



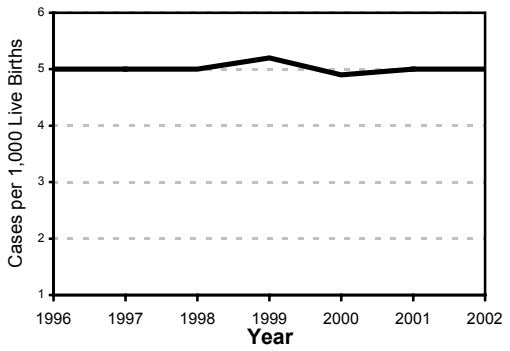
*Excludes Long Beach and Pasadena Data.

HEPATITIS B, PERINATAL

CRUDE DATA	
Number of Infants Born to HbsAg Positive Mothers	733
Annual Prevalence[a]	
LA County	5
United States	N/A
Case Fatality	
LA County	0.0%
United States	N/A

[a] Cases per 100,000 live births.

Figure 1
Perinatal Hepatitis B
Incidence Rates of Infants Born to HBV-Positive Mothers by Year
LAC, 1996–2002*

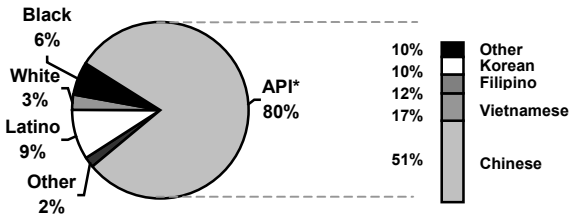


* In 1996, case management services were expanded. Data from prior years are not comparable.

DESCRIPTION

Hepatitis B is a vaccine-preventable disease transmitted through parenteral or mucous membrane exposure to the blood and other body fluids of individuals infected with the hepatitis B virus (HBV). It is also transmitted from mother to infant during birth. Within LAC, it is estimated that over 40% of infants born to hepatitis B surface antigen (HBsAg) positive women will become infected without prophylaxis. An estimated 90% of infants who become infected by perinatal transmission develop chronic HBV infection and up to 25% will die of chronic liver disease as adults. Hepatitis B vaccination and one dose of hepatitis B immune globulin (HBIG), administered within 24 hours after birth, are 85–95% effective in preventing both HBV infection and the chronic carrier state. The Immunization Program's Perinatal Hepatitis B Prevention Program (PHBPP) conducts case management of chronic HbsAg-positive pregnant women, their newborns, and household contacts.

Figure No 2
Perinatal Hepatitis B
by Maternal Race/Ethnicity
LAC, 2002 (N=723)



* Includes Asians and Pacific Islanders.

DISEASE ABSTRACT

- The majority of HBsAg-positive women giving birth were born in areas of the world with high or intermediate levels of endemic hepatitis B disease (e.g., Southeast and Central Asia).
- Of infants born to HBsAg-positive mothers, 96% were immunized within 24 hours of birth.
- Among those whose parents responded to a survey 3 to 9 months after the completion of the full vaccination series, 88% of infants were protected against HBV, 9% were still susceptible, and 3% were infected with HBV.

STRATIFIED DATA

Trends: In 2002, 733 infants (including 10 sets of twins) were born to 723 HBsAg-positive women. The incidence of infants born to HBsAg-positive mothers was essentially unchanged from 2001 (Figure 1).

Race/Ethnicity: The majority of the cases were among Asian/Pacific Islanders (API). Most of the mothers (n=581, 80%) were API, 64 (9%) were Latino, 39 (6%) were Black, 22 (3%) were White, and 17 (2%) were classified by another ("other") ethic group (Figure 2). Of API women, half were Chinese (n=296, 51%). The remaining API women included: Vietnamese (n=99, 17%), Filipino (n=68, 12%), Korean (n=61,10%), and others (e.g., Samoa, Tonga, Japan, Laos, Burma, Indonesia, and India; n=57, 10%).

Age: The age-range of mothers was 14–46 years of age with a median age of 31 years.

Location: The majority of the HBsAg-positive mothers (n=333, 45%) resided in SPA 3 which has a large Asian/Pacific Islander constituency. An additional 14% resided in SPA 2 (n=101), followed by SPA 4 (n=96, 13%), SPA 8 (n=59, 8%), SPA 5 (n=44, 6%), SPA 7 (n=36, 5%), SPA 6 (n=35, 5%), and SPA 1 (n=14, 2%). Place of residence could not be confirmed for five cases.

Countries of Origin: The majority (n=672, 93%) of the HBsAg-positive women giving birth were born outside of the US. Of these women, 598 (89%) were born in areas of the world with high or intermediate levels of endemic hepatitis B disease, such as Southeast Asia, Central Asia, India, the Middle East, Africa, Eastern Europe, South Pacific Islands, and Central and South America.

CASES COMPLETED FOR FOLLOW-UP IN 2002

In 2002, follow-up was completed for 881 women, their 894 newborns, and 1,471 household contacts. Fifty-three mothers were excluded (26 mothers miscarried, 11 transferred/moved out of LAC or were unable to be located before delivery and 15 were retested and found to be HBsAg negative). Case managers made numerous attempts to complete follow up of infants and household contacts; therefore, some of the cases completed in 2002 were reported in 2000 and 2001.

Case management protocol includes:

1. educating pregnant HBsAg-positive women about HBV disease, transmission, and other infant vaccinations,
2. identifying and referring household contacts for screening and vaccination,
3. notifying hospitals of the expected deliveries and requesting that the hospitals return documentation after the infant's birth with the dates and times of the administration of hepatitis B vaccine #1 and HBIG,
4. notifying the infant's health care provider about the need for hepatitis B vaccine #2 at 1 to 2 months and hepatitis B vaccine #3 at six months of age,
5. reminding parents about these needed vaccinations, and
6. sending post vaccination serology letters to pediatric health care providers.

Infant Immunoprophylaxis Completion Rates: Of 894 eligible infants (including 13 sets of twins), nearly all (96%) received the hepatitis B vaccine #1 within 24 hours of birth. The majority of infants (n=814, 91%) received HBIG and a complete three-dose series of hepatitis B vaccine (Table 1).

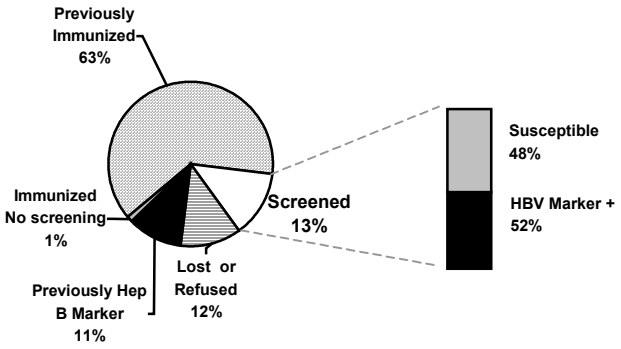
Table 1. Summary of Infant Hepatitis B Immunoprophylaxis—LAC, 2002 (N=894)

Hepatitis B Immunoprophylaxis	# of Infants	Percent*
Received hepatitis B vaccine #1 <12 hours after birth	832	93%
Received hepatitis B vaccine #1 <24 hours after birth	857	96%
Received HBIG <12 hours after birth	823	92%
Received HBIG <24 hours after birth	854	96%
Completed HBIG/3-dose hepatitis B vaccine series	814	91%

* Percent of infants receiving hepatitis B immunoprophylaxis out of 894 infants born to 881 HBsAg+ mothers who completed follow-up in 2002. Total includes infants who moved out of LAC prior to 6 months of age and prior to completion of the 3-dose hepatitis B vaccine.

Household and Sexual Contacts Completion Rates: A household contact was defined as an individual with anticipated continuous household exposure for greater than one year (often limited to nuclear family). Of the 1,471 contacts identified, 923 (63%) were previously vaccinated and 161 (11%) had demonstrated serologic evidence of hepatitis B infection. Of the remaining contacts (n=381, 26%), 193 (13%) were screened for serologic evidence of hepatitis B infection or immunity, while 188 (12%) refused screening or vaccination, were lost to follow-up, or moved; 1% were vaccinated without screening. Of the 193 (13%) household contacts that were serologically screened, 92 (48%) had positive markers for hepatitis B and therefore did not need vaccine. Half of the screened household contacts (n=101, 52%) were seronegative, and therefore, susceptible to hepatitis B infection (Figure 3). Upon completion of case management for the HBsAg-positive mothers, 63 (62%) of these susceptible household contacts had completed all three doses of hepatitis B vaccine.

Figure 3
HBV Marker Status Of Household Contacts to Cases Closed in 2002 LAC (N=1,471)



Post-vaccination serology results: Post vaccination serology testing of infants born to HBsAg-positive mothers is recommended 3 to 9 months after completing immunoprophylaxis to verify vaccine failure or success. Letters requesting post vaccination serology results were mailed to pediatric health care providers of infants tracked by the PHBPP. The post vaccination serology results of 258 infants (29%) whose follow-up was completed in 2002 were received. Of these, 226 (88%) had antibodies to hepatitis B surface antigen indicating protection against HBV, 7 (3%) were HBsAg-positive and infected, and 25 (9%) were negative for both markers and revaccination was recommended.

ADDITIONAL RESOURCES

Information from the CDC includes:

- General information www.cdc.gov/ncidod/diseases/hepatitis/b/index.htm
- Publications www.cdc.gov/ncidod/diseases/hepatitis/resource/pubs.htm
- Viral Hepatitis B Virus slide set www.cdc.gov/ncidod/diseases/hepatitis/slideset/hep_b/slide_1.htm

Information from the Immunization Action Coalition is available at: www.immunize.org

Information form the Hepatitis B Foundation is available at: www.hepb.org/

HEPATITIS C, ACUTE

CRUDE DATA	
Number of Cases	2
Annual Incidence	
LA County	-- [a]
California	N/A
United States	N/A
Case Fatality	
LA County	N/A
United States	N/A

[a] Rates based on fewer than 20 cases are unreliable.

DESCRIPTION

The Hepatitis C virus (HCV) is the most common bloodborne infection in the US. This RNA virus is one of at least 5 different viruses associated with liver disease and is predominantly transmitted through contact with contaminated blood and blood products. Sexual and perinatal transmission of HCV appears to occur less frequently, but its epidemiology has yet to be fully elucidated. People at risk include: anyone who has had a blood transfusion prior to 1989, IV drug users, hemodialysis patients, infants born to infected mothers, those with multiple sexual partners, health care workers who suffer needle-stick accidents and people with tattoos or body-piercings. However, an estimated 30% have no identifiable history of exposure to the virus. Household or familial contact is not considered a risk factor for the transmission of hepatitis C. There is no vaccine available for HCV and vaccines for hepatitis A and B do not provide immunity.

Symptoms of acute infections can include jaundice, fatigue, anorexia, nausea, or vomiting; however, up to 85% of acute infections have mild or no symptoms and usually go undetected. Hepatitis C completely resolves in only 15% of infections and progresses to a chronic illness in 60–70%. Medical complications occur decades after initial infection B including cirrhosis, liver failure, and hepatic cancer. Once infection has occurred, secondary prevention recommendations include: vaccination for hepatitis A and B viruses, abstaining from alcoholic beverages, avoiding other high-risk behaviors (e.g., unprotected sex) and maintaining regular doctors visits for assessment and early treatment.

In the US, the annual number of acute hepatitis C virus infections has declined during the past decade from 180,000 to 35,000. Primary prevention efforts concentrate mainly on risk-behavior modification—specifically, avoiding contact with contaminated blood. An estimated 3.9 million Americans are currently infected with HCV, and an estimated 8,000–10,000 deaths each year result from HCV-associated chronic liver disease. HCV infection affects persons of all ages, but most acute cases of hepatitis C and the highest seroprevalence of HCV infection are found among young, male adults. The highest proportion both of incident cases and of prevalent infections is among White males.

The current CDC definition for acute hepatitis C requires that a person have evidence of jaundice or an onset date of symptoms within six months of diagnosis and have the following laboratory results:

1. A positive HCV test (antibody testBEIA) confirmed by a more specific test (RIBABor detection of the HCV-RNA antigen by polymerase-chain reaction) or an EIA signal to cutoff ratio of $\geq$3.8.
2. Serum alanine aminotransferase (ALT) greater than 7 times the upper limit of normal.
3. No evidence of either acute hepatitis A or B disease.

DISEASE ABSTRACT

- There were 13 reported cases of acute hepatitis C in 2002, but upon further investigation only two cases were confirmed and met the current case definition.
- The two acute cases were in a 29 year-old Latino and a 51 year-old Asian. The first case had been incarcerated and the second case reported tattooing in the six months prior to infection. These were the only identified risk factors. No common surgical procedure or interventions were identified prior to clinical presentation. Both denied use of needles for injection of street drugs.
- A total of 9,691 HCV chronic cases were reported in 2002, 15% fewer than 2001 (N=11,379).

PREVENTION

Universal blood product screening in 1990 and heat-inactivation of other blood concentrates initiated in 1987 have dramatically reduced recipient-associated cases of hepatitis C. This leaves the reduction of high-risk behaviors as the primary recommendation for preventing transmission. Educational efforts aimed at reducing high-risk behaviors (e.g., sharing injection drug equipment, engaging in unprotected sex), may help to reduce new hepatitis C cases. Testing should be offered routinely to persons most likely to be infected with HCV who might require medical management, and testing should be accompanied by appropriate counseling and medical follow-up. Once chronic infection has occurred, consuming alcohol and becoming co-infected with HIV or other hepatitis A or B viruses can accelerate the progression of hepatitis C disease to cirrhosis, liver failure, and hepatocellular carcinoma. Additional funding is necessary to study the feasibility of hepatitis B vaccine into existing programs that provide drug/alcohol treatment as well as HIV screening and treatment.

COMMENTS

Conducting surveillance for acute hepatitis C is difficult—stringent criteria are established by the CDC and are required for diagnosis. With more widespread use of HCV testing, increasingly larger numbers of persons with a positive anti-HCV (antibody to HCV) test are being reported to state and local health departments. Most of these reports represent chronic disease from past drug use or blood transfusions. Because there is no serologic marker for acute hepatitis C, additional investigation is required to determine if these reports represent acute infection, chronic infection, a duplicate report (i.e., resulting from a repeated test of a person previously reported), or a false-positive.

Such stringent criteria explain why it is hard to classify the reported HCV cases—most of the anti-HCV reports are not accompanied by results of the other laboratory tests and resources are not available to conduct a follow-up on every reported case. Only cases reported with additional laboratory information are investigated; therefore, the number of acute hepatitis C cases is an underestimation of the total number of cases. Furthermore, there has been a recent change in the ALT levels necessary to be considered a case. Since 2000, the serum ALT levels have been raised from 2.5 times the upper limit of normal (ALT >120U/L) to 7 times the upper limit of normal (ALT >280 U/L). This standard has decreased the number of cases. ACDC is currently exploring methods to improve surveillance for hepatitis C in order to identify more acute cases and better understand the epidemiology of acute hepatitis C in LAC.

Therapy for hepatitis C is a rapidly changing area of clinical practice. Combination therapy with interferon and ribavirin is now FDA-approved treatment for chronic hepatitis. These recombinant interferon drugs have been effective in 40%–50% of those treated. Side effects include: flu-like symptoms, depression, headache and decreased appetite and are usually very severe. No data exist indicating that treatment begun during the acute phase of infection is more effective than treatment begun early during the course of chronic HCV infection.

The most important areas for future research include developing less toxic treatments and finding better ways to identify those who are infected. New studies, including evaluations of the latest combination treatment in patients who haven't responded to other treatments or who had to stop those treatments due to side effects, still need to be conducted.

ADDITIONAL RESOURCES

Further information about hepatitis is available from:

American Liver Foundation www.liverfoundation.org

International Liver Foundation www.hepfi.org/infomenu.htm

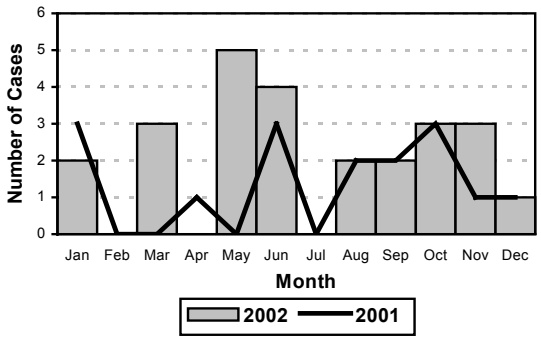
CDC www.cdc.gov/ncidod/disases/hepatitis/

LEGIONELLOSIS

CRUDE DATA	
Number of Cases	25
Annual Incidence[a]	
LA County	0.3
United States	0.4
Age at Diagnosis	
Mean	67
Median	73
Range	51–81 years
Case Fatality	
LA County	12.0%
United States	N/A

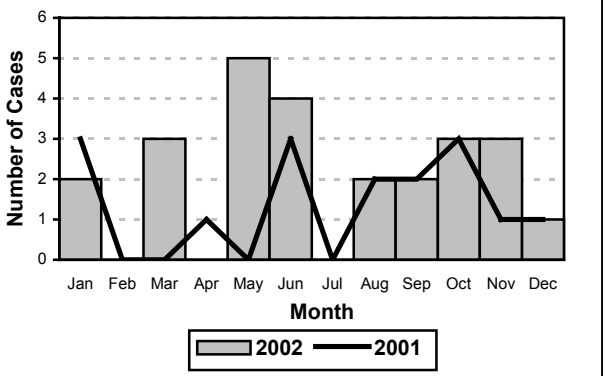
[a] Cases per 100,000 population.

Figure 2
Legionellosis
Cases by Month of Onset
LAC, 2002



DESCRIPTION

Figure 2
Legionellosis
Cases by Month of Onset
LAC, 2002



Legionellosis is a bacterial infection with two distinct clinical forms: 1) Legionnaires' disease (LD), the more severe form characterized by pneumonia, and 2) Pontiac fever, an acute-onset, self-limited flu-like illness without pneumonia. *Legionella* bacteria are common inhabitants of aquatic systems and thrive in warm environments. Ninety percent of cases of LD are caused by *Legionella pneumophila,* although at least 11 other species and a number of serogroups are known to cause disease in humans. Transmission occurs through inhalation of aerosols containing the bacteria or by aspiration of contaminated water. Person-to-person transmission does not occur. The case fatality rate for LD ranges from 5%–15%, but can be higher in outbreaks occurring in a hospital setting. People of any age may get LD, but the disease most often affects middle-aged and older persons, particularly those who are heavy smokers, have chronic lung disease, or whose immune system is suppressed by illness or medication.

DISEASE ABSTRACT

- As in previous years, the incidence of legionellosis in LAC was below national levels.
- Three definite and six possible nosocomial cases were identified in one medical facility. Findings and recommendations from this outbreak investigation are documented in a 2002 special report.
- There were no cases of Pontiac fever.

STRATIFIED DATA

Trends: Twenty-five reported cases met the CDC surveillance case definition for LD in 2002. This is noticeably lower than the peak incidence of 32 cases reported in 1997 (Figure 1).

Seasonality: Fifteen cases (60%) occurred during the summer and autumn months (June through November, Figure 2). This is consistent with national surveillance data and possibly represents increased exposure related to travel and/or contaminated air-cooling systems during warmer months.

Age: Consistent with the expected higher frequency among older persons, the mean age of reported cases was 67 years, the median age 73 years, and the range was 51–81 years.

Gender: The male-to-female case ratio was 2.1:1. Disproportionately higher rates of legionellosis occurred among males—a consistent finding for LAC and national surveillance data. Both cigarette smoking and older age are recognized risk factors for LD. An explanation often offered to explain the gender disparity in LD is the higher prevalence of cigarette smoking among males in the older age groups. The gender disparity in prevalence of smoking in the older age groups is expected to narrow or disappear in the near future, as it has among younger age groups.

Race: The majority of cases (n=14, 56%) occurred in Whites. The next most frequently reported racial group was Latino (n= 5, 20%), followed by Asian (n=3, 12%), and Black (n=1, 4%). Racial group was not reported for two (8%) cases.

Location: There was no apparent clustering by residence; no more than two cases each occurred among any of the eight health districts.

COMMENTS

In 2002, three (12%) cases were confirmed by culture alone, two (8%) by direct fluorescent antigen testing of the sputum, and 20 (80%) by urine antigen testing alone. *Legionella pneumophila* serogroup 1 was implicated in all but five of the cases, possibly reflecting increased use of urine antigen testing, which is specific for Lp1. The proportion of cases of *Legionella* diagnosed by urinary antigen increased only slightly from 14 (78%) cases in 2001 to 20 (80%) cases in 2002. It is possible that this relatively easy diagnostic test may contribute to increased diagnosis of legionellosis in the future since clinicians are using this test more frequently.

One outbreak of legionellosis in a medical facility had three definite and six probable nosocomial cases. CDC guidelines for investigation of nosocomial legionellosis were followed at the facility, outbreak control recommendations were implemented, and no additional cases were identified after July 2002. A detailed summary of this investigation is presented as a special report.

Two additional definite nosocomial cases occurred at two separate medical facilities that were not outbreak associated and were not investigated.

The number of cases of legionellosis in LAC remains lower than expected based on national surveillance data and other epidemiologic studies. Empiric treatment for community-acquired pneumonia without specific testing for *Legionella*, inappropriate laboratory testing (use of a single serologic antibody titer testing without convalescent titers), and underreporting by physicians are possible explanations.

ADDITIONAL RESOURCES

Guidelines:

- CDC. Guidelines for prevention of nosocomial pneumonia. MMWR 1997; (RR-1):1–79. www.cdc.gov/ncidod/diseases/hip/pneumonia/pneu_mmw.htm

- Allegheny County Health Department. Approaches to prevention and control of Legionella infection in Allegheny County health care facilities. 2nd ed. Pittsburgh, PA: Allegheny County Health Department. 1997:1–15. www.legionella.org

- State of Maryland, Department of Health and Mental Hygiene. Report of the Maryland Scientific working Group to Study *Legionella* in Water Systems in Healthcare Institutions. June 14, 2000, Baltimore, Maryland. www.dhmh.state.md.us/html/legionella.htm

- ASHRAE. Guideline 12, 2000. Minimizing the risk of legionellosis associated with building water systems. American Society of Heating, Refrigerating and Air-Conditioning Engineers, Atlanta, GA., 1999. www.ASHRAE.org or www.baltimoreaircoil.com/index1.html

- LAC Department of Health Services. Legionellosis: Taking the Mystery out of Laboratory Diagnosis. The Public's Health. 2001;1(3):4. Available at: www.lapublichealth.org/wwwfiles/ph/ph/ph/TPH_October_2001.pdf

Reviews:

- Stout JE, Yu VL; Legionellosis. N Engl J Med 1997; 337:682–687.

- Breiman RF, Butler JC: Legionnaires' disease: clinical, epidemiological, and public health perspectives. Semin Respir Infect 1998; 13:84–89.

Selected Articles:

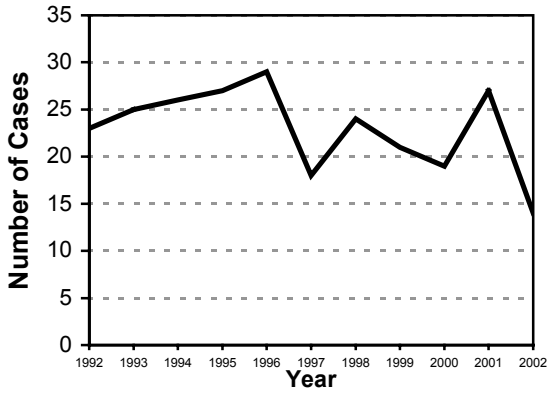
- Lin YS, Stout JE, Yu VL, Vidic RD. Disinfection of water distribution systems for *Legionella*. Semin Respir Infect 1998; 13:147–59.

- Yu VL. Resolving the controversy on environmental cultures for *Legionella*: A modest proposal. Infect Control Hosp Epidemiol 1998; 19:893–7.

LISTERIOSIS, NONPERINATAL

CRUDE DATA	
Number of Cases	14
Annual Incidence [a]	
LA County	---[b]
United States	N/A
Age at Diagnosis	
Mean	68.5
Median	64
Range	47–92 years
Case Fatality	
LA County	14%
United States	N/A

Figure 1
Nonperinatal Listeriosis
Cases by Year of Onset
LAC, 1992–2002



[a] Cases per 100,000 population.
[b] Rates based on less than 20 observations are unreliable.

DESCRIPTION

Listeriosis is a disease transmitted primarily through consumption of food contaminated with *Listeria monocytogenes,* a gram-positive bacterium. *L. monocytogenes* is found in soil and water, and can contaminate raw foods (e.g., uncooked meats and vegetables), as well as processed foods that become contaminated after processing (e.g., soft cheeses and cold cuts). Unpasteurized (raw) milk and foods made from unpasteurized milk may also contain the bacterium. Common symptoms of listeriosis include fever, muscle aches, headache, nausea, diarrhea, and neck stiffness. A case of nonperinatal listeriosis is one that occurs in persons other than pregnant women and/or their fetuses, neonates, or infants up to 42 days after birth. Historically, nonperinatal listeriosis presents as meningoencephalitis and/or septicemia, primarily affecting elderly and immunocompromised persons, such as those with cancer or HIV, and those on immunosuppressive therapy.

DISEASE ABSTRACT

- In 2002, 14 nonperinatal listeriosis cases were reported, 50% fewer cases than the previous year (N=27) and the lowest rate in at least 10 years.
- There were two case fatalities due to listeriosis during 2002. While the same number of deaths occurred during the previous year, since the overall incidence decreased, the case fatality rate increased substantially, from 7% to 14%.
- Listeriosis cases typically follow a seasonal trend with cases increasing during the summer months. During the previous five years, the highest incidence of cases occurred during June. However, this seasonal pattern did not occur during 2002; no cases were reported during June 2002 and the majority of cases occurred during the final, winter months of the year.
- There were no foodborne listeriosis outbreaks during 2002.

STRATIFIED DATA

Trends: There has been a considerable decline in the number of cases; the number of incident cases in 2002 decreased by more than 48% compared to the previous year (N=27). The incidence rate in 2002

was lowest rate identified in the past 10 years. However, since the number of fatalities remained stable, the case fatality in 2002 increased to 14% (2/14) from 7% (2/27) in 2001.

Seasonality: In the previous five years, the average number of reported cases was greatest in June. However, in 2002, there were no cases in June and the majority of cases occurred during the second half of the year (Figure 2).

Age: Advanced age is considered a risk factor for nonperinatal listeriosis. In 2002, a greater percentage of cases (43%, n=6) were 65-years of age or older—an increase compared to 2001 (33%). In 2002, just as many cases occurred those 55 to 64 years of age (43%). There were no nonperinatal cases among residents younger than 47 years (Figure 3).

Sex: In 2002, more males contracted nonperinatal listeriosis; the male-to-female incidence ratio was 1:0.75.

Race/Ethnicity: In 2002, Whites had the highest number of incident cases of nonperinatal listeriosis (n=9). Latinos had the second highest number of new cases (n=4) followed by Asians (n=1). There were no Black cases reported in 2002 (Figure 4).

Location: During 2002, there was no significant clustering of cases by location.

Predisposing Conditions and Medical Risk Factors: As mentioned, many of the cases occurring in 2002 (n=6, 43%) were older than 65 years of age. In addition, half of the cases (n=7, 50%) were diagnosed with cancer, and four cases (29%) were on steroid medication. All of the cases during 2002 had at least one risk factor associated with infection (Table 1).

Outcome: Two (14%) of the 14 cases in 2002 died.

Culture Sites: *L. monocytogenes* was isolated from blood in all 14 cases as well as in CSF in four cases.

Figure 2
Nonperinatal Listeriosis
Cases by Month of Onset
LAC, 2002

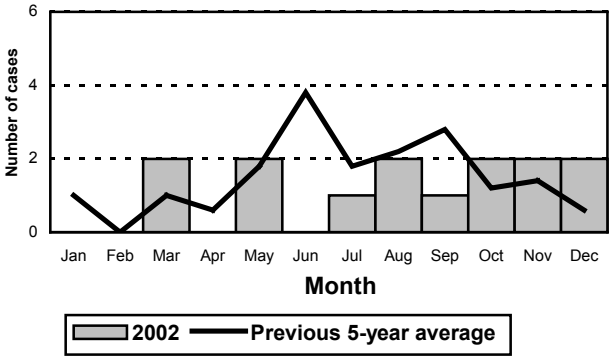


Figure 3
Nonperinatal Listeriosis Incidence
by Age Group
LAC, 2002

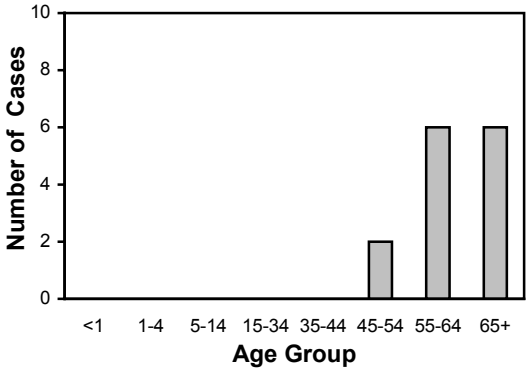
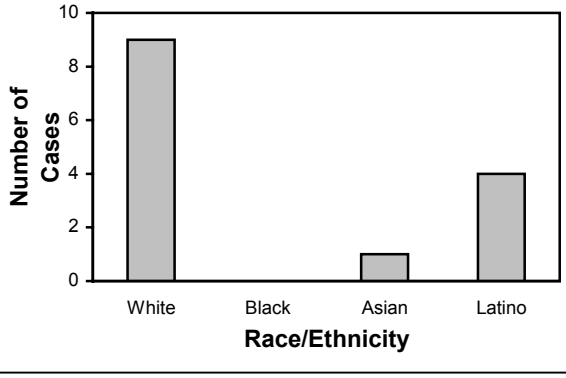


Figure 4
Nonperinatal Listeriosis
Incidence by Race/Ethnicity
LAC, 2002



PREVENTION

In general, listeriosis may be prevented by thoroughly cooking raw food from animal sources, such as beef, pork, or poultry; washing raw vegetables thoroughly before eating; and keeping uncooked meats separate from vegetables, cooked

foods, and ready-to-eat foods. Avoiding unpasteurized milk or foods made from unpasteurized milk, and washing hands, knives, and cutting boards after handling uncooked foods also may prevent listeriosis.

Persons at high risk for listeriosis include the elderly and those with cancer, HIV, diabetes, weakened immune systems, and those on immunosuppressive therapy. These individuals should follow additional recommendations: avoid soft cheeses such as feta, brie, camembert, blue-veined, and Mexican-style cheese. Hard cheeses, processed cheeses, cream cheese, cottage cheese, or yogurt need not be avoided. Leftover foods or ready-to-eat foods, such as hot dogs, should be cooked until steaming hot before eating. Finally, although the risk of listeriosis associated with foods from deli counters is relatively low, immunosuppressed persons may choose to avoid these foods or thoroughly reheat cold cuts before eating.

Table 1. Predisposing Factors in Cases of Nonperinatal Listeriosis—LAC, 2002

Medical Conditions	Number	Percent
Age >65 years	6	43
Cancer	7	50
Diabetes	1	7
Steroid Use	4	29
Kidney Disease	3	21
Prior Antibiotic Use	3	21
No Identified Risk Factors	0	0

COMMENTS

2002 had the lowest incidence rate for listeriosis in at least 10 years. This decline may be attributable to better food safety handling and/or packaging, improved education and knowledge from experience with *L. monocytogenes*. As opposed to previous years, there were no foodborne *L. monocytogenes* outbreaks. Another contributing factor may be variations in reporting and hospital laboratory testing practices. Foodborne illnesses both locally and nationwide have decreased substantially in recent years. Whether this represents a real decrease in disease, a reduction in laboratory testing and/or reporting, or both remains to be determined.

Although there were fewer cases in 2002, the number of case fatalities was the same as in 2001. Given the older age distribution (no cases less than 47 years and just as many 50 to 64 year-old cases as those 65 years and older) and the predisposing health conditions of the cases (all of the cases had at least one predisposing condition that might lead to a weaker immune system), *L. monocytogenes* still appears to be an opportunistic disease targeting people who are very ill and/or weaker in fighting off infections.

All *L. monocytogenes* isolates are now analyzed by pulsed field gel electrophoresis (PFGE). There were no LAC outbreaks or LAC cases associated with a multi-jurisdictional outbreak identified in this manner in 2002.

ADDITIONAL RESOURCES

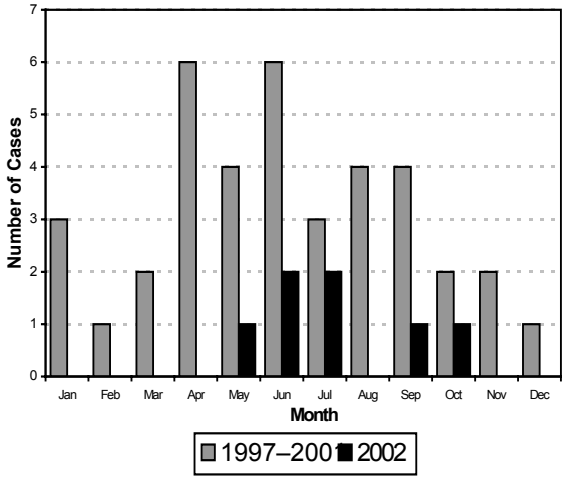
General disease information is available from the CDC at:
www.cdc.gov/ncidod/dbmd/diseaseinfo/listeriosis_g.htm

General information and reporting information about this and other foodborne diseases in LAC is available at: www.lapublichealth.org/acd/food.htm

LISTERIOSIS, PERINATAL

CRUDE DATA	
Number of Cases[a]	7
Annual Incidence[b]	
LA County	---[c]
United States	N/A
Age at Onset	
Maternal:	
Mean	28 years
Median	28 years
Range	17–39 years
Infant Gestational:	
Mean	32 weeks
Median	36 weeks
Range	16–39 weeks
Case Fatality[d]	
LA County	29%
United States	N/A

Figure 2
Number of perinatal listeriosis cases
by month of onset
LAC, 1999—2002



[a] Cases are mother-infant pairs.
[b] Cases per 100,000 population.
[c] Rates based on less than 20 observations are unreliable.
[d] Among fetal/neonate cases only, no maternal deaths included.

DESCRIPTION

Perinatal listeriosis is a disease transmitted transplacentally from infected pregnant women; these women may experience only mild flu-like symptoms or may be asymptomatic. A perinatal listeriosis case is defined as a mother-infant pair in which one or both persons has a positive *Listeria monocytogenes* culture from a normally sterile site. Neonatal/infant listeriosis is divided into early onset (0–6 days after birth) and late onset (7–42 days after birth). Infection during pregnancy may lead to premature birth, stillbirth, or septicemia and/or meningitis in the neonate—even if the mother is asymptomatic. There is no vaccine to prevent listeriosis.

DISEASE ABSTRACT

- While the number of perinatal listeriosis had been decreasing since 1993, incidence increased 130% from 3 cases in 2001 to 7 cases in 2002.
- Among the affected infants, two (29%) were stillbirths, four cases (57%) were born alive and healthy, and one case (14%) was not born during the time the mother presented with *L monocytogenes*.

STRATIFIED DATA

Trends: In 2002, perinatal listeriosis incidence increased after declining since 1999 (Figure 1).

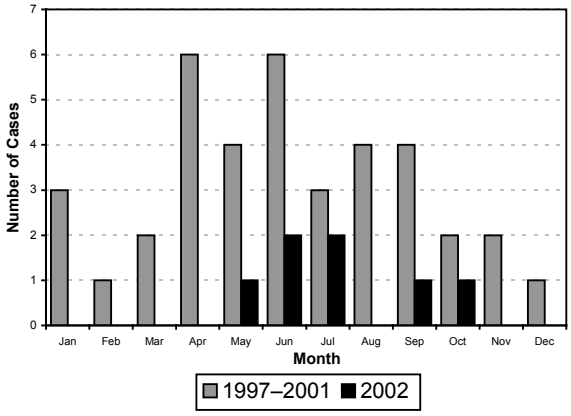
Seasonality: From 1997 to 2002, the number of cases tends to increase during the spring and summer months (Figure 2). In 2002, more than half of the cases (n=4) occurred in June and July.

Age: During 2002, the average maternal and gestational ages of perinatal cases (28.1 years and 32 weeks, respectively) were slightly lower compared to those in 2001 (29.7 year and 33 weeks). Of the two case fatalities, stillbirths occurred at 16 and 37 weeks.

Sex: In 2001, all newborns/fetuses (n=3) of the perinatal cases were born female. In 2002, with one fetus unborn during the mother's presentation with listeriosis, there were two male and four female newborns/fetuses testing positive for *L monocytogenes*.

Race/Ethnicity: The majority of cases were Hispanic (n=5, 71%), one (14%) was Asian, and one was White. Of the two case fatalities, one was Hispanic and one was Asian.

Figure 2
Number of perinatal listeriosis cases
by month of onset
LAC, 1999–-2002



Location: Two perinatal cases were from the South health district (SPA 6), and one case was from one of the following health districts: Glendale (SPA 2), Alhambra (SPA 3), Hollywood-Wilshire (SPA 4), San Antonio (SPA 7), and Torrance (SPA 8).

Type of Delivery: Of the six births, the method of delivery was caesarian section for two cases, vaginal for two cases, and unknown for two.

Outcome: All mothers survived but two (29%) newborns/fetuses died.

Culture Sites: Of the six births, three (43%) newborns/fetuses had blood and CSF cultures, one had only blood culture, one had heart fluid and lung fluid cultured, and two had no cultures done (Table 1). Four (57%) mothers had positive blood cultures, another mother had positive nasopharyngeal and umbilical cord cultures, and two mothers (29%) were missing culture information.

Onset: In 2002, all cases were classified as early-onset (0–6 days after birth).

High-risk Foods: When high-risk foods were assessed as possible causes for infection, most mothers reported having eaten Mexican cheese (n=5, 71%), one (14%) mother drank raw milk, one ate soft cheese, one ate cold cuts and raw eggs, two (29%) ate raw fruit, and two ate raw vegetables.

Table 1. Frequency and Percent* of *Listeria monocytogenes* Isolates From Mothers and Infants—LAC, 2002

	Mother (n=7)		Infant (n=7)	
Culture Site	**Number**	**Percent**	**Number**	**Percent**
Blood	4	57	4	57
CSF	0	0	3	43
Nasopharyngeal	1	14	0	0
Umbilical cord	1	14	0	0
Placenta	0	0	0	0
Heart fluid	0	0	1	14
Lung fluid	0	0	1	14

* Percentages may exceed 100% as cultures were obtained from more than one site in some cases.

PREVENTION

L monocytogenes is found in soil and water. Animals can carry *Listeria* without appearing ill, which can result in contaminated foods of animal origin, such as meats and dairy products. In particular, studies have implicated unpasteurized milk or products made from unpasteurized milk; soft cheeses (Mexican-style, Brie, Feta, blue-veined, Camembert); undercooked meat, such as beef, pork, poultry, and pate; and cold cuts from deli counters. Pregnant women should avoid these foods. In particular, cheese sold by street vendors, or obtained from relatives/friends in other countries where food processing quality assurance is unknown should be avoided by pregnant women.

In addition, fruits and vegetables should be thoroughly washed. Uncooked meats should be stored separately from vegetables, cooked foods, and ready-to-eat foods. Hands, utensils, and cutting boards should be washed after handling uncooked foods. Leftover foods or ready-to-eat foods, such as hot dogs, should be cooked until steaming hot before eating. Finally, although the risk of listeriosis associated with foods from deli counters is relatively low, pregnant women may choose to avoid these foods or thoroughly reheat cold cuts before eating.

Given the seasonality of perinatal listeriosis, prevention strategies should take effect before June. Possible preventive methods include education during pregnancy checkups, outreach in Hispanic/Latino communities, and food safety notices at food and deli markets.

COMMENTS

Although twice as many perinatal listeriosis cases occurred in 2002 compared to 2001, the incidence is still less than ten cases per year. Hispanic women pregnant with female babies are at highest risk. The five Hispanic mothers were the five cases who ate Mexican-style fresh cheese, a source of *L monocytogenes* infection in previous outbreaks. As the Hispanics are the fastest growing segment of the LAC population, prevention in this group becomes ever important. There were no perinatal cases associated with outbreaks in 2002.

All isolates of *L monocytogenes* are now typed by pulsed-field gel electrophoresis (PFGE), a technique to detect matching strains of various pathogenic agents. When matches between isolates from patients or foods are detected, an investigation may be initiated. In addition, a solitary case occurring locally can be linked by PFGE results to an outbreak occurring on a wider geographical scale. In 2002, there were no cases of *L monocytogenes* in LAC associated with a multi-jurisdictional outbreak identified in this manner.

ADDITIONAL RESOURCES

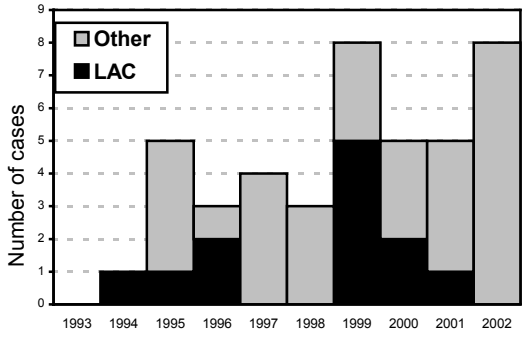
General disease information is available from the CDC at:
www.cdc.gov/ncidod/dbmd/diseaseinfo/listeriosis_g.htm

General information and reporting information about this and other foodborne diseases in LAC is available at: www.lapublichealth.org/acd/food.htm

LYME DISEASE

CRUDE DATA	
Number of Cases	8
Annual Incidence[a]	
LA County	---[b]
California	0.3
United States	8.4
Age at Diagnosis	
Mean	37
Median	36
Range	7–67 years
Case Fatality	
LA County	0.0%
United States	N/A

Figure 1
Lyme Disease
Exposure Site by Year
LAC and US, 1993–2002



[a] Cases per 100,000 population.
[b] Rates based on fewer than 20 cases are unreliable.

DESCRIPTION

Lyme disease is caused by a bacterium, *Borrelia burgdorferi*, transmitted to humans by the bite of the western blacklegged tick (*Ixodes pacificus*). This disease is not common in LAC. The reservoir is in small rodents, with deer as a secondary reservoir. Ticks that feed from infected rodents or deer may then transmit the disease to humans, who are accidental hosts. A distinctive rash (erythema migrans) is present in most patients (about 60–90%) at the site of the tick bite. The incubation period is from 3–32 days. However, early symptoms (e.g., fever, body aches, headaches and fatigue) are often unrecognized as indicators of Lyme disease. Patients may present with later manifestations such as aseptic meningitis, cranial neuritis, cardiac arrhythmias and arthritis of the large joints. Laboratory tests are available, but they are often not sensitive, specific or consistent. Early disease is treated with a short course of oral antibiotics, while later manifestations may require longer treatment with oral or intravenous (IV) antibiotics. Currently, there is no vaccine.

DISEASE ABSTRACT

- In 2002, 8 reported cases met CDC surveillance criteria. Most (n=6, 75%) were female.
- All cases reported exposure outside LAC.

COMMENTS

Lyme disease is now the most frequently reported vectorborne disease in the US. Lyme disease is reported infrequently in LAC. Since Lyme disease became reportable in 1989, 48 reported cases have met the CDC surveillance criteria. Sixteen cases (28%) were exposed to ticks inside LAC. Although transmission of Lyme disease does occur in LAC, it is believed to be rare because the western blacklegged tick is not the most common tick in LAC, and only 1–2% of western blacklegged ticks in California are infected with the bacterium that causes Lyme disease. The tick must be attached for a minimum of 48 hours for transmission to occur. Although DHS has been testing ticks and reservoir

animals for the past eleven years, 1999 was the first year for which ticks were confirmed to carry *B. burgdorferi* by culture.

When a case of Lyme disease is reported to the DHS, an investigation is initiated by ACDC, which includes collection of information from the physician and the patient. Vector Management staff determine the probable site of tick exposure and initiate field studies. Field studies include collection of ticks and samples from animals to test for Lyme disease.

Although Lyme disease occurs rarely in LAC, personal protective measures are recommended to prevent tick bites. These include: using insect repellents containing DEET, wearing long pants and long-sleeved clothing, wearing light-colored clothing (so that ticks can be spotted more easily) and walking in the center of a trail to avoid overhanging grass or brush.

Future Directions

The vaccine made by SmithKline Beecham (LYMErix) was taken off the market in 2001 due to poor sales and possible side effects and complications. Efforts are being made to develop a new vaccine.

ADDITIONAL RESOURCES

More information about Lyme disease is available from the CDC at:
www.cdc.gov/ncidod/dvbid/lyme/index.htm

A brochure regarding Lyme disease is from the California Department of Health Services is avilable at:
www.dhs.ca.gov/ps/dcdc/disb/pdf/Lyme%20Disease%20brochure%20final.pdf

Publications:

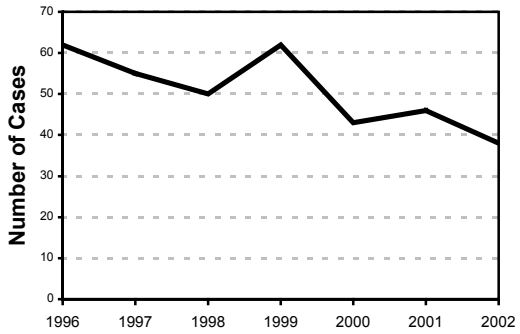
- Nadelman RB and Wormser GP. Lyme borreliosis. Lancet. 1998; 352:557–65.
- Barbour AG. Lyme Disease: The Cause, the Cure, the Controversy. 1996. The Johns Hopkins University Press, Baltimore, MD.
- Steere AC. Lyme disease. N Engl J Med. 2001; 345(2):115–125.
- Sood SK. Lyme disease. Pediatr Infect Dis J. 1999; 18:913–25.

MALARIA

CRUDE DATA	
Number of Cases	38
Age at Onset	
Mean	37
Median	39
Range	<1–77 years
Case Fatality	
LA County	0.0%
United States	N/A

[a] Cases per 100,000 population.

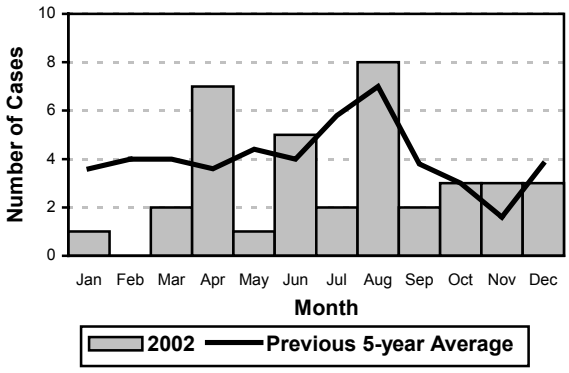
Figure 1
Malaria
Cases by Year
LAC, 1996–2002



DESCRIPTION

Human malaria is an illness caused by one or more plasmodia that infect humans: *P. vivax* (PV); *P. falciparum* (PF); *P. malariae* (PM); and *P. ovale* (PO). PF is found primarily in tropical regions and poses the greatest risk of death for non-immune persons because it invades red blood cells of all ages and is often drug-resistant. Malaria is acquired from the bite of an infective female *Anopheles* mosquito. Malaria is not transmitted locally in LAC, although a vector, *Anopheles hermsi*, exists here.

Figure 2
Malaria
Cases by Month of Onset
LAC, 2002



DISEASE ABSTRACT

- The number of malaria cases in LAC decreased from 46 cases in 2001 to 38 in 2002 (Figure 1).
- The percent of malaria cases who were US residents decreased from 63% (29/46) in 2001, to 58% (22/38) in 2002.
- The percent of malaria cases who were recent immigrants, visitors to the US, or whose residency status was unknown increased from 37% (17/46) in 2001 to 42% (16/38) in 2002.
- Of US resident cases, only 32% (7/22) had taken some form of prophylaxis during travel to a malaria-endemic region (Table 2).

STRATIFIED DATA

Species Frequency: The infecting malarial species was identified for 36 cases (95%, Figure 4); most cases (n=21, 55%) with PF, 15 (39%) with PV, and 2 (5%) were unspecified.

Seasonality: In 2002, April and August had the most cases of malaria. The fall and winter months had fewer cases compared to spring and summer months (Figure 2). These fluctuations in malaria cases by month are probably due to travel.

Age: The most cases occurred in individuals aged 15-34, followed by those between 35 to 44 years.

Sex: The rate ratio of male-to-female cases was 2.4:1.

Race/Ethnicity: Total cases were highest among person of reporting their race as Black. This included both African-Americans and African nationals (19/38).

Location: SPA 2 had the most malaria cases, eight cases, followed by SPA 8 with 7 cases.

Figure 3
Malaria
Cases by Age Group
LAC, 2002

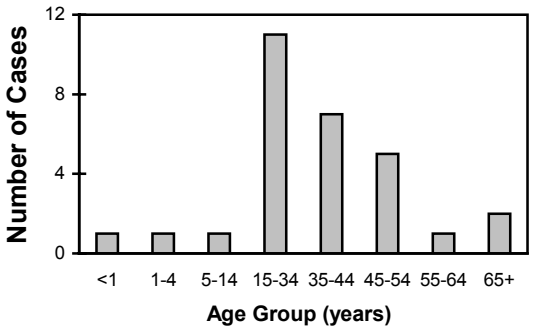
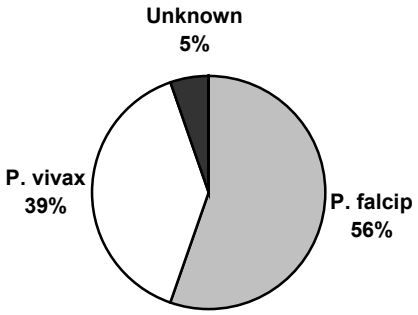


Figure 4
Malaria Cases by Species
LAC, 2002



COMMENTS

In LAC, malaria is a disease related to travel and immigration. There is no recent documentation of malaria being transmitted locally, but a competent mosquito vector exists in LAC. Local transmission has not occurred here due to a lack of a concentrated group of people circulating with the malaria parasite.

Residency and/or reason for travel were available for 36 (95%) of 38 reported malaria cases (Table 1). The majority of malaria cases (n=22, 58%) were LAC residents who traveled abroad either for work or vacation and 16 (42%) cases were recent immigrants, individuals visiting the US, or those whose residency status was unknown. The reason for overall drop in malaria cases is probably fewer people emigrating from malarial regions. The number of malaria cases overall is still far below the numbers of cases seen throughout the late 1970s through 1986 (an average of 133 malaria cases reported annually from 1979-1986).

Among malaria cases in US residents traveling abroad, Africa remains the most common region visited with Nigeria the most frequent destination. Twenty-two (58%) of all reported malaria cases were from individuals who were US residents and non-residents traveling to or coming from African countries (Table 1). Since the early 1990s, Blacks, including African nationals and African Americans, have been the ethnic group with the highest incidence of malaria in LAC.

Prior to the 1990s, immigrants/refugees from Central America and Southeast Asia made up the majority of all malaria cases seen in LAC. Of the 16 reported cases from non-US residents, recent African immigrants had the largest number of reported malaria (6 cases), followed equally by Central America and Southeast Asia with 5 reported cases respectively.

Antimalarial prophylaxis use history was available for all of the 22 US resident cases. Only 7 (32%) individuals took prophylaxis, up 12% from the previous year (Table 2). A lower percentage of work-related travel cases (20%) took prophylaxis compared to tourist cases. However, appropriateness of prophylaxis and adherence to regime was unknown. Twelve months prior to onset, three (8%) of all reported malaria cases had a previous malaria history.

Table 1. Malaria Cases by Species, Residency Status and Travel History—LAC, 2002

Location	Foreign Travel by US Residents No. of cases	(species) [b]	Non-US Resident [a] No. of cases	(species) [b]
Africa				
- Cameroon	2	(2 PF)	0	--
- Ghana	3	(3 PF)	1	(1 PF)
- Ivory Coast	0	--	1	(1 PF)
- Kenya	1	(1 PF)	1	(1 N)
- Liberia	1	(1 PV)	0	--
- Nigeria	8	(7 PF, 1 N)	2	(2 PF)
- Sierra Leone	2	(2 PF)		
Latin America				
- Honduras	1	(1 PV)	0	--
- El Salvador	0	--	2	(2 PV) [c]
- Guatemala	0	--	2	(2 PV)
Asia/Oceania				
- India	3	(3 PV)	2	(2 PV, 1 PF)
- New Guinea	1	(1 PV)	0	--
- Pakistan	1	(1 PV)	1	(1 PV)
- Thailand	0	--	1	(1 PF)
Unknown	0	--	2	(2 PV)
Total	**22**		**16**	

[a] Case recently immigrated, residency status is unknown, or case identified while visiting the US.
[b] PF = *P. falciparum*; N = not determined; PV = *P. vivax.*
[c] One case also traveled through Mexico.

Table 2. Malaria Prophylaxis Use in US Residents, 2002

Reason for Travel	Malaria Cases (N)	US Residents: Cases That Used Prophylaxis (N)	Prophylaxis Use (%)
Pleasure	17	6	35%
Work	5	1	20%
Total	22	7	32%

ADDITIONAL RESOURCES

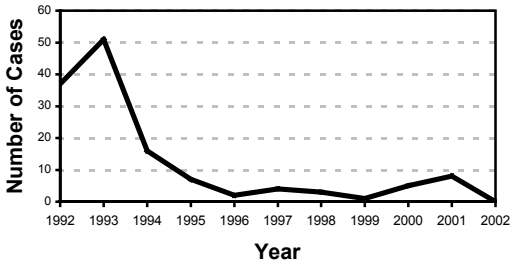
Additional information about malaria is available from the CDC at:
CDC website: www.cdc.gov/ncidod/dpd/parasites/malaria/default.htm

MEASLES

CRUDE DATA	
Number of Cases	0
Annual Incidence	
LA County	0
California	0.01
United States	N/A
Case Fatality	
LA County	0.0%
United States	N/A

[a] Rates based on less than 19 observations are unreliable.

Figure No. 62
Measles
Reported Cases by Year of Onset
LAC, 1992–2002



DESCRIPTION

Measles is a vaccine-preventable disease caused by a paramyxovirus and is transmitted by contact with respiratory droplets or by airborne spread. Common signs and symptoms of measles include fever, cough, conjunctivitis, runny nose, photophobia, Koplik spots, and a generalized maculopapular rash. Severe complications are rare, but can include acute encephalitis and death from respiratory or neurologic complications. Immunocompromised individuals are more likely to develop complications. All persons who have not had the disease or who have not been successfully immunized are susceptible. The minimum clinical criteria for measles are fever of at least 101°F, a generalized rash lasting at least three days, and either cough, coryza, conjunctivitis, or photophobia. A case is confirmed by positive IgM titers or a four-fold increase in acute and convalescent IgG titers.

DISEASE ABSTRACT

- There were no confirmed measles cases reported in LAC during 2002. This marks first time this has occurred in the history of this county.
- During 2002, there were 44 reported cases in the US, of which, 5 cases were reported in California. This serves as a reminder that vigilance against measles is necessary and should continue in order to prevent the occurrence of new cases.

IMMUNIZATION RECOMMENDATIONS

- Measles disease can be effectively prevented by Measles-Mumps-Rubella (MMR) vaccine, given in accordance with recommendations from the CDC's Advisory Committee on Immunization Practices (ACIP).
- Usually, two doses of measles-containing vaccine are given via Measles-Mumps-Rubella (MMR) vaccine. The first dose is recommended at 12 months of age. The second dose can be given as early as four weeks after the first dose, but is usually given at ages 4 to 6 years.
- Vaccination is recommended for those born in 1957 or later who have no prior MMR vaccination or history of disease. Proof of immunization with 2 MMR doses is recommended for health care workers and person attending post secondary educational institutions as well as others who work or live in high risk settings.
- Over 95% of those who receive the current live attenuated measles vaccine develop immunity.
- Women should not become pregnant within 1 month of vaccination.

- Individuals who are severely immunocompromised for any reason should not be given MMR vaccine.

STRATIFIED DATA

Over the past several years the incidence of measles has significantly decreased in LAC since a record high occurring in 1993 (Figure 1). With the exception of this year, the number of measles cases has been increasing since 1999.

COMMENTS

As case counts have decreased markedly from those reported in the early 1990s, more epidemiologically linked cases are contributing to continued reports of measles. In 2000, 4 of the 5 cases were linked together as part of a cluster of cases that occurred during May and June. This cluster included unvaccinated siblings aged 1 and 3 years. While hospitalized, these cases infected a 24-year old hospital employee. The index cases also infected a 9-month old from another local health jurisdiction while this infant was visiting their home. A 29 year-old LAC resident developed measles after visiting the 9-month old infant in a hospital. All the cases, with the exception of the 9-month old infant, were preventable had they been adequately immunized with the MMR vaccine. Similarly, two of eight confirmed measles cases were epidemiologically linked in SPA 7 (East) during March 2001. However, it has been nearly ten years since an outbreak of measles has occurred in LAC.

It is the policy of the LAC Immunization Program to immediately follow-up on all suspect measles cases that are reported in order to verify diagnosis, medical history information, immunization status, and past travel history. Physicians and suspect cases are contacted directly by phone to verify the diagnosis and determine if the minimum criteria for measles classification has been met. If any measles report(s) involve a school or a sensitive setting like a health care facility, a school nurse or a medical administrator is contacted to assist in investigative efforts and to immediately implement isolation procedures necessary for preventing the spread of the disease. Susceptible contacts are identified and offered MMR vaccination to prevent natural measles occurrence. If vaccine is contraindicated, immune globulin (IG) is given instead. IG is recommended for infants less than 6-months of age, pregnant women, and immunocompromised individuals.

Both clinical and laboratory tests are important in the diagnostic confirmation of the disease. Blood specimen collections are arranged for serological analysis if the physicians have not ordered them. The testing laboratory is contacted to obtain measles IgM and IgG antibody levels. Detection of both types of antibodies is important in disease testing. Measles IgM antibodies are detectable from 2-28 days after rash onset. The presence of IgG antibodies in the serum indicates prior exposure to measles, either by natural means or by immunization. However, if a four-fold rise in measles IgG titer level is evidenced from sera drawn two weeks apart, a recent measles infection is indicated.

In summary, the decline in the number of measles cases in LAC is attributable to both the effectiveness of the MMR vaccine, diligent surveillance activities, and the success of the various outreach and educational programs implemented by the LAC Immunization Program to improve vaccination coverage rates in the county.

ADDITIONAL RESOURCES

National Immunization Program at: www.cdc.gov/nip

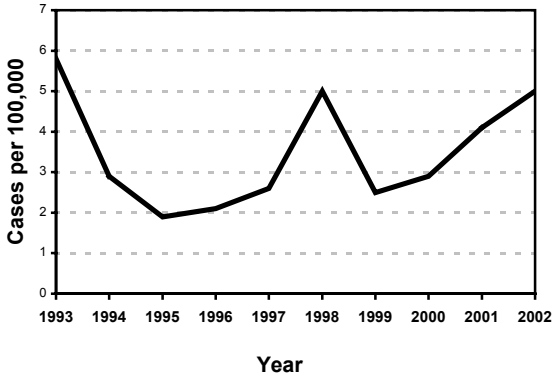
Immunization Action Coalition at: www.immunize.org

LAC, Immunization Program at: www.lapublichealth.org/ip

MENINGITIS, VIRAL

CRUDE DATA	
Number of Cases	466
Annual Incidence	
LA County	5.0
United States	N/A
Age at Diagnosis	
Mean	24
Median	22
Range	<1–84 years
Case Fatality	
LA County	1.3%
United States	N/A

Figure 1
Viral Meningitis
Incidence Rates by Year of Onset
LAC, 1993–2002

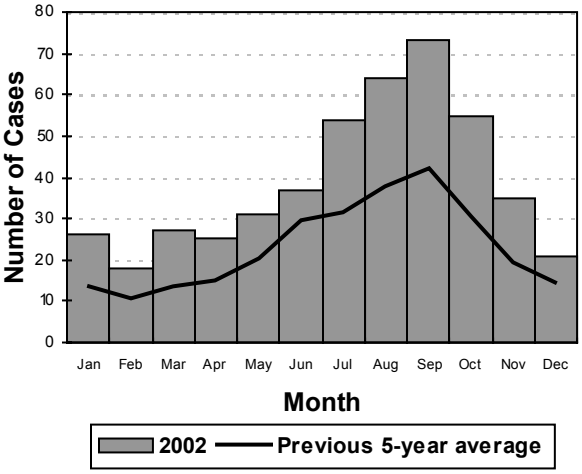


[a] Cases per 100,000 population.

DESCRIPTION

Viral meningitis, also referred to as aseptic meningitis, is a clinical syndrome in which no etiologic agent is identified on bacterial culture or examination of cerebrospinal fluid. While no often performed, enterovirus is the virus most often detected in CSF culture. Transmission may be fecal-oral, respiratory or by another route specific to the etiologic agent. Viral meningitis can occur at any age but is most common among the very young. Symptoms, which usually last from 7 to 10 days, are characterized by sudden onset of fever, severe headache, stiff neck, photophobia, drowsiness or confusion, nausea and vomiting. Treatment is usually supportive although antiviral agents may be available; recovery is usually complete. Enteroviruses, the etiologic agents commonly associated with viral meningitis, are not vaccine-preventable (except for polioviruses).

Figure 2
Viral Meningitis
Cases by Month of Onset,
LAC, 2002



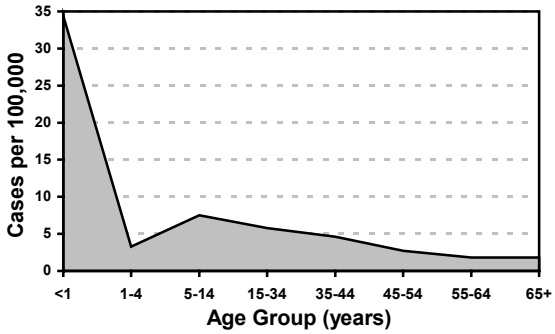
DISEASE ABSTRACT

- In 2002, there were 466 cases of viral meningitis compared to 378 (19% increase) in 2001.
- The annual incidence was 5.0 per 100,000 compared to 4.2 per 100,000 in 2001.
- The summer seasonal increase continued later into the year compared with the previous 5-year average (Figure 2).
- Arboviral infections such as West Nile virus, can present as aseptic meningitis.
- One case of aseptic meningitis was confirmed as West Nile virus infection by CSF and serum (see special report for more details).

- No unusual viral etiologies, associated cases, or clusters were reported in 2002.
- The highest age-group specific rate (34.4 per 100,000) continued to be seen in infants aged less than 1 year (Figure 3).

COMMENTS

Figure 3
Viral Meningitis
Incidence Rates by Age Group
LAC, 2002 (N=466)



Surveillance for viral meningitis is passive and only outbreaks, not individual cases, are investigated. The number of cases reported annually is considered to be significantly lower than the actual burden of disease. In 2002, there was a 19% increase in the number of cases reported. In 2002, there were 5 cases per 100,000 compared to 4.2 cases per 100,000 in 2001. Reasons for the increase, whether actual, or the result of improved reporting or other unknown factors, were not apparent. A similar unexplained increase was seen in 1998.

Information about the causative agents of viral meningitis is rarely included with case reports because viral cultures and nucleic acid tests are not routinely performed at most medical facilities. When an etiology is determined, an enterovirus, most of which are transmitted through the fecal-oral route, is the most frequently identified agent. Improvements in molecular testing capabilities should lead to faster diagnoses and changes in the management of viral meningitis such as less use of inappropriate antibiotics.

Supportive measures, and to a lesser extent antiviral agents, are the usual treatments for viral meningitis. Good personal hygiene, especially handwashing and avoiding contact with oral secretions of others, is the most practical and effective preventive measure.

Of particular interest in 2002 is the recognition that arboviral infection, especially WNV, presents as aseptic meningitis. In 2002, one adult female had confirmed WNV as the underlying etiology of her meningitis. She recovered fully. This was the only case documented in the state of California (see special report for more details).

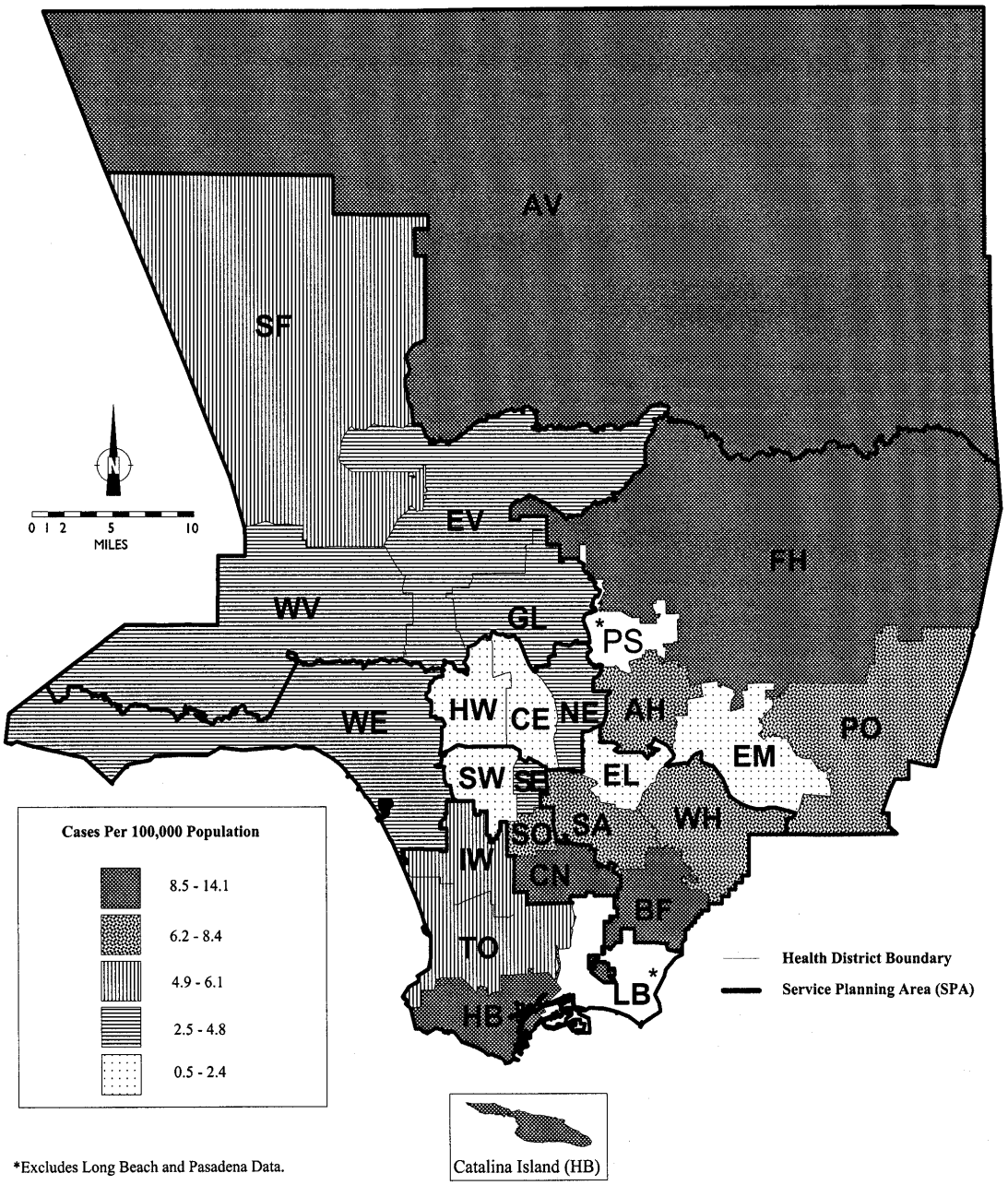
ADDITIONAL RESOURCES

CDC, Respiratory and Enteric Viruses Branch, Viral (Aseptic) Meningitis at:
www.cdc.gov/ncidod/dvrd/virlmen.htm

CDC, Respiratory and Enteric Viruses Branch, Non-polio Enterovirus Infections at:
www.cdc.gov/ncidod/dvrd/entrvirs.htm

Association of State and Territorial Directors of Health Promotion and Public Health Education, Infectious Facts, Viral Meningitis at: www.astdhpphe.org/infect/vmenin.html

MAP 9. Meningitis, Viral
Rates by Health District, Los Angeles County, 2002*

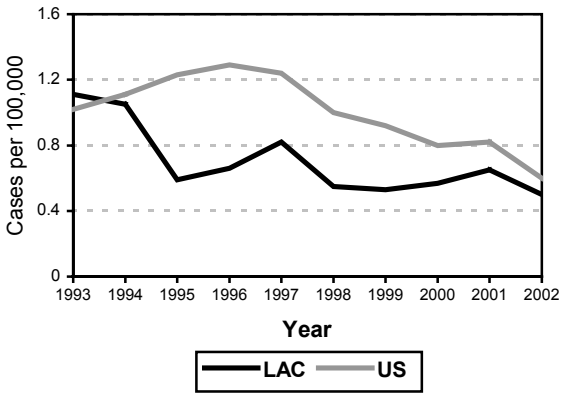


*Excludes Long Beach and Pasadena Data.

MENINGOCOCCAL DISEASE

CRUDE DATA	
Number of Cases	46
Annual Incidence[a]	
LA County	0.5
California	0.7
United States	0.6
Age at Diagnosis	
Mean	28
Median	21
Range	<1–83 years
Case Fatality	
LA County	7.0%
United States	N/A

Figure 1
Meningococcal Disease
Incidence Rates by Year of Onset
LAC and US, 1993–2002

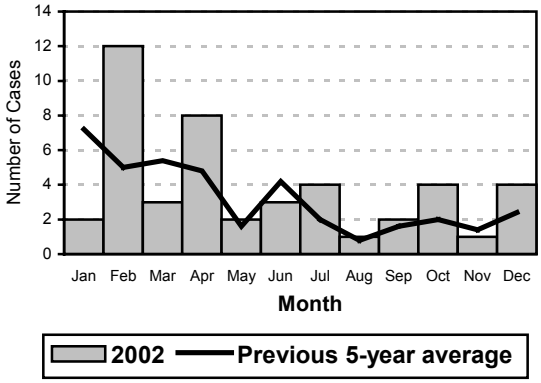


[a] Cases per 100,000 population.

DESCRIPTION

Meningococcal disease occurs most often as meningitis or bloodstream infection (meningococcemia) and is transmitted through direct or droplet contact with nose or throat secretions of persons infected with the *Neisseria meningitidis* bacterium. Common symptoms include sudden onset of fever, headache, nausea, vomiting, stiff neck and lethargy which can progress to overwhelming sepsis, shock and death within hours. Long-term sequelae include significant neurologic or orthopedic complications such as deafness or amputation secondary to disseminated intravascular coagulation and thromboses. Meningococcal disease affects all age groups but occurs most often in infants. Of the 12 serogroups, only some (A, C, Y, and W-135) are vaccine-preventable.

Figure 2
Meningococcal Disease
by Month of Onset
LAC, 2002 (N=46)



DISEASE ABSTRACT

The number of cases in 2002 was the lowest in at least 10 years. With one exception, cases were sporadic. There were very few fatalities.

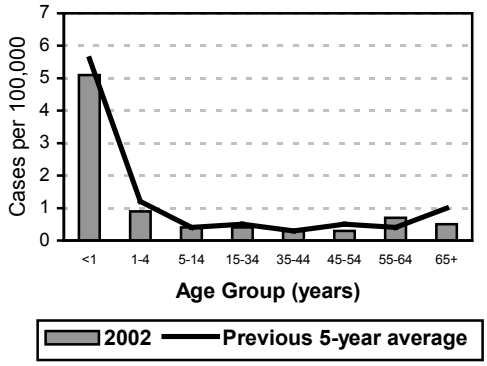
STRATIFIED DATA

Trends: Cases remained low, with serogroup B and non-typeable strains equally predominant among isolates submitted.

Seasonality: Cases were characteristically highest during winter and early spring, with over half occurring in the first four months of the year (Figure 2).

Age: Rates of meningococcal disease are characteristically highest among infants and children aged 1–4 years**.** In 2002, rates in these age groups were again highest (5.1 per 100,000 and 0.9 per 100,000, respectively). Combined, these age groups accounted for 26% of all cases. There was a decrease of over 50% in cases among those aged 15–19 years; however, over 50% of all cases occurred in those of college age or younger (<23 years). The rate among all age groups remained stable in comparison to the five-year average and was relatively low in all groups >1 year of age. (Figure 3).

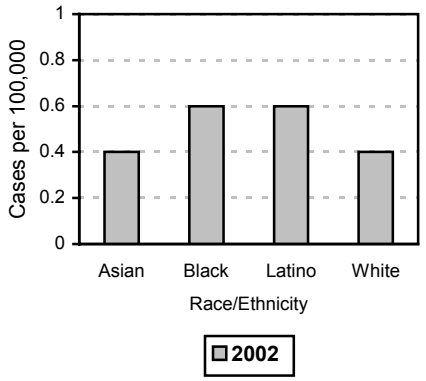
Figure 3
Meningococcal Disease
Incidence Rates by Age Group
LAC, 2002



Sex: The male-to-female rate ratio was 1:1.5.

Race/Ethnicity: There was minimal difference in incidence by race/ethnicity. A shown in Figure 4, the incidence rate among Blacks and Latinos (0.6 per 100,000 for each group) was slightly greater than among Asians and Whites (0.4 per 100,000 for each group). However, the actual number of incident cases in each of these groups is too low for the rates to be reliable; Asian 5 cases, Black 5 cases, Latino 24 cases, White 12 cases.

Figure 4
Meningococcal Disease
Incidence Rates by Race/Ethnicity
LAC, 2002



Location: Rates were highest in SPA 4 (0.7 per 100,000), 3 (0.6 per 100,000), and 2 (0.4 per 100,000). Cases were highest in SPA 3 (n=10), 2 and 4 (n=8, for both locations).

PREVENTION

In 2002, there were three deaths among the 46 cases of meningococcal disease. At least 11 (24%) cases, including one death, were caused by a serogroup covered by the currently licensed polysaccharide vaccine for meningococcal disease (Menomune) and were potentially preventable (Figure 5). Serogroup B accounted for 15% of cases and is not vaccine preventable. Development of an effective vaccine has proved challenging; however, research is ongoing.

Meningococcal vaccine is routinely given to military recruits, and is recommended for those with terminal complement deficiencies or asplenia, travelers to endemic or epidemic areas, and certain lab personnel. The Advisory Committee on Immunization Practices (ACIP) recommends that college students, especially freshmen and those living in dormitories, be informed about meningococcal disease and the benefits of the vaccine. Several states have recently passed legislation requiring documentation that students

entering college have received information about meningococcal disease and have either received or declined immunization.

COMMENTS

In 2002, *N. meningitidis* was confirmed by culture in 37 (80%) of 46 cases: 24 (65%) from blood, 9 (24%) from cerebrospinal fluid (CSF), 3 (8%) from both blood and CSF, and 1 (3%) from synovial fluid (Figure 6). The Public Health Laboratory received 25 case isolates (54% of all cases) and performed serogroup identification. Of these, 28% (n=7) were serogroup B; 16% (n=4) were serogroup C; 24% (n=6) were serogroup Y; 3% (n=1) were serogroup W-135, and 28% (n=7) was non-typeable (Figure 5).

Figure 5
Meningococcal Disease
by Serogroup
LAC, 1998–2002

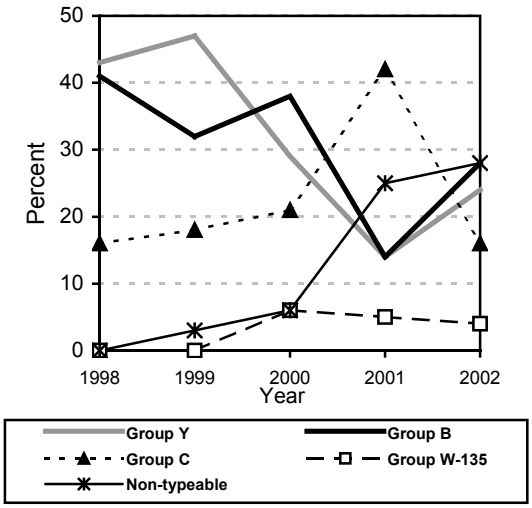
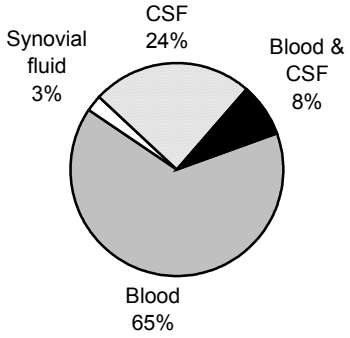


Figure 6
Meningococcal Disease
by Culture Site
LAC, 2002



Although most cases in 2002 were sporadic and unassociated, there was a cluster of two cases in cousins, aged 13 months and 5 years, who were both hospitalized with serogroup B disease within hours of each other. Because they were household contacts to each other and their onset of symptoms could not be determined with certainty, they were considered to be co-infected primary cases, rather than a primary case with secondary transmission.

Fortunately, fewer cases than the previous year were seen in college students or those of college age. However two cases, one fatal, among college students on the same campus, were investigated. The surviving case had a history of immunization. Although gram-negative diplococci were identified in the case fatality, recovery of the organism needed for confirmation was not possible in either case and serogroup identification was not possible.

ADDITIONAL RESOURCES

Prevention and control of meningococcal disease among college students: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 2000; 49 (RR–7):1–20. Available at: www.cdc.gov/mmwr/PDF/rr/rr4907.pdf

Control and Prevention of Meningococcal Disease: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 1997; 46(RR–5):1–51. Available at: www.cdc.gov/epo/mmwr/preview/mmwrhtml/00046263.htm

Riedo FX, Plikaytis BD, Broome CV. Epidemiology and prevention of meningococcal disease. Pediatr Infect Dis J 1995; 14:643–57.

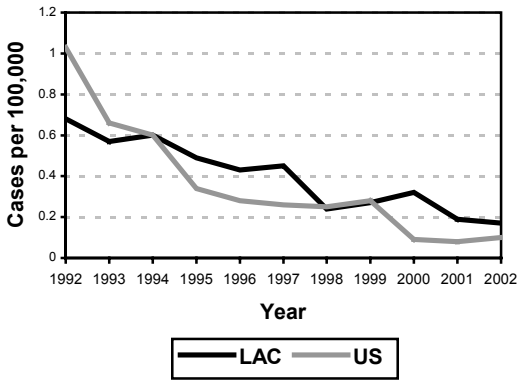
Rosenstein NE, Perkins BA, Stephens DS, Popovic T, Hughes JM. Meningococcal disease. N Engl J Med 2001; 344:1378–88.

MUMPS

CRUDE DATA	
Number of Cases	16
Annual Incidence[a]	
LA County	-- [b]
California	0.2
United States	0.1
Age at Diagnosis	
Mean	8
Median	7
Range	1–16 years
Case Fatality	
LA County	0
United States	N/A

[a] Cases per 100,000 population.
[b] Rates based on less than 20 observations are unreliable.

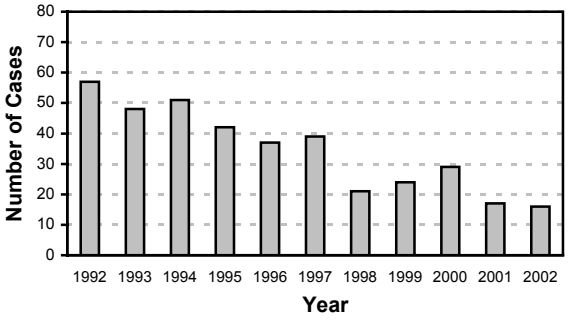
Figure 1
Mumps
Incidence Rates by Year of Onset
LAC and US, 1992–2002



DESCRIPTION

Mumps is a vaccine-preventable disease caused by an RNA paramyxovirus that is transmitted by direct contact with respiratory droplets. Symptoms begin 14–18 days after exposure, with a range of 12–25 days, and include swelling of salivary glands, fever, and inflammation of the testes in teenage and adult males. Up to 20% of infected individuals may be asymptomatic. Sequelae include encephalitis, meningitis, orchitis, arthritis, and deafness. In addition, pregnant women who contract mumps are at increased risk of spontaneous abortions. Most reported cases are diagnosed based on clinical symptoms and do not have supporting laboratory confirmation. Although single probable or confirmed cases are reportable, only outbreaks of two or more cases are investigated.

Figure 2
Mumps
Cases by Year of Onset
LAC, 1992–2002



DISEASE ABSTRACT

- The incidence of mumps cases in LAC has been steadily declining since 1992 (Figure 1).

IMMUNIZATION RECOMMENDATIONS

- Two doses of mumps-containing vaccine, usually given as Measles-Mumps-Rubella (MMR), are normally required to achieve immunity. The first dose is recommended at 12 months of age. The second dose can be given as early as four weeks after the first dose, but is usually given at ages 4 to

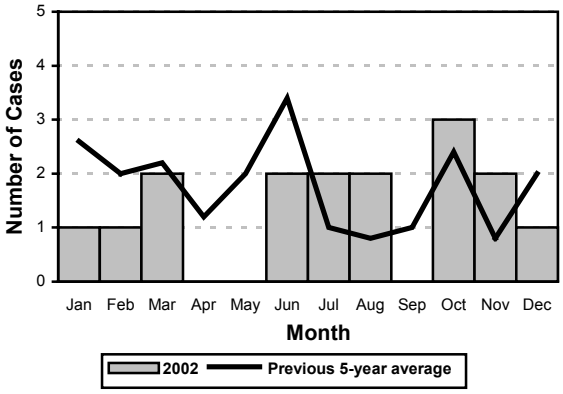
6 years. Vaccination is recommended for those who have no prior MMR, particularly if they are in a high-risk setting.
- Over 95% of those who receive the current live attenuated mumps vaccine develop immunity.
- Women should not become pregnant within one month of vaccination.
- Individuals who are severely immunocompromised for any reason should not be given MMR vaccine.

STRATIFIED DATA

Trends: Since 1992, the incidence of mumps has decreased by 77%. The steady decline in the annual number of reported cases has reached a plateau in 2001 and 2002. This decline reflects the effectiveness of the MMR vaccine in reducing the incidence of disease in the general population, however, the plateau indicates more work that needs to be done to vaccinate remaining individuals and prevent further transmission.

Seasonality: Historically case reports have peaked during the winter and spring seasons. Fifty percent of the cases occurred in the winter months and 25% of the cases were reported during the spring months. However, the number of cases occurring during May, June, and July accounts for over 37% of the reported cases in 2002 (Figure 3).

Figure 3
Mumps
Cases by Month of Onset
LAC, 2002



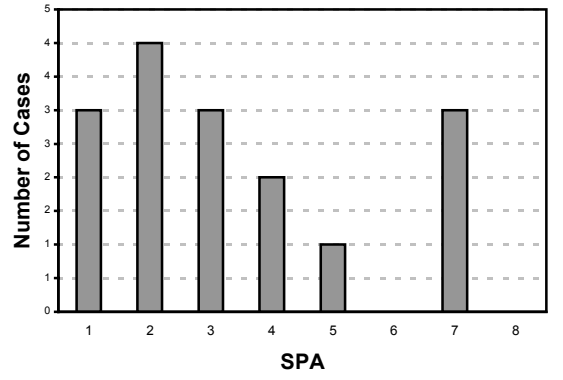
Age: Persons under the age of 14 accounted for 94% of all reported cases in 2002.

Sex: The male-to-female ratio of the cases was 1:0.6

Race/Ethnicity: About half of the reported mumps cases occurred among Latinos. There were 3 cases among Asians, 1 case reported in Blacks, and 1 case identified in Whites and 3 had unspecified race/ethnicity.

Location: Cases were reported in six of the 8 SPAs (Figure 4). Antelope Valley (SPA 1), San Fernando (SPA 2), San Gabriel (SPA 3), and East (SPA 7) reported similar number of cases and accounted for 81% of the total 2002 cases.

Figure 4
Mumps
Cases by Service Planning Area
LAC, 2002



COMMENTS

The majority of reported individual (non-outbreak related) and non-lab confirmed clinical mumps cases among highly immunized populations are most likely caused by other agents such as coxsackie and parainfluenza group 3 viruses. Recurrent parotitis can also result from non-infectious etiologies.

Cluster Identification: None of the cases in 2002 was epidemiologically linked to another.

Vaccination Status: Most of the cases (n=10, 63%) had documented dates for their MMR vaccination. Four cases claimed to have been vaccinated but no documentation was available. One case did not have a previous history of MMR vaccination, and one had an unknown vaccination status.

ADDITIONAL RESOURCES

National Immunization Program at: www.cdc.gov/ip

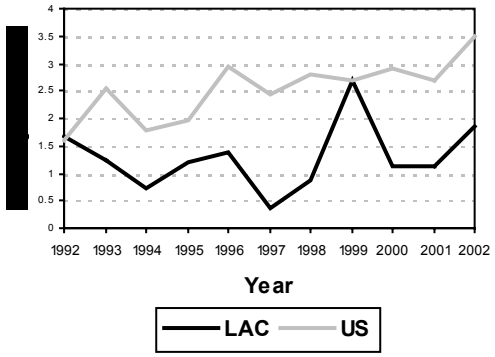
Immunization Action Coalition at: www.immunize.org

LAC Department of Health Services, Immunization Program at: www.lapublichealth.org/ip

PERTUSSIS (WHOOPING COUGH)

CRUDE DATA	
Number of Cases	170
Annual Incidence[a]	
LA County	1.8
California	3.3
United States	3.5
Age at Diagnosis	
Mean	5 years
Median	6 months
Range	<1–83 years
Case Fatality	
LA County	1.2%
United States	N/A

Figure 1
Pertussis
Incidence Rates by Year of Onset
LAC and US, 1992–2002



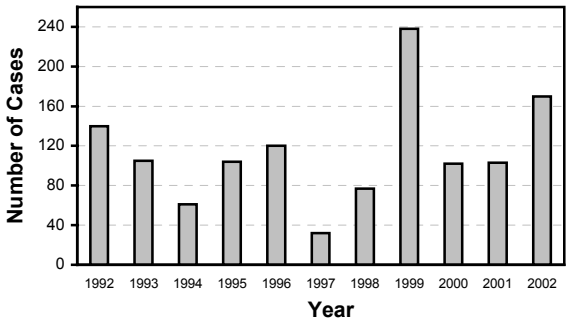
[a] Cases per 100,000 population.

DESCRIPTION

Pertussis, commonly known as whooping cough, is a vaccine-preventable disease spread by close contact with the respiratory secretions of infected individuals. Typical symptoms include paroxysmal coughing, inspiratory whooping, and post-tussive vomiting. Complications include pneumonia, seizures, and encephalopathy. Infants under 1 year of age are at highest risk for developing severe complications, but are the least likely to transmit the disease to susceptible individuals if infected.

The minimum clinical criteria for pertussis is a cough lasting at least two weeks with paroxysms of coughing, inspiratory "whoop," or post-tussive vomiting, without other apparent causes. Pertussis is confirmed by either positive *B. pertussis* culture or PCR.

Figure 2
Pertussis
Cases by Year of Onset
LAC, 1992–2002



DISEASE ABSTRACT

- The majority of reported cases in 2002 were among children less than one year of age. Infants younger than two months of age accounted for more than half of these cases.
- Preceding their illness, nearly half of the cases in 2002 had contact to a person who had a prolonged cough.
- Almost half of the cases reported in 2002 were susceptible to pertussis due to absent or waning immunization.

IMMUNIZATION RECOMMENDATIONS

- A pertussis-containing vaccine should be administered at 2 months, 4 months, 6 months, 15–18 months, and 4–6 years of age to provide protection against the disease.
- Immunity conferred by the pertussis component of the DTP/DTaP vaccine decreases over time, with some vaccinated individuals becoming susceptible to pertussis 5–10 years following their last dose.
- Currently, there is no pertussis vaccine booster available for adults.

STRATIFIED DATA

Seasonality: Typically, the summer months have the highest pertussis incidence in LAC (Figure 3). Although this was still the case in 2002, a steady increase in cases that began at the end of 2001 continued into the beginning of 2002. This yielded an unprecedented number of cases in January, and overall, a higher number of cases during every month than compared to previous years.

Age: As evidenced in previous years, approximately 71% (n=126) of reported cases in 2002 were among children less than one year of age. This is consistent with the national trends. However, cases are increasing among older children and adolescents over the past few years.

Sex: The male-to-female rate ratio was approximately 1:0.9

Race/Ethnicity: After adjusting for age, rates in 2002 among all racial/ethnic groups, except Asians, were higher than the previous 5-year averages (Figure 5). Rates among Blacks, Latinos, and Whites are approximately the same, although the population proportion of Blacks (9.4%) and Whites (31%) is much lower than that for Latinos (46%).

Location: The number of cases per SPA ranged from 1 to 32. Of those cases where address was indicated, San Fernando SPA 2, South SPA 6, and South Bay SPA 8 reported the most cases. However, SPA 5, 6, and 8 had the highest rates (2.20, 2.23, 2.05 cases per 100,000 respectively) and Antelope Valley SPA 1 had the lowest rate of 0.29 per 100,000. The clustering of cases in specific geographic areas is influenced in part by the active reporting efforts of local hospitals.

Figure 3
Pertussis
Cases by Month of Onset
LAC, 2002

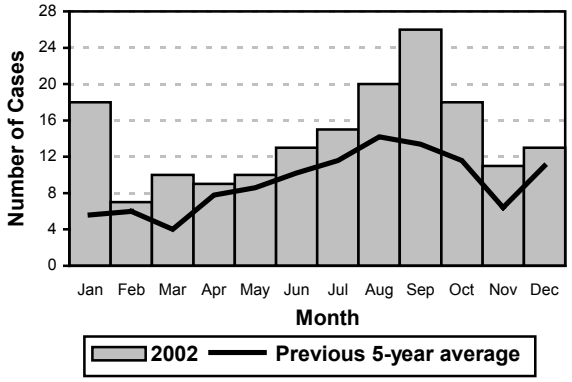


Figure 4
Pertussis
Cases by Age Group
LAC, 2002

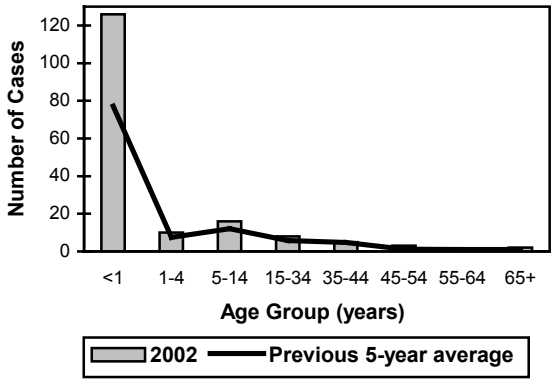
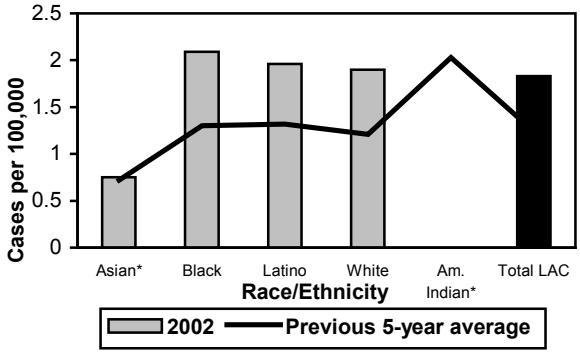


Figure 5
Pertussis
Age-Adjusted Incident Rates by
Race/Ethnicity
LAC, 2002



*Rates unreliable due to small number of observations.

COMMENTS

Because immunity induced by pertussis vaccine decreases over time, adolescents and adults can develop infection and serve as a source of transmission to infants who are not adequately immunized. Adults and adolescents with pertussis are more likely to have mild or atypical disease, so they often go undiagnosed. Future licensure and widespread use of an acellular pertussis booster vaccine for adolescents and adults should significantly decrease the incidence of pertussis in children, as well as its complications.

More effort is underway to educate providers on the impact adults and adolescents have on the continued increase in transmission of pertussis, urging them to be more diligent in observing, confirming, and reporting suspect pertussis cases in this population.

Trends: Pertussis incidence in LAC has peaked every 3–4 years since 1991 with the highest incidence in 30 years occurring in 1999 (n=238). The rate of pertussis has been steadily increasing since 1998, with a 2002 rate 48% higher than the previous 5-year average.

Laboratory Confirmation: Nearly half of reported cases (48%, n=82) were laboratory confirmed by a positive culture or PCR. The remaining cases (52%) were either epidemiologically linked to a confirmed case (2%, n=3), or met the clinical criteria for pertussis (98%, n=85).

Vaccination Status: One third of cases (33%, n=56) were younger than two months of age and were too young to receive pertussis vaccine. Only 11% (n=18) of cases were 15 years of age or older; so even if they were fully immunized in early childhood, they would not have had complete immunity against pertussis in 2001. Thus, 44% percent of the cases reported in 2001 were susceptible to pertussis.

Thirty-nine percent (n=67) of cases were between 2–6 months of age. Of these, 30% were up to date with pertussis vaccination for their age, but would not have developed full immunity against pertussis. Of the children who could have had full immunity from vaccination (7 months to 15 years old), 16 (55%) were fully up to date.

Complications/Hospitalization: The majority of cases (60%, n=102) were hospitalized, with an average hospital stay of eight days (range 1–30 days). All but four of the hospitalized cases were less than one year of age. Of the 14 cases who developed pneumonia, 13 were infants less than 1 year of age and 3 were between the ages of 1–4. The two cases with seizures were among infants less than 2 months of age. Two infants aged less than one year died from complications.

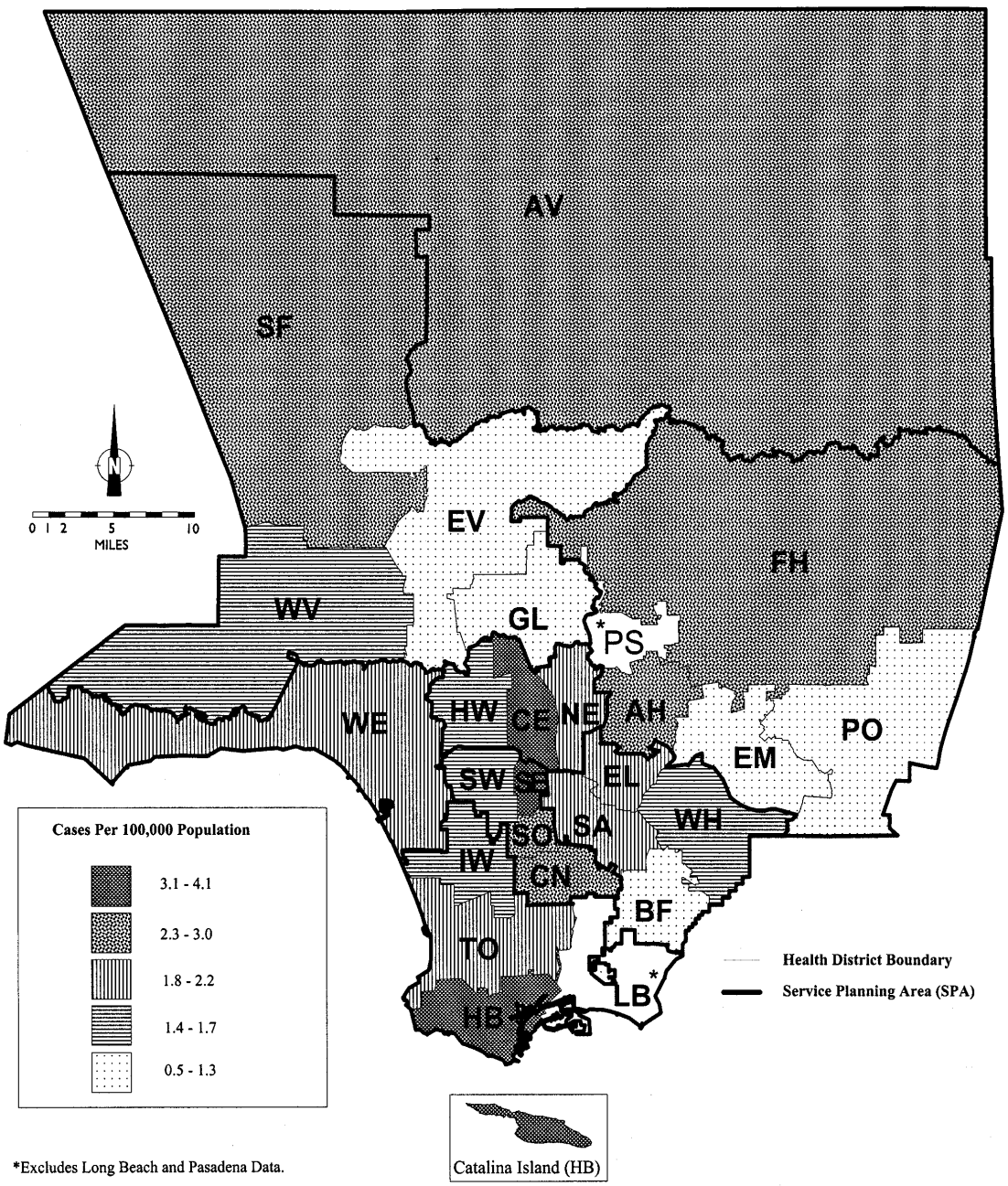
ADDITIONAL RESOURCES

National Immunization Program at: www.cdc.gov/nip

Immunization Action Coalition at: www.immunize.org

LAC DHS, Immunization Program at: www.lapublichealth.org/ip

MAP 10. Pertussis
Rates by Health District, Los Angeles County, 2002*

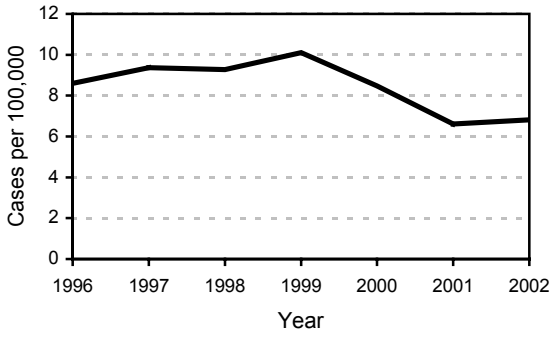


*Excludes Long Beach and Pasadena Data.

PNEUMOCOCCAL DISEASE, INVASIVE

CRUDE DATA	
Number of Cases	630
Annual Incidence	
LA County	6.8
United States[b]	17.2
Age at Diagnosis	
Mean	52
Median	55
Range	<1–99 years
Case Fatality	
LA County[c]	16.0%
United States	N/A

Figure 1
Invasive Pneumococcal Disease
Incidence Rates by Year of Culture
LAC, 1996–2002



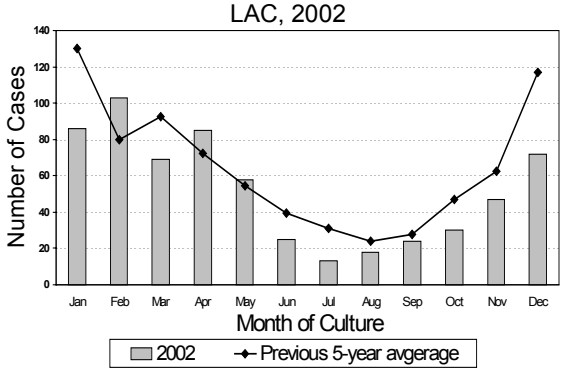
[a] Cases per 100,000 population.
[b] Estimation from provisional data from the Active Bacterial Core Surveillance Emerging Infections Program Network [3].
[c] Validity questionable since outcome status of 48% of 2002 cases were reported as "unknown".

DESCRIPTION

Streptococcus pneumoniae is a leading cause of illness in young children and causes considerable illness and death in the elderly. This bacterium (pneumococcus) can attack different parts of the body causing pneumonia, bacteremia, and meningitis. Increasing antimicrobial resistance in the last decade poses a serious public health concern. A major development for pneumococcal disease in 2000 was the Food and Drug Administration's approval of a conjugate vaccine protecting children less than two years of age. Studies have indicated that the vaccine is safe and effective [1]. Previously, the only available vaccine, a polysaccharide vaccine, could not protect this high-risk age group.

In October 2002, LAC DHS added invasive pneumococcal disease (IPD) to its list of reportable diseases to enhance surveillance of this infection. Since 1995, the health department has followed LAC cases as a special surveillance project. The purpose of IPD surveillance is to measure the incidence of IPD in LAC, identify antibiotic resistance patterns, and monitor the effectiveness of the recently released pneumococcal conjugate vaccine.

Figure 2
IPD Cases By Month of Culture
LAC, 2002



IPD cases are defined as LAC residents with a positive isolate for *S. pneumoniae* collected from a normally sterile site. Antimicrobial susceptibility is determined by disk diffusion or dilution diffusion. Minimum inhibitory concentration (MIC) breakpoints utilized by participating laboratories are based on the National Committee for Clinical Laboratory Standards. An isolate of *S. pneumoniae* is considered nonsusceptible to an antimicrobial agent if the results indicate intermediate or high-level resistance.

DISEASE ABSTRACT

- The 2002 incidence rate for IPD increased slightly from 2001, although it was lower than previous years (1996–2000).
- The elderly are at highest risk for acquiring IPD.
- The rate in children under 5 years continued to decrease, a trend also found in 2001.
- Resistance to penicillin was not associated with increased mortality.

STRATIFIED ANALYSIS

Trends: The IPD incidence rate for 2002 was 6.8 cases per 100,000 (n=630, Figure 1). A 33% decrease was observed in 2002 compared to the peak incidence observed in 1999.

Seasonality: The IPD cases from 2002 followed the typical seasonal pattern, peaking in late winter then gradually declining through spring. The pattern observed by month for 2002 was very similar to previous years although not as high at the end of the year (Figure 2).

Sex: Male-to-female ratios indicated more males acquired IPD (Table 1).

Table 1. Characteristics of Invasive Pneumococcal Disease Cases— LAC, 1999–2002

Characteristic	1999 (N=894)	2000 (N=760)	2001 (N=603)	2002 (N=630)
Male: Female rate ratio	1.23:100	1.05:1.00	1.18:1.00	1.23:1.00
Age (years)				
Mean	47	43	51	52
Median	53	48	55	55
Range	<1–100	<1–101	<1–103	<1–99
Case Fatality rate	17% (55/328)	13% (42/320)	15% (39/252)	16% (51/327)
Culture Site				
Blood only	836 (94%)	703 (93%)	540 (90%)	567 (90%)
CSF/CSF & blood	44 (5%)	33 (4%)	34 (6%)	41 (7%)
Other	14 (2%)	24 (3%)	29 (5%)	22 (3%)

Age: The mean age for IPD cases was 52 years, median 55 years, ranging from 4 days to 99 years (Table 1). For 2002, the highest age-specific incidence rates occurred among adults 65 years and over, which is common with IPD. Children less than 5 years of age continue to have a lower rate than found during 1999 to 2000, but not as low as 2001 (Figure 3).

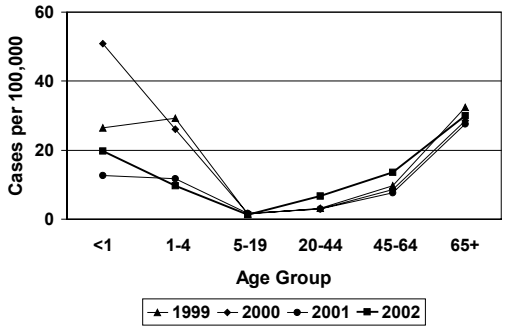
Disease Severity: In 2002, the case fatality rate was 16%, similar to last year (Table 1). The validity of this data is questionable since outcome status for over half of the 2002 cases was unknown, although it should be noted that the percent with unknown outcomes stayed constant for the past three years. The case fatality rate may be underestimated since reporting of positive isolates is required within seven days and many times the final outcome of current infection has not been determined yet. In 2002, there was minimal fluctuation between the proportion of cases with cultures taken from the CSF versus other sites (e.g., ascites fluid, joint/synovial fluid, endotracheal fluid, pleural fluid, sinus, thoracentesis fluid, upper lobe fluid, and vitreous fluid). Of the meningitis cases with known outcome, only one case died.

Antibiotic Susceptibility: From 1998 to 2002, the proportion of penicillin nonsusceptible *S. pneumoniae* (PNSP) isolates has decreased to 5-year low (24%) in 2002 (Figure 3). Ninety-five percent of the cases had antimicrobial resistance information provided. The percent of cases nonsusceptible to erythromycin, cefotaxime, and trimethoprim-sulfamethoxazole (TMP-SMZ) decreased from 2001 to 2002. Of the 281 cases reported in 2002 with testing results on levofloxacin, only one case (0.4%) was nonsusceptible

which is slightly lower than 0.7% seen in 2001 from a nationwide population-based surveillance system for IPD [3].

From 2001 to 2002, the proportion of PNSP cases fluctuated for most of the age groups. The largest increase of 93% (n=26) was observed among those less than 1-year of age, although the result is unstable due to small numbers. The largest decrease of 31% (n=146) was in adults 75 years and over (Figure 5). Only 14% (6 of 42 cases) of the cases that died had PNSP.

Figure 3
Incidence Rates of IPD Cases by Age, LAC, 1999– 2002



PREVENTION

Two effective vaccines are available for pneumococcal disease. Heptavalent pneumococcal conjugate vaccine (Prevnar®) is recommended by the Advisory Committee on Immunization Practices (ACIP) for all children less than age 2 years, and for children up to age 5 years who are at high risk of invasive pneumococcal infections [1]. The 23-valent pneumococcal polysaccharide vaccines (Pnu-Imune®23 and Pneumovax®23) are recommended for all adults 65 years and those over age 2 years who are at high risk of invasive pneumococcal disease [2]. For children aged 2 years to 5 years who are at high risk of invasive pneumococcal infections, ACIP recommends use of pneumococcal conjugate vaccine followed at least 2 months later by 23-valent pneumococcal polysaccharide vaccine, in order to provide protection against a broader range of serotypes, although supporting data are limited [2].

Figure 5
PNSP Cases by Age
LAC, 1998– 2002

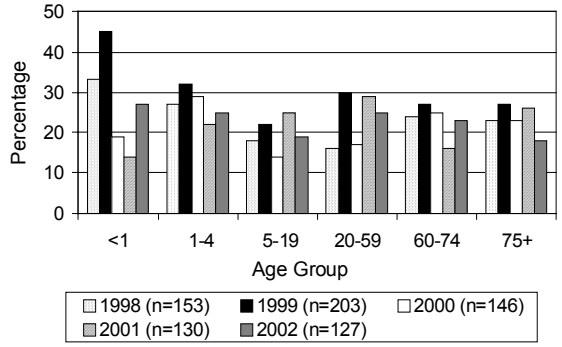
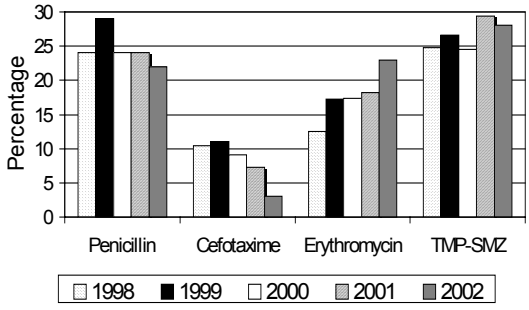


Figure 4
IPD Cases Nonsusceptible to Selected Antimicrobial Agents
LAC, 1998– 2002



COMMENTS

For 2002, the resistance pattern toward selected antibiotics has decreased from the previous year. Once again the elderly were at a higher risk of acquiring IPD. Like 2001, there was a decrease in the 2002 incidence of IPD in children less than 5 years compared to previous years (1996–2000), which may be attributed to the use of the pneumococcal conjugate vaccine licensed in 2000. As in previous years, resistance toward penicillin was not associated with increased mortality.

REFERENCES

1. CDC. Prevention of pneumococcal disease: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 1997; 46:1–24.

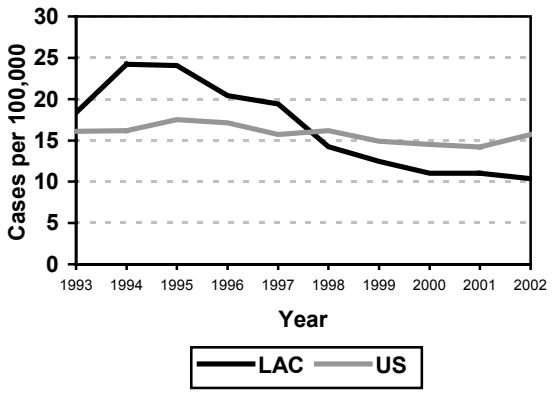
2. CDC. Preventing pneumococcal disease among infants and young children: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 2000; 49:1–35.
3. Active Bacterial Core Surveillance Reports from 1998 to 2001 (2001 provisional) from the Center of Disease Control and Prevention's Division of Bacterial and Mycotic Diseases. Report available at: www.cdc.gov/ncidod/dbmd/abcs/survreports.htm

SALMONELLOSIS

CRUDE DATA	
Number of Cases	956
Annual Incidence	
LA County	10.3
United States	15.7
Age at Diagnosis	
Mean	27
Median	22
Range	<1–98 years
Case Fatality	
LA County	0.9%
United States	N/A

[a] Cases per 100,000 population.

Figure 1
Salmonellosis
Incidence Rates by Year
LAC and US, 1992–2002



DESCRIPTION

Salmonellosis is caused by a bacterium, *Salmonella enterica*, of which there are at least 2,400 serotypes. This disease is transmitted by the fecal-oral route, from animal or human, with or without intermediary contamination of foodstuffs. The most common symptoms include fever, headache, abdominal pain, diarrhea, nausea, and sometimes vomiting. Occasionally, the clinical course is that of enteric fever or septicemia. Asymptomatic infections may occur. The incubation period is usually 12–36 hours for gastroenteritis, longer and variable for other manifestations. Communicability lasts as long as organisms are excreted, usually from 2–5 weeks, but may last for months to years. Even healthy people are susceptible, but persons especially at risk are those who are on antacid therapy, have recently taken or are taking broad-spectrum antibiotic therapy or immunosuppressive therapy, and those who have had gastrointestinal surgery, achlorhydria, neoplastic disease, or other debilitating conditions. Severity of the disease is related to the serotype, the number of organisms ingested, and host factors. Immunocompromised persons, such as those with cancer or HIV infection, are at risk for recurrent *Salmonella* septicemia. Occasionally the organism may localize anywhere in the body, causing abscesses, osteomyelitis, arthritis, meningitis, endocarditis, pericarditis, pneumonia, or pyelonephritis.

DISEASE ABSTRACT

- The 2002 salmonellosis crude rate dropped 8.6% compared to 2001. It has remained below the national rate since 1998.
- Although *Salmonella* serotype Enteritidis has remained the most common isolate accounting for 19% of all reported salmonella infections, it decreased 17% in 2002.
- There were four salmonellosis outbreaks during 2002, each caused by a different serotype: Newport, Typhimurium var Copenhagen, B:i:- and Stanley.
- SPA 6 had the highest incidence rate of Salmonella cases during 2002 as it did in 2001. Only 10 (6%) of the 159 cases in SPA 6 were due to an outbreak.

STRATIFIED DATA

Trends: The incidence of reported salmonellosis cases in 2002 was 10.33 cases per 100,000 population. This is lower than the 2001 incidence of 11.3 cases per 100,000 population and is less than the national incidence of 15.7 per 100,000 population. In 2002, cases continued to include "presumptive cases," those that meet a clinical case definition and have an epidemiological link to a laboratory confirmed case. If the presumptive cases are removed, the rate decreases to 9.6 per 100,000.

Salmonella Serotypes: Despite a 17% decrease in *S.* Enteritidis cases in 2002, *S.* Enteritidis still makes up 19% of all *Salmonella* isolates. An increase in *S*. B:i:- cases is partially explained by a skilled nursing facility outbreak (Table 2). The reason for the increase in *S.* Montevideo is unknown (Table 1).

Table 1. Most Frequent *Salmonella* Serotypes—LAC, 2001–2002

	2001 (N=949)*		2002 (N=958)*		
Serotype	**No.**	**Percent**	**No.**	**Percent**	**Change**
Enteritidis	216	23.0	182	19.0	-17.4
Typhimurium**	159	17.0	175	18.3	+7.7
Newport	66	7.0	86	9.0	+28.6
Heidelberg	60	6.3	55	5.8	-8.0
Montevideo	17	1.8	37	3.9	+116.7
B:i:-	10	1.1	32	3.3	+200.0
Agona	24	2.5	27	2.8	+12.0
Oranienburg	20	2.1	19	2.0	-4.8
Berta	16	1.7	19	2.0	+17.7
Infantis	20	2.1	16	1.7	-19.1

* Includes only the isolates which were serotyped.
** Includes *S.* Typhimurium var. Copenhagen and degraded form.

Seasonality: In 2002, the peak in incidence occurred during May and June, due in part to outbreaks. There was a plateau in incidence during the summer months until a drop in October (Figure 2).

Age: The highest age-specific rates of infection occurred among infants aged less than 1 year (58.5 per 100,000 population) followed by children aged 1–4 years (30.6 per 100,000 population).

Figure 2
Salmonellosis
Cases by Month of Onset
LAC, 2002

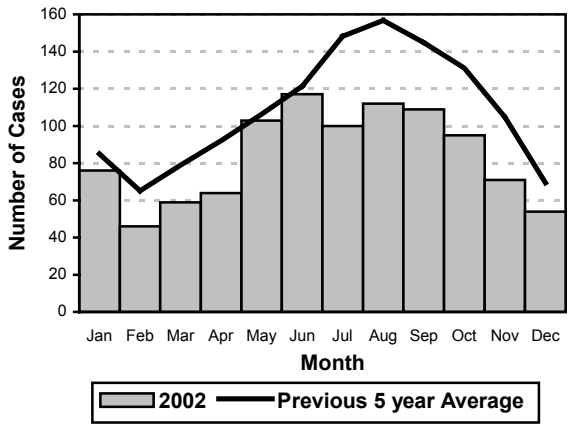
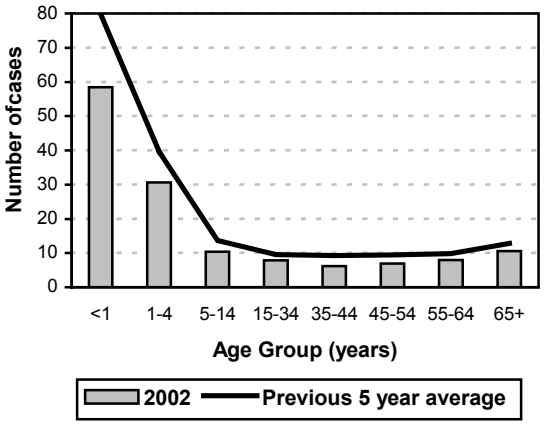


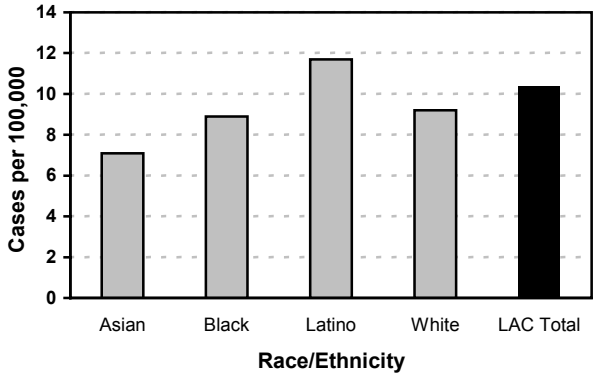
Figure 3
Salmonellosis
Incidence Rates by Age Group
LAC, 2002



Sex: The male-to-female rate ratio was 1:1.

Race/Ethnicity: The highest age-adjusted rate was in Latinos (11.6 cases per 100,000), followed by Whites (9.2 per 100,000 population) then Blacks (8.9 per 100,000 population) and Asians (7.1 per 100,000 population). All rates decreased, while the greatest drop was among Asians, which decreased 33%, from 10.6 to 7.1 per 100,000 population (Figure 4).

Figure 4
Salmonellosis
Age-Adjusted Rates by Race/Ethnicity
LAC, 2002



Location: Southeast Health District had the highest incidence (22.1 per 100,000 population), followed by Hollywood Wilshire (19.4 per 100,000 population) and Southwest (17.8 per 100,000 population). The two other districts that followed closely were South (17.4 per 100,000 population) and El Monte (17.2 per 100,000 population). SPA 6 (16.1 per 100,000 population), SPA 8 (11.5 per 100,000 population), and SPA 4 (11.4 per 100,000 population) had rates higher than the county average, while SPA 1 had a lower than usual rate (4.7 per 100,000, Figure 5).

PREVENTION

Each outbreak of salmonellosis is investigated and preventive measures are recommended. Review of investigation reports shows that many persons engage in high-risk food handling behaviors such as consumption of raw or undercooked meats, not washing hands and/or cutting boards after handling raw poultry or meat, and not maintaining food at proper temperature to prevent bacterial growth. These investigations demonstrate a need for improved public education on proper handling and preparation of animal-derived foods.

Figure 5
Salmonellosis
Incidence Rates by
Service Planning Area
LAC, 2002

Also, health education targeted at specific racial/ethnic groups is necessary; for example, 37% of salmonellosis cases having reptile contact were Latino. Education to reduce salmonellosis from contaminated pets should include:

- how to properly wash hands after handling the pet
- to not kiss the pet
- to keep those at high risk for communicable diseases from coming into contact with the pet
- to remove reptile from the home and thoroughly clean home if family is expecting a baby
- to keep the pet from roaming freely in the home
- to not keep reptile pets in a preschool or child care center
- to not use the kitchen sink to wash pet's cage/tank, or food and water dishes

Table 2: Salmonellosis Outbreaks in LAC, 2002

Onset Month	Outbreak Setting	Total No. Ill	Culture Positive	Serotype	Suspect Vehicle	Suspect Source
Apr	University/ Restaurant	13	3	S. *Newport*	Unknown	Unknown
May	Park Potluck	11	3	*S.* Typhimuriem var Copenhagen	Cornish hens	Cornish hens
May	Park Potluck	8	4	S. *Stanle*y	BBQ meat	BBQ meat
Oct–Nov	Skilled Nursing Facility	16	11	*S.* B:i:-	Unknown	Probable food source with secondary transmission
TOTAL		48	21			

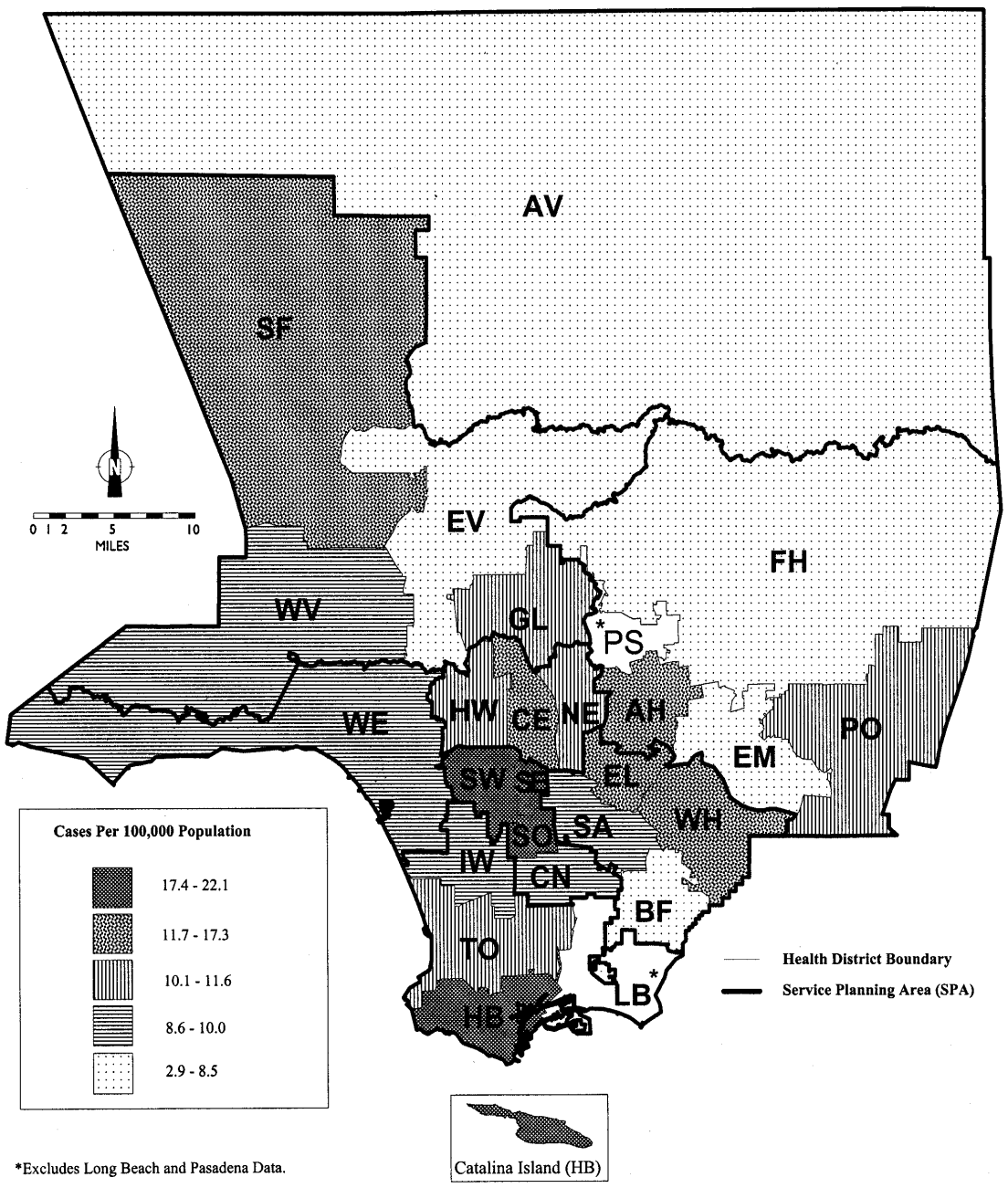
COMMENTS

Starting in 1995, a steady decline occurred in the rate of salmonellosis. This decline continued, dipping below the national average in 1998 (Figure 1). Specific reasons for the declining rate have not been studied scientifically, but several factors may have contributed. These include the increase in managed care and medical practice guidelines recommending treatment for patients with fever and diarrhea without confirmed diagnosis. Other potential contributing factors include: industry-based programs such as the California Egg Quality Assurance Program and the California Poultry Meat Quality Assurance Program, various government laws and regulations affecting food safety from farm to distribution as well as the increased use of safe food preparation labels on packaged meats.

During 2002, there were four reported outbreaks of salmonellosis in LAC. Outbreak-related cases accounted for 2.4% of all culture-confirmed salmonellosis cases and 5% of total cases reported in 2002. In most years since 1994, *Salmonella* Enteritidis was the etiologic agent identified in the majority of outbreaks in LAC. In 2002, S. Enteritidis caused none of the outbreaks, but continues to be one of the predominant serotypes in LAC despite having decreased by 17.4%. In 2002, two of the four salmonellosis outbreak investigations cited home prepared food as a possible source although no definite source could be identified. The use of PFGE and comparison of PFGE patterns with other laboratories through PulseNet, the national molecular subtyping network for foodborne disease, has helped identify related clusters within LAC.

Salmonellosis was reported as a contributing cause of death in 10 people, all of whom had underlying health problems such as cancer, diabetes, coronary artery disease, renal failure, abdominal aneurysm and AIDS. Most of these cases (80%) had positive blood cultures and most (70%) were hospitalized with symptoms probably caused by salmonellosis; one case had positive urine, spleen, and blood cultures; two had sepsis with positive blood cultures and two died of septic shock.

MAP 11. Salmonellosis
Rates by Health District, Los Angeles County, 2002*



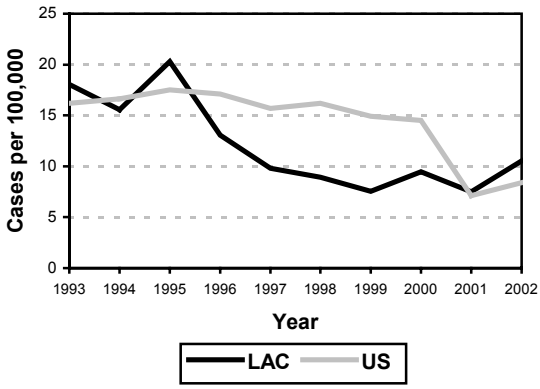
*Excludes Long Beach and Pasadena Data.

SHIGELLOSIS

CRUDE DATA	
Number of Cases	974
Annual Incidence[a]	
LA County	10.5
California	8.1
United States	8.4
Age at Diagnosis	
Mean	19
Median	9
Range	<1–92 years
Case Fatality	
LA County	0.1%
United States	N/A

[a] Cases per 100,000 population.

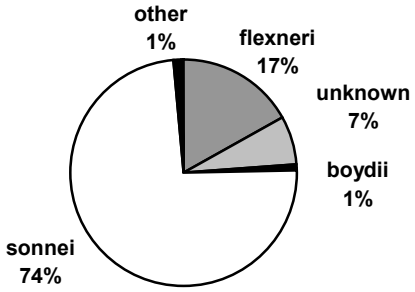
Figure 1
Shigellosis
Incidence Rates by Year of Onset
LAC and US, 1993–2002



DESCRIPTION

Shigellosis is caused by a Gram-negative bacillus with four main serogroups: *Shigella dysenteriae* (group A), *S. flexneri* (group B), *S. boydii* (group C) and *S. sonnei* (group D). Transmission occurs when individuals fail to thoroughly wash their hands after defecation and spread infective particles to others, either directly by physical contact including sexual behaviors or indirectly by contaminating food. Infection may occur with ingestion of as few as 10 organisms. Common symptoms include diarrhea, fever, nausea, vomiting, and tenesmus. Stool may contain blood or mucous. In general, the elderly, the immunocompromised, and the malnourished are more susceptible to severe disease outcomes.

Figure 2
Shigellosis
Percent by serogroup
LAC, 2002
(N=974)



DISEASE ABSTRACT

- There was a 42% increase in shigellosis cases, during 2002. This ended a general 6-year downward trend.
- There were eight outbreaks investigated in 2002.
- There was an increase in sporadic cases in SPAs 6 and 4 during the last part of 2002.

STRATIFIED DATA

Trends: There was a 42% increase in the number of cases during 2002. The rate increased from 7.7 in 2001 to 10.5. This may be due to outbreaks, increased reporting of presumptive cases and an increase of cases in districts with multifamily dwellings corresponding with more young children and high population density. There is anecdotal evidence that shigellosis is increasing nationally; increasing reports of outbreaks has occurred in other states.

Serotypes: *S. sonnei* continues to be the most common serotype seen in LAC followed by *S. flexneri* (Figure 2). *S. sonnei* increased from 64% of speciated cases in 2001 to 74% of cases in 2002. Other serotypes identified during 2002 include: *S. boydii*, *S. flexneri* Provisional 89-141 and *S. flexneri* Provisional SH-108.

Seasonality: In 2002, there was an increase in cases starting in summer and continuing through the end of the year. Incidence peaked during August and October, but numbers of cases starting in June were higher than the 5–year average (Figure 3). This was partly due to outbreaks that occurred starting in July and the increase in sporadic cases in SPAs 6 and 4.

Age: The rates in children aged 1–4 and 5–14 years were higher than the 5-year average. This was probably due to outbreaks occurring in preschools, the community and a primary school. The rates in persons aged 35–44 years and over 65 years are higher than the 5-year average. One outbreak occurred in the 35–44 age group. There were more Latino cases in persons aged 65 years or older.

Race/Ethnicity: During 2002, Latinos aged 1–4 years again had the highest age-adjusted rate. Rates in Blacks aged 1–4 years, 5–14 years and 15–34 years were higher due to outbreaks in SPA 6. The higher rate seen in Whites aged 35–44 years was due to more shigellosis cases among men who have sex with men (MSM) in that age group during 2002. The reason for the higher rate in Latinos aged 65 years and older is unknown.

Sex: The male-to-female rate ratio was 1:1. In 2001 the rate ratio was 1:1.2 due to more reports of shigellosis among MSM in 2001.

Figure 3
Shigellosis
Cases by Month of Onset
LAC, 2002

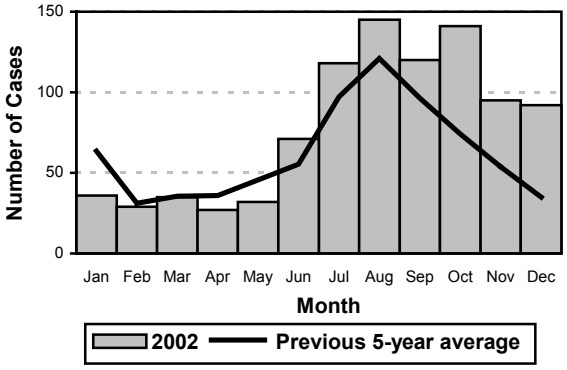


Figure 4
Shigellosis
Incidence Rates by Age Group
LAC, 2002

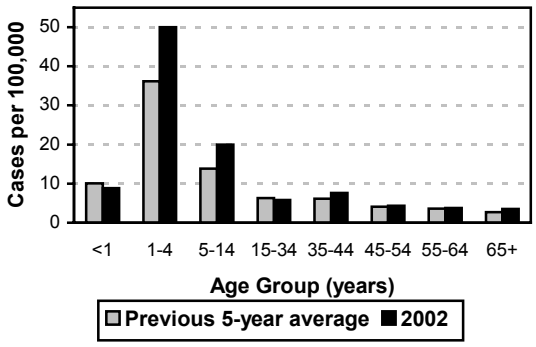
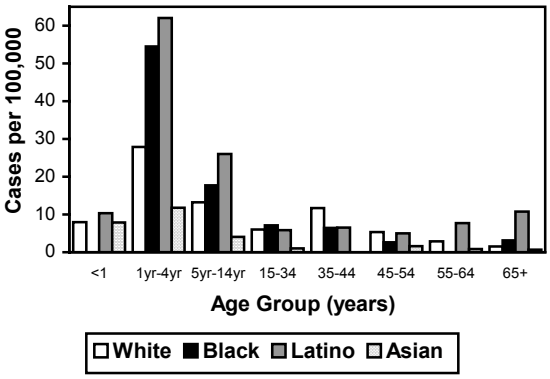


Figure 5
Shigellosis
Incidence Rates
by Age Group and Race
LAC, 2002 (N=974)



Location: The rates for SPA 4 and SPA 6 were significantly higher than the county average. This was due to outbreaks occurring in those districts and the increase in sporadic cases. Also 63% of MSM cases were reported in the Hollywood Wilshire health district (20 cases). SPA 5 had a higher rate in 2002 due to two large outbreaks there.

Severity of Illness: Fifteen percent of reported shigellosis cases were hospitalized. There was one shigellosis related death in an infant with multiple medical/social problems.

Risk Factors: Exposure to a case inside or outside the household (37%) and exposure during travel (14%) were the most commonly reported potential sources of infection. The majority of travel associated illness (66%) involved visiting Mexico.

PREVENTION

Careful handwashing is important in preventing this disease. Handwashing is especially important when out in crowded areas such as amusement parks or shopping malls. Children should not be allowed to swim or wade while ill with diarrhea; children in diapers should never be allowed in public swimming areas. Swimming or wading in areas not designated for such activities should be avoided, especially in areas where there are no toileting or handwashing facilities. In LAC, cases and symptomatic contacts in sensitive occupations or situations (e.g., food handling, healthcare workers) are routinely removed from work or the situation until they are negative on stool specimens tested in the Public Health Laboratory.

COMMENTS

There were eight outbreaks investigated in 2002; three were community outbreaks involving multiple households. One was a community outbreak involving individuals visiting a particular park. One outbreak involved a daycare facility and one outbreak involved a residential facility for the developmentally disabled. Two outbreaks involved LAC's Jewish communities. All of these outbreaks appear to be from person-to-person transmission. There were no restaurant-related shigellosis outbreaks reported in 2002.

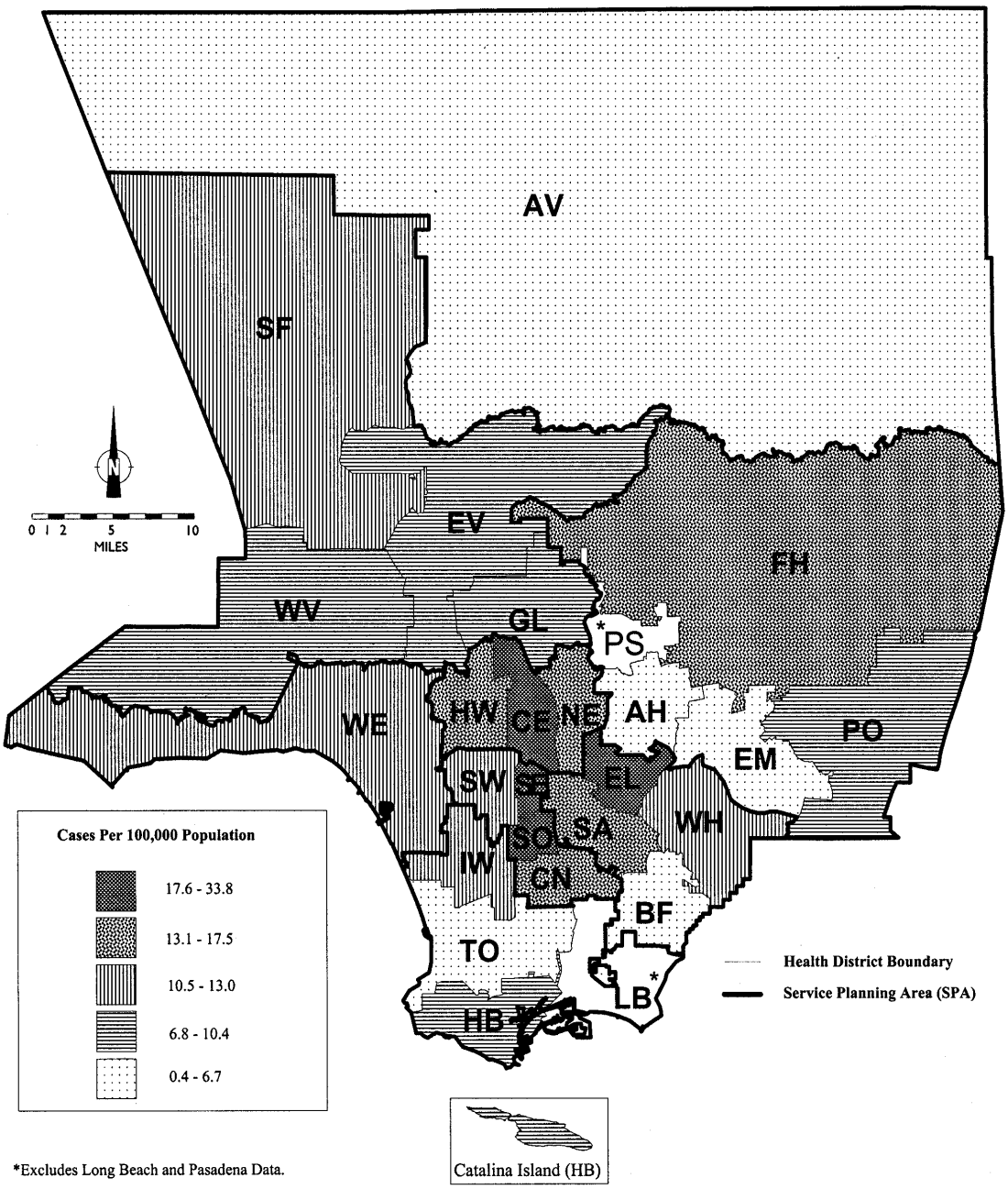
Certain sexual practices—especially those in which there is direct contact with fecal material—are a potential source of infection. There were 32 shigellosis cases in MSM. No links were established among these cases. *S. sonnei* (56%) continued to be the predominant serotype in this risk group.

ADDITIONAL RESOURCES

General information about shigellosis is available at:
www.cdc.gov/ncidod/abmd/diseaseinfo/shigellosis_g.htm

General information and reporting information about this and other foodborne diseases in LAC is available at: www.lapublichealth.org/acd/food.htm

MAP 12. Shigellosis
Rates by Health District, Los Angeles County, 2002*

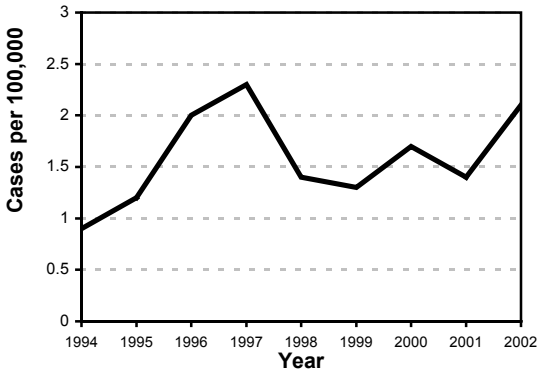


*Excludes Long Beach and Pasadena Data.

INVASIVE GROUP A STREPTOCOCCUS (IGAS)

CRUDE DATA	
Number of Cases	192
Annual Incidence	
LA County	2.1
United States	N/A
Age at Diagnosis	
Mean	50
Median	52
Range	<1–95 years
Case Fatality	
LA County	8.8%
United States	N/A

Figure 1
IGAS
Incidence Rates by Year of Onset
LAC, 1994–2002*



*Data prior to 1994 not available.

[a] Cases per 100,000 population.

DESCRIPTION

Invasive Group A Streptococcal (IGAS) disease is caused by the group A beta-hemolytic *Streptococcus pyogenes* bacterium. Transmission is primarily by direct contact. For LAC surveillance purposes, IGAS is defined as isolation of *Streptococcus pyogenes* from a normally sterile body site (e.g., blood, cerebrospinal fluid, synovial fluid, or from tissue collected during surgical procedures), or from a non-sterile site if associated with streptococcal toxic shock syndrome (STSS) or necrotizing fasciitis (NF). Illness manifests as various clinical syndromes, including: bacteremia without focus; sepsis; cutaneous wound, or deep soft-tissue infection; septic arthritis; and pneumonia. IGAS occurs in all age groups but is most common among the very old. Infection can result in severe illness, including death.

In 2002, case patients with a culture positive for GAS from a normally sterile site were categorized as IGAS, with or without identification of a clinical syndrome. Case patients with a culture positive for GAS from a sterile or nonsterile site were categorized as having NF or STSS if the diagnosis was made by the treating physician, with or without fulfillment of the CDC or Council of State and Territorial Epidemiologists (CSTE) case definitions for these syndromes.

DISEASE ABSTRACT

- The number of cases increased substantially over the previous year.
- Cases were sporadic and unassociated. No clusters or outbreaks were reported.

STRATIFIED DATA

Trends: The number of reported cases increased 51%, from 127 cases in 2001 to 192 cases in 2002, approaching the peak seen in 1997 (Figure 1). The number of cases of STSS and NF occurring during 2002 were comparable to those the previous year (Table 1).

Table 1: Frequency of IGAS, STSS and NF—LAC, 1994–2002

	IGAS	STSS		NF	
Year	N	N	% IGAS	N	% IGAS
1994	83	29	35.0	18	22.0
1995	103	16	16.0	17	17.0
1996	175	9	5.0	13	7.0
1997	205	7	3.0	9	4.0
1998	128	8	6.0	13	10.0
1999	114	6	5.0	11	10.0
2000	154	8	5.0	20	13.0
2001	127	3	2.4	15	12.0
2002	192	5	2.5	13	7.0

Seasonality: While cases occur throughout the year, a pronounced winter/spring seasonality commonly associated with streptococcal pharyngitis was observed (Figure 2).

Age: Although incidence was highest among infants aged less than 1 year (8.0 cases per 100,000 population), the mean age of cases was 50 years and the median was 52 years (range newborn to 95 years). In 2002, the number of cases in those aged 65 or more increased substantially since the previous year (from 32 to 75, Figure 3). No reason for the increase in this age group was apparent.

Gender: The male-to-female rate ratio was 1.4:1.

Race/Ethnicity: Race/ethnicity was known for 76% of cases, an increase of 22% from 2001. Of these, 40% were White, 39% were Latino, 11% were Black, 8% were Asian and 1% were Other.

Figure 2
IGAS
Cases by Month of Onset
LAC, 2002

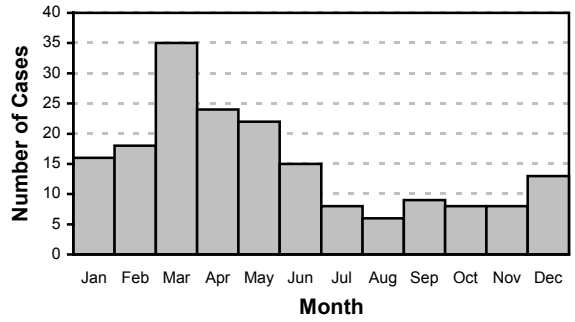
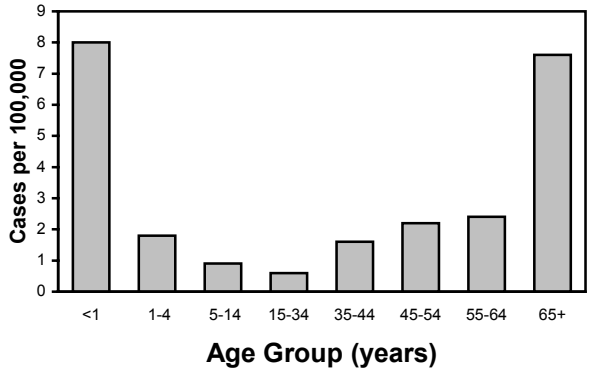


Figure 3
IGAS
Incidence Rates by Age Group
LAC, 2002



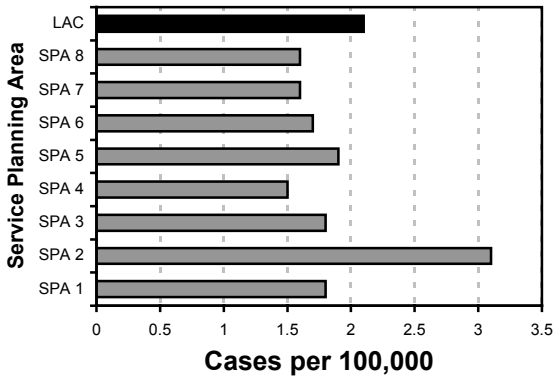
Location: The crude incidence rate for IGAS was highest in SPA 2 (3.1 cases per 100,000 population), compared with a mean of 2.1 per 100,000 for all of LAC (Figure 4). However, many of the rates are unstable because they are based on small numbers.

Clinical Syndromes: The distribution of clinical syndromes among cases is shown in Table 2. The majority of cases (n=73, 38%) were categorized as sepsis, followed by necrotizing fasciitis (n=13, 7%),

septic arthritis (n=7, 4%), pneumonia (n=6, 3%), cellulitis, STSS (n=5, 3%), meningitis (n=1, 0.5%), and other (n=1, 0.5%). The clinical presentation of 80 cases (42%) was not available.

Of the 13 cases of NF, the mean age was 37 years, the median was 37 years and the range was 2 years to 75 years. More than half (54%, n=7) were female. Eight case patients underwent surgical debridement and amputation was reported in three case patients.

Figure 4
IGAS
Rates by Service Planning Area
LAC, 2002



COMMENTS

Although IGAS disease is not a mandated reportable disease in California, ACDC has requested laboratories, hospitals, and healthcare providers to report IGAS disease since 1993. Surveillance has been predominately passive; information pertaining to patient demographics, clinical presentation, intervention, and outcome has often been incomplete. In 2002, 79% of cases were reported by hospitals and 21% by laboratories. Overall, there was a 51% increase in the number of cases reported. The reason for the increase—whether a result of improved awareness by providers, a cyclical upswing or a true increase in morbidity—is unclear.

Table 2: Frequency and Percentage of IGAS Clinical Syndromes, LAC 2002

Syndrome	N	Percent
Sepsis	73	38.0
NF	13	7.0
Septic Arthritis	7	4.0
Cellulitis	6	3.0
Pneumonia	6	3.0
STSS	5	3.0
Meningitis	1	0.5
Other	1	0.5

Case investigation was expanded in 2002, the first year that active efforts were made to collect more detailed data. As a result, collection of demographic and clinical information improved and was obtained on 58% of cases. However, this represents 42% of cases for which clinical information was not obtained. As a consequence, clinical and outcome data for 2002 are incomplete. Although public health interventions to prevent IGAS are limited, active efforts to obtain thorough demographic and clinical information about cases will continue in order to improve data analysis, make meaningful year-to-year comparisons, and identify potential opportunities for prevention.

ADDITIONAL RESOURCES

For information about IGAS and antibiotic resistance in LAC, visit: www.lapublichealth.org/acd/antibio.htm

IGAS Publications:

- The Working Group on Prevention of Invasive group A Streptococcal Infections. Prevention of Group A streptococcal disease among household contacts of case-patients and among postpartum and postsurgical parients: Recommendations from the Centers for Disease Control and Prevention. Clin Infec Dis 2002; 35:950–9.

- O'Brien KL, Beall B, Barret NL, et al. Epidemiology of invasive group A streptococcal disease in the United States, 1995–1999. Clin Infec Dis 2002; 36:268–276.

- Laupland KB, Davies HD, Low DE, et al. Invasive group A streptococcal disease in children and association with varicella-zoster virus infection. Ontario Group A Streptococcal Study Group. Pediatrics 2000; 105(5):E60.

- The Working Group on Prevention of Invasive Group A Streptococcal Infections. Prevention of invasive group A streptococcal disease among household contacts of case-patients: Is prophylaxis warranted? JAMA 1998;15:1206–10.

- American Academy of Pediatrics. Committee on Infectious Diseases. Severe invasive group A streptococcal infections: A subject review. Pediatrics. 1998; 101:136–40.

- Zurawski CA, Bardsley MS, Beall B, et al. Invasive group A streptococcal disease in metropolitan Atlanta: a population-based assessment. Clin Infec Dis 1998; 27:150–7.

- Kaul R, McGeer A, Low D, et al. Population-based surveillance for group A streptococcal necrotizing fasciitis: Clinical features, prognostic indicators, and microbiologic analysis of seventy-seven cases. Am J Med 1997; 103:18–24.

- Davies HD, McGeer A, Schwarz B, et al. Invasive group A streptococcal infections in Ontario, Canada. N Engl J Med 1996; 335:545–54.

- The Working Group on Severe Streptococcal infections. Defining the group A streptococcal toxic shock syndrome. Rationale and consensus definition. JAMA 1993; 269:390–1.

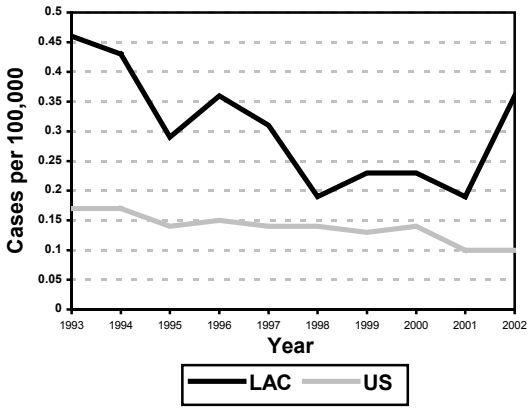
- CDC. Case Definitions for Infectious Conditions Under Public Health Surveillance. MMWR 1997; 46:1–55.

TYPHOID FEVER, ACUTE

CRUDE DATA	
Number of Cases	33
Annual Incidence[a]	
LA County	0.4
California	0.2
United States	0.1
Age at Diagnosis	
Mean	19
Median	18
Range	0–65 years
Case Fatality	
LA County	0.0%
United States	N/A

[a] Cases per 100,000 population.

Figure 1
Acute Typhoid Fever
Incidence Rates by Year of Onset
LAC* and US, 1993–2002



* Rates based on fewer than 20 observations are unreliable.

DESCRIPTION

Typhoid fever, or "enteric fever," is an acute systemic disease caused by the gram-negative bacillus *Salmonella typhi*. Transmission may occur person to person or by ingestion of food or water contaminated by the urine or feces of acute cases or carriers. Common symptoms include insidious onset of persistent fever, headache, malaise, anorexia, constipation (more common than diarrhea), bradycardia, enlargement of the spleen, and rose spots on the trunk. Humans are the only known reservoir for *S. typhi*.

DISEASE ABSTRACT

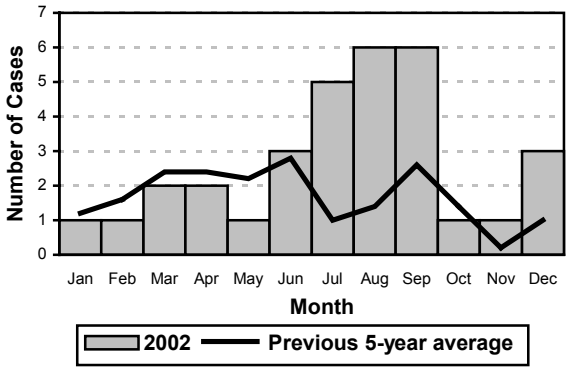
- During 2002, 27% (n=9) of all cases were related to two separate outbreaks, both occurred among Latino extended families during the summer season.
- Travel continued to be the most common risk factor—52% of cases reported visits to typhoid-endemic countries.

STRATIFIED DATA

Trends: The rate of typhoid fever cases increased due in part to two outbreaks. In 2001, the rate was 0.18.

Seasonality: The majority of cases (60%) had onset during the summer, which was the time period of the two outbreaks. In previous years, most cases occurred in late spring and summer, coinciding with holidays and school vacations (Figure 2).

Figure 2
Acute Typhoid Fever
Cases by Month of Onset
LAC, 2002



Age: In 2002, although persons aged 15–34 years continued to have a high incidence (Figure 3), persons aged 5–14 and 1–4 years also had high incidence. This was due to the two outbreaks occurring in extended families with many children.

Sex: The male-to-female ratio was 0.9:1.

Race/Ethnicity: In 2002, acute typhoid fever cases were seen primarily in Latinos, who accounted for 52% of cases (Figure 4). In 2001, Asians had the highest percentage. This change was due to the two outbreaks in the Latino community.

Location: The two outbreaks occurred in SPAs 1 and 2. Sporadic cases were seen in all SPAs except SPA 5.

Figure 3
Acute Typhoid Fever
by Age Group
LAC, 2002

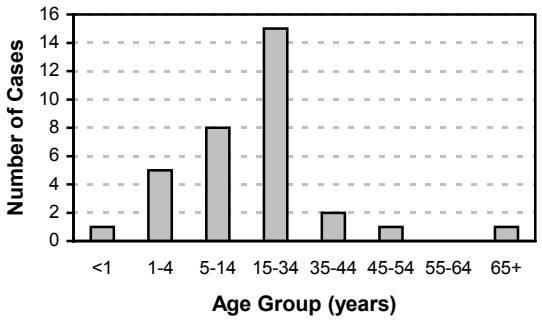
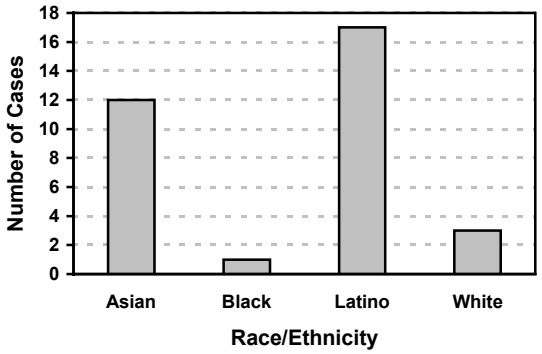


Figure 4
Acute Typhoid Fever
by Race/Ethnicity
LAC, 2002



PREVENTION

Handwashing after using the toilet, before preparing or serving food, and before and after caring for others is important in preventing the spread of typhoid. When traveling to locations where sanitary practices are uncertain, foods should be thoroughly cooked and served hot; bottled water should be used for drinking as well as for brushing teeth and making ice. Vaccination should be considered when traveling in areas of high endemicity. LAC tests household contacts of confirmed cases for *S. typhi* to identify and previously undiagnosed carriers or cases.

COMMENTS

Nine cases (27%) were related to the two outbreaks. Two previously unknown carriers were identified as sources for these outbreaks. Half of the cases (n=17, 52%) were associated with travel to endemic areas outside the US; of these cases, most (n=11) acquired disease while in Asia and the Pacific Islands. Five cases acquired disease in Mexico and Central and South America.

Four cases (12%), that were not outbreak-related, denied foreign travel or having recent visitors from areas outside the US. It is presumed they became infected in LAC. Household contacts were tested for *S. typhi* and no source of infection was identified.

ADDITIONAL RESOURCES

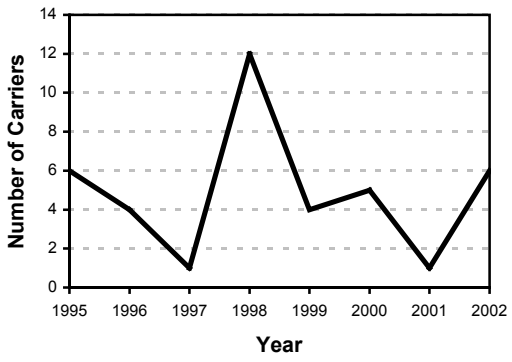
General disease information is available at:
www.cdc.gov/ncidod/dbmd/diseaseinfo/typhoidfever_g.htm

Traveler's health information is available at: www.cdc.gov./travel/diseases/typhoid.htm

TYPHOID FEVER, CARRIER

CRUDE DATA	
Number of New Carriers	6
Annual Incidence[a]	
LA County	---[b]
United States	N/A
Age at Diagnosis	
Mean	43
Median	37
Range	16–89 years
Case Fatality	
LA County	N/A
United States	N/A

Figure 1
Typhoid Fever Carriers
by Year of Detection
LAC, 1995–2002



[a] Cases per 100,000 population.
[b] Rates based on less than 20 observations are unreliable.

DESCRIPTION

The chronic typhoid carrier state can occur following symptomatic or subclinical infection with *Salmonella typhi*. Among untreated cases, 10% will shed bacteria for three months after initial onset of symptoms and 2–5% will become chronic carriers. The chronic carrier state occurs most commonly among women in middle age.

DISEASE ABSTRACT

- Six new typhoid carriers were identified in 2002.
- Two typhoid carriers were identified while investigating two separate outbreaks.
- During 2002, a total of 17 carriers were under case management in LAC.

COMMENTS

All new carriers were foreign born; 66% were female. Three previously unknown carriers were found while testing household contacts to new acute typhoid cases. Of these three, two were sources for outbreaks (see Typhoid Fever, Acute). The remaining three carriers were identified during diagnostic tissue culture.

Upon identification, each new carrier is added to the typhoid carrier registry. All carriers are visited semi-annually by a public health nurse to assess and emphasize compliance with a signed typhoid carrier agreement. During 2002, two carriers died of non-typhoid related conditions, two moved, two were cleared as typhoid carriers and one was lost to follow up.

ADDITIONAL RESOURCES

Disease information is available from the CDC at:
www.cdc.gov/ncidod/dbmd/diseaseinfo/typhoidfever_g.htm

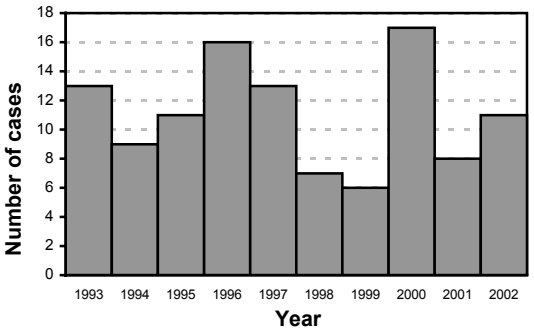
TYPHUS

CRUDE DATA	
Number of Cases	11
Annual Incidence[a]	
LA County	---[b]
United States	N/A
Age at Diagnosis	
Mean	31
Median	22
Range	10–60 years
Case Fatality	
LA County	0.0%
United States	N/A

[a] Cases per 100,000 population.

[b] Rates based on less than 20 observations are unreliable.

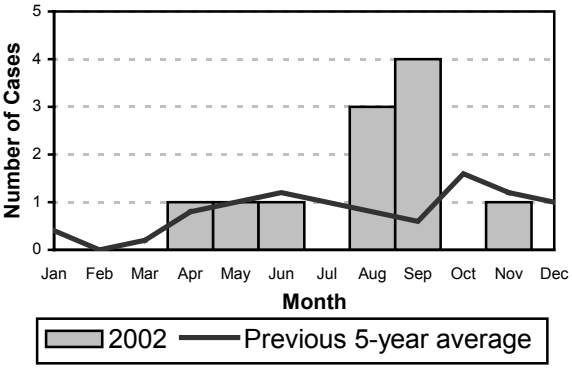
Figure 1
Murine Typhus
Cases by Year of Onset
LAC, 1994–2002



DESCRIPTION

Typhus (murine typhus, endemic typhus) is caused by bacteria, *Rickettsia typhi* and *R. felis*, and transmitted through the bite or contact with feces of an infected flea. Most reported cases of typhus reside in the foothills of central LAC. Reservoir animals are predominantly rats and other small mammals that live in areas with heavy foliage. Symptoms include fever, severe headache, chills, and myalgia. A fine, macular rash may appear three to five days after onset. Occasionally, complications such as pneumonia or hepatitis may occur. Fatalities are uncommon, occurring in less than 1% of cases. The disease is mild in young children. Typhus is not vaccine preventable, but can be treated with antibiotics.

Figure 2
Murine Typhus
Cases by Month of Onset
LAC, 2002



DISEASE ABSTRACT

- Cases occur more often in summer and fall. In 2002, over half of the cases (55%, n=6) occurred during August and September.
- Nine cases (82%) were hospitalized.
- There were 6 female cases and 5 male cases.
- Five cases were Latino, followed by Whites (n=4), and Blacks (n=2).

LOCATION

In 2002, four cases were residents in Alhambra, three lived in Central, and two in the San Antonio and one in South and Glendale health districts, respectively. Typhus is endemic in the foothills of central LAC. Cases are reported from Silver Lake, Echo Park, Eagle Rock, Glendale Hills, Pasadena and Altadena. Animals from these areas have tested positive for typhus group *Rickettsia*. The reasons for these localized endemic areas are unclear.

TRANSMISSION AND RISK FACTORS

Human infection most commonly occurs by introduction of infectious flea fecal matter into the bite site or into adjacent areas that have been abraded by scratching. Most cases observed small mammals (e.g., rats, opossums, dogs and cats) in their yards, and thus may have had exposure to animals that carry fleas. One case reported contact with an opossum. Typhus cannot be transmitted from person to person.

PREVENTION

Typhus infection can be prevented through flea control measures implemented on pets and in the yard. Foliage in the yard should be kept trim so that it does not provide harborage for small mammals. Screens can be placed on windows and crawl spaces to prevent entry of animals into the house.

COMMENTS

Each case of endemic typhus is carefully interviewed regarding potential exposures. If possible, field studies of the property where exposure occurred and surrounding areas in the neighborhood are conducted. Local residents are contacted and provided with education about typhus and prevention of the disease by controlling fleas and eliminating harborage for potentially typhus-infected animals that carry fleas.

The nonspecific clinical presentation and the lack of a definitive test during the acute phase of the illness make the early diagnosis of endemic typhus difficult. Thus, diagnosis of endemic typhus depends on the clinical acumen of the treating physician, and is often confirmed after the patient has recovered. Accurate reporting of typhus or suspect typhus cases is important to identify endemic areas in LAC which can be monitored for the presence of disease in the animal populations and to institute control measures. Treatment with antibiotics hastens recovery and lessens the chance of complications.

ADDITIONAL RESOURCES

General information about murine typhus is available from the ACDC website at:
www.lapublichealth.org/acd/vectormurine.htm

Publications:

Azad AF, Radulovic S, Higgins JA, Noden BH and Troyer JM. Flea-borne rickettsioses: Ecologic considerations. Emerg Infect Dis 1997; 3:319–27.

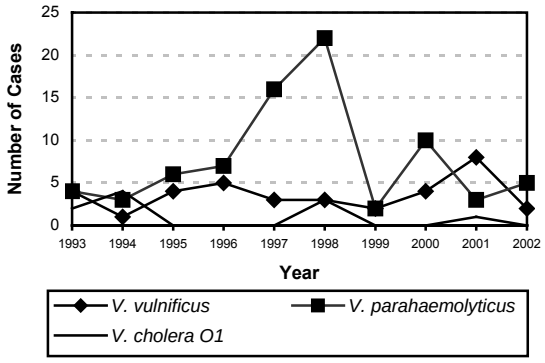
Sorvillo FJ, Gondo B, Emmons R, Ryan P, Waterman SH, Tilzer A, Andersen EM, Murray RA, and Barr AR. A suburban focus of endemic typhus in Los Angeles County: Association with seropositive domestic cats and opossums. Am J Trop Med Hyg 1993; 48:269–73.

Williams SG, Sacci JB Jr, Schriefer ME, et al. Typhus and typhuslike rickettsiae associated with opossums and their fleas in Los Angeles County, California. J Clin Microbiol 1992; 30:1758–62.

VIBRIOSIS

CRUDE DATA	
Number of Cases	14
Annual Incidence[a]	
LA County	---[b]
United States	N/A
Age at Diagnosis	
Mean	44
Median	45
Range	7–71 years
Case Fatality	
LA County	14.0%[c]
United States	varies by species

Figure 1
Selected Vibrio Species
Cases by Year of Onset
LAC, 1993–2002



[a] Cases per 100,000 population.
[b] Rates based on less than 20 observations are unreliable.
[c] Deaths from *V. vulnificus* (n=2) had a 100% case fatality.

DESCRIPTION

The genus Vibrio consists of Gram-negative, curved, motile rods, and contains about a dozen species known to cause human illness. Transmission is most often through ingestion of the organism via foodborne route, but also from contact of non-intact skin with seawater. Presenting symptoms vary by infecting species and mode of transmission. The vibrio species of greatest public health importance are: *V. vulnificus* which presents as a primary septicemia and is often associated with oysters harvested in the Gulf of Mexico, and *V. cholerae* O1 which is most often travel associated. Both *V. cholerae* O1 and *V. parahaemolyticus* present as a gastrointestinal illness.

DISEASE ABSTRACT

- Fourteen cases of Vibrio species were reported in 2002—similar to the previous year (N=15).
- Two cases of *Vibrio vulnificus* were reported in 2002, both with oyster consumption history and both fatal.

STRATIFIED DATA

Trends: Over the last 10 years, case numbers of Vibrio infections peaked in 1998 with 36 reports. Reported cases of *Vibrio vulnificus* decreased to two cases in 2002, a substantial decline compared the 10-year peak of eight cases occurring during in 2001.

Seasonality: Among reported vibriosis cases with distinct onset dates, the majority (85%, n=11) occurred between May and September. Historically, cases of vibrio infections increase during the warmer summer months.

Age: Vibrio cases were predominately adults (Table 1). Two cases of *V. alginolyticus* associated ear infection were reported in a 7 and a 21 year old.

Sex: All but one case was male (93%, n=13, Table 1).

Race/ethnicity: Reported cases were most often Latino (50% n=7, Table 1).

Severity: For surviving vibriosis cases with data of distinct onsets and resolution dates (n=7), duration of illness averaged 6 days (range 3–10). Five vibrio required hospitalization for their infection. Two fatal Vibrio cases were reported, both due to *V. vulnificus*.

Table 1: Vibrio Cases by Species, Race, Age and Sex—LAC, 2002

Species	No. of cases	Race (no. of cases)	Mean Age, years (range)	Sex Ratio M:F
V. vulnificus	2	Latino (2)	45 (44–45)	2:0
V. parahaemolyticus	5	Latino (3), Asian (1), White (1)	51 (33–36)	5:0
V. cholerae non-O1	2	Latino (1), Asian (1)	41 (40–41)	1:1
V. other species*	5	Latino (1), Asian (2), White (1), Unknown (1)	37 (7–71)	5:0

* Other species include *V. alginolyticus* (n=4) and *V. mimicus* (n=1).

Species-specific risk factors:

- Vibrio vulnificus
The number of V*. vulnificus* cases decreased to two in 2002 from a 10-year peak of 8 in 2001. Both 2002 cases were fatal. Risk factor data indicated both cases had seafood exposure, specifically raw oyster consumption. Both cases in 2002 fit the Los Angeles County *V. vulnificus* profile of being adult Latino males with pre-existing liver disease. Investigation of *V. vulnificus* can be hampered since cases may be too ill to give a reliable history.

- Vibrio parahaemolyticus
Five cases of *V. parahaemolyticus* were reported during 2002, an increase from the previous year's total (n=3). All five were identified through stool culture, one required hospitalization. From the three cases with reliable epidemiologic history, all recounted a food history of oyster consumption and two cited a travel history outside of the US.

PREVENTION

In LAC, risk from vibrioses can be prevented or reduced by avoiding seawater contamination of wounds or consumption of high-risk food items, especially oysters.

COMMENTS

In LAC, risk from vibrioses can be prevented or reduced by avoiding seawater contamination of food (especially raw fish and shellfish) or drink. Infection with *V. vulnificus* is a particular risk for persons with pre-existing liver disease, frequently leading to soft tissue invasion, limb amputation, and a high case fatality. Adult males may be more at risk for Vibrio infections because of their tendency to engage in behaviors exposing them to seawater contamination or higher levels of raw or partially cooked seafood consumption, especially oysters.

ADDITIONAL RESOURCES

Mouzin E, Mascola L, Tormey M, Dassey DE. Prevention of Vibrio vulnificus infections. Assessment of regulatory educational strategies. JAMA 1997; 278(7):576–578. Abstract available at: www.jama.ama-assn.org/cgi/content/abstract/278/7/576

Disease information regarding *Vibrio vulnificus* is available from the CDC at:
www.cdc.gov/ncidod/dbmd/diseaseinfo/vibriovulnificus_g.htm

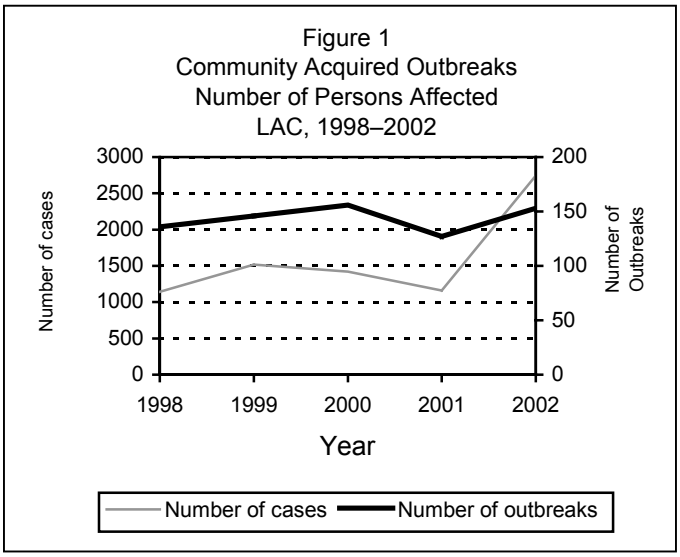
Disease information regarding *Vibrio parahaemolyticus* is available from the CDC at:
www.cdc.gov/ncidod/dbmd/diseaseinfo/vibrioparahaemolyticus_g.htm

DISEASE OUTBREAK SUMMARIES 2002

COMMUNITY-ACQUIRED DISEASE OUTBREAKS

DISEASE ABSTRACT

- In 2002, 29 of 182 (16%) reported and investigated community-acquired outbreaks were foodborne (see Foodborne Outbreak section). The remaining 153 community outbreaks accounted for 2,745 cases of illness.
- Schools were the most common setting of community-acquired outbreaks (54%).



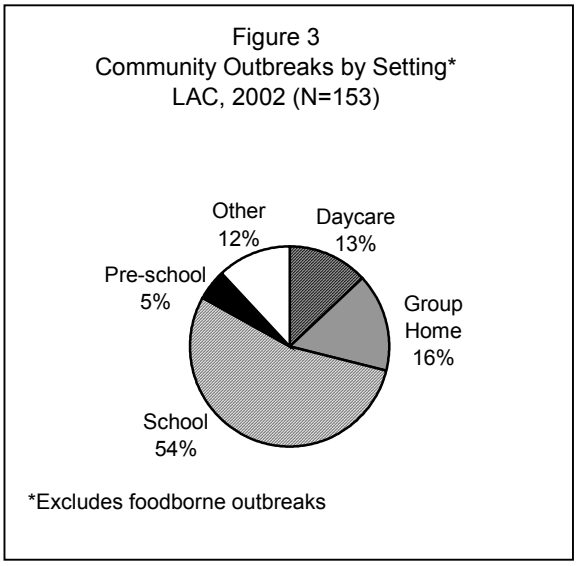
DATA

Disease outbreaks are defined as clusters of illness that occur in a similar time or place, or unusual numbers of disease cases above baseline in a specified area. Depending on the nature of the outbreak, investigation responsibility is maintained by either ACDC or by Community Health Services, with ACDC providing consultation as needed.

Most reported community outbreaks in LAC were due to varicella (28%), followed by ectoparasites (scabies and pediculosis) and gastroenteritis (GE), each of these two diseases account for 18% of all outbreaks (Figure 2).

During 2002, methicillin-resistant *Staphylococcus aureus* (MRSA) and varicella were diseases with the highest number of total cases. The two diseases with the highest number of cases per outbreak were MRSA and influenza (Table 1).

The most common settings for illness transmission were schools (elementary through high school), accounting for 54%, and group homes (16%, Figure 3).



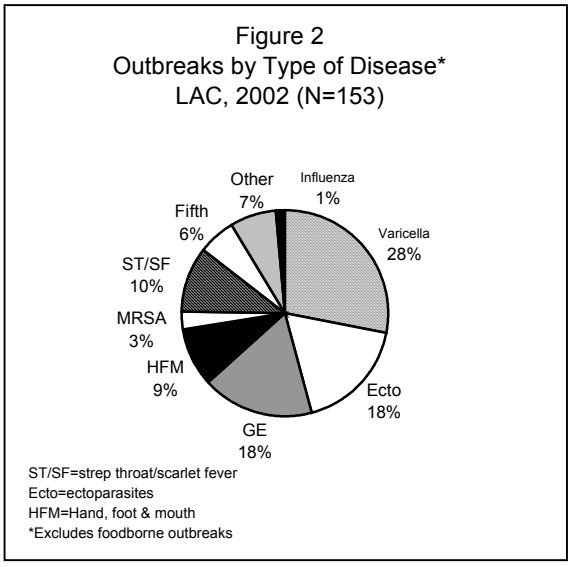


Table 1. Community Outbreaks by Disease—LAC, 2002[a]

Disease	No. of outbreaks	No. of cases	Cases per outbreak (average)	Cases per outbreak (range)
Varicella	43	412	10	3–29
Scarlet fever/strep throat	16	138	5	2–30
Scabies	16	88	6	2–9
Hand, foot & mouth disease	14	72	5	2–12
Pediculosis	11	92	8	2–22
GE illness - Norovirus	5	87	17	7–30
GE illness - Shigella	6	72	12	5–22
GE illness - Undetermined	16	328	21	5–62
Fifth disease	9	115	13	2–30
MRSA	4	938	235	2–920
Influenza	2	240	120	53–187
Other[b]	11	163	15	2–108
Total	**153**	**2,745**	**18 (avg.)**	**--**

[a] Excludes foodborne outbreaks.
[b] Includes conjunctivitis, herpes simplex, impetigo, psittacosis, ringworm, rotavirus, typhoid fever, unknown respiratory illness and unknown rash.

Table 2. Community Outbreaks: Disease by Setting—LAC, 2002

Disease	Group Home[a]	School[b]	Preschool	Daycare	Other[c]	TOTAL
Varicella	2	38	0	1	2	**43**
Scarlet fever/strep throat	0	13	0	3	0	**16**
Scabies	10	1	0	2	3	**16**
Hand, foot & mouth disease	0	3	3	7	1	**14**
Pediculosis	4	5	1	1	0	**11**
GE illness – Norovirus	4	0	0	0	1	**5**
GE illness – Shigella	1	1	0	0	4	**6**
GE illness – Undetermined	2	7	4	2	1	**16**
Fifth disease	0	8	0	1	0	**9**
MRSA	1	0	0	0	3	**4**
Influenza	0	2	0	0	0	**2**
Other	0	4	0	3	4	**11**
Total	**24**	**82**	**8**	**20**	**19**	**153**

[a] Includes centers for retirement, rehabilitation and the developmentally disabled
[b] Includes elementary, middle and high schools.
[c] Includes jails, workplaces, universities/colleges and private homes.

COMMENTS

Varicella has remained the most common cause of community-acquired outbreaks in LAC since 1999, when it surpassed ectoparasites. However, the number of varicella outbreaks dropped from 35% of total outbreaks in 2001 to 28% in 2002. This may be due in part to the mandated use of varicella vaccine among school-aged children. Although varicella was the most common cause of outbreaks in 2002, it did not account for the most cases of illness. The sizable increase in the total number of cases in 2002 is mainly due to a large outbreak of MRSA in a jail (920 cases).

In 2002, the number of community-acquired outbreaks increased 20% from the previous year (2001 had 127 outbreaks, 2002 had 153 outbreaks) the average number of cases per outbreak also increased (2001 had an average of 8.6 cases per outbreak, 2002 had an average of 18 cases per outbreak). Schools have continued to be the most common location for community outbreaks (54%); however, during 2002 group-homes (16%) have replaced pre-schools as the second most common site.

FOODBORNE OUTBREAKS

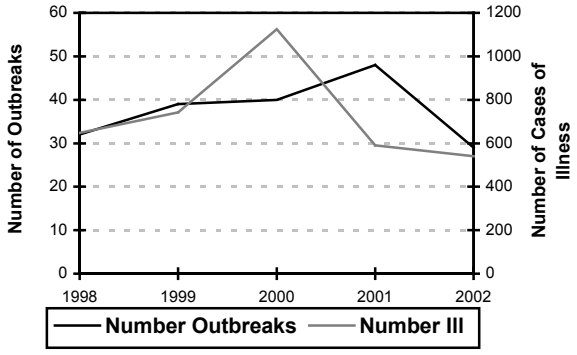
DESCRIPTION

Foodborne outbreaks are caused by a variety of bacterial, viral, and parasitic pathogens, as well as toxic substances. To be considered a foodborne outbreak, CDC requires at minimum the occurrence of two or more cases of a similar illness resulting from the ingestion of a common food.[1]

The system used by LAC DHS for detection of foodborne outbreaks begins with a Foodborne Illness Report (FBIR). This surveillance system monitors complaints from residents, illness reports associated with commercial food facilities, and foodborne exposures uncovered during disease-specific case investigations (e.g., *Salmonella, Shigella, Campylobacter*). LAC Environmental Health Services Food and Milk (F&M) Program investigates each FBIR by contacting the reporting individual and evaluating the public health importance and need for immediate follow-up. When warranted, a thorough inspection of the facility is conducted. In 2002, 63% of FBIRs led to an on-site investigation of the facility—this is often sufficient public health action to prevent additional foodborne illnesses.

The ACDC Food and Water Safety Program also reviews all FBIRs. Typically, an epidemiologic investigation will be initiated when there are illnesses in multiple households, multiple reports from the same establishment with similar symptoms in a short period of time, and large events implicated with the potential for others to become ill.

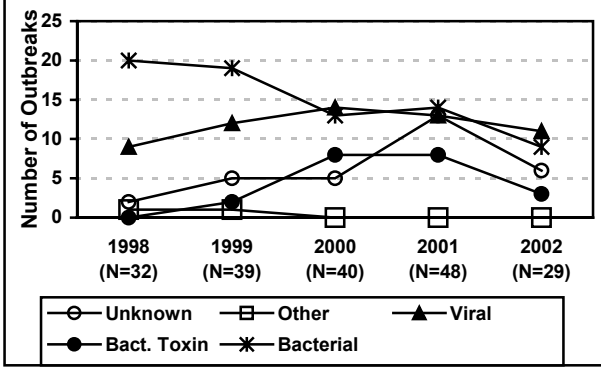
Figure 1
Foodborne Outbreaks
Number of Persons Affected
LAC, 1998–2002



DISEASE ABSTRACT

- In 2002, the number of outbreaks investigated was less than the previous four years. The overall number of cases of individual illness was also lower than the previous four years (Figure 1).
- A food item was implicated in 55% of the foodborne outbreaks.
- Probable contributing factors were determined for 17% of the outbreaks investigated (Figure 8).

Figure 2
Foodborne Outbreaks
by Etiologic Agent Category
LAC, 1998–2002



DATA

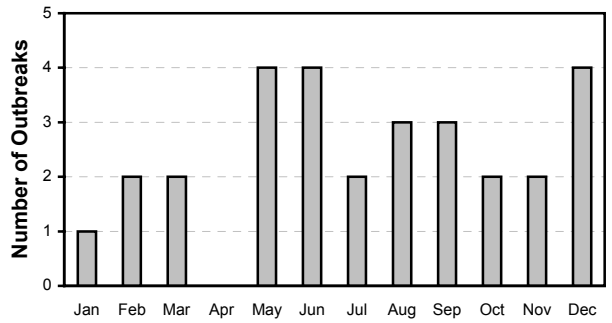
Overview: Of the 1,588 FBIRs in 2002 from consumers eating food from establishments located in LAC, F&M investigated 1,003 (63%), Some of the FBIRs (n=64, 4%) were multiple reports filed for the same establishment. ACDC investigates foodborne outbreaks with the greatest public health importance. In 2002, ACDC investigated 29 outbreaks representing 540 cases of foodborne illness (Table 1, Figure 1). These outbreaks were caused by a variety of pathogens (Figure 2). The mean

[1] CDC. Surveillance for foodborne disease outbreaks—United States, 1988–1992. MMWR 1996;45(SS-5):58. Available at: www.cdc.gov/mmwr/preview/mmwrhtml/00044241.htm

number of cases per foodborne outbreak was 19 (range 2–85 cases). There were no waterborne outbreaks reported in 2002. There were no foodborne outbreaks in health facilities.

Seasonality: In 2002 there were peaks of foodborne outbreaks in May, June and December, with lesser peaks in August and September (Figure 3).

Figure 3
Foodborne Outbreaks
by Month of Onset
LAC, 2002 (N=29)



Agent: Typical foodborne pathogens can be categorized according to common characteristics of illness. The categories used in this report include five types of pathogens (Figure 2). Bacterial agents that cause infection include *Salmonella, Campylobacter* and *E.coli*. Bacteria that produce toxins include *Staphylococcus aureus*, *Clostridium perfringens,* and *Bacillus cereus*. Viral gastroenteritis (Viral GE) includes the Noroviruses (NV) of the *Caliciviridae* family. The "other" category includes hepatitis A virus, fish poisonings, and enteric parasites.

Figure 4
Foodborne Outbreaks
% with Suspected/Confirmed Etiologic Agent
LAC, 1998–2002

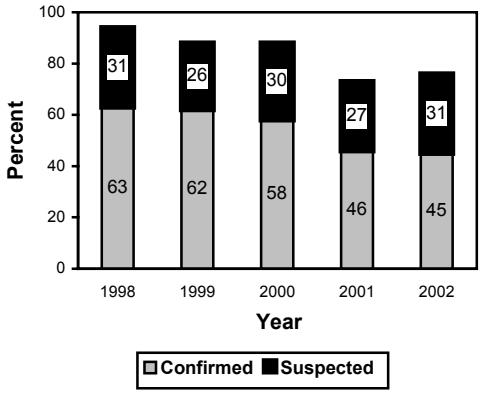
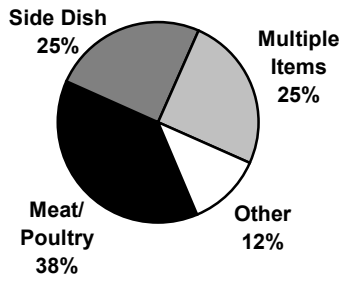


Figure 5
Foodborne Outbreaks
with Implicated Food Vehicles
LAC, 2002 (N=16)



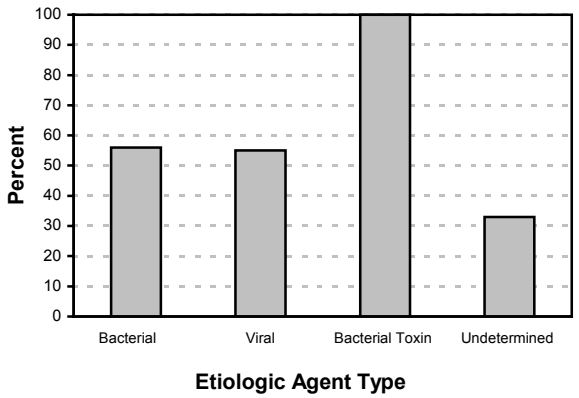
A specific pathogen was laboratory confirmed in 45% and epidemiologically suspected in 31% of foodborne outbreaks investigated (Figure 4). Seven outbreaks, all bacterial, were identified by routine disease surveillance (Table 2). Laboratory testing was conducted in 23 of the 29 foodborne outbreaks (79%). Reasons for no laboratory testing include lack of cooperation (n=4); unclear epidemiologic picture (n=1); and delayed notification (n=1).

Implicated Food Vehicles: In 55% of foodborne outbreak investigations, a food vehicle was epidemiologically implicated. Meat/poultry accounted for 38% of the implicated food items (Figure 5). In suspected bacterial toxin outbreaks, the food vehicle was identified 100% of the time, while a food item was identified in only 56% of bacterial and 55% of viral GE outbreaks (Figure 6). Implicated food vehicles are categorized in Figure 6. The largest proportion of outbreaks was caused by the meat/poultry category (38%), followed by side dishes (25%) and multiple items (25%).

Outbreak Location: The most common eating places for foodborne outbreaks were restaurants (24%), followed by the workplace (17%) (Figure 7). Outbreak-associated food was most often prepared by a restaurant (55%) or from a caterer (21%).

The geographic distribution of the outbreaks by SPA is summarized in Table 3. SPA 5 had the most foodborne outbreaks (n=7); SPAs 1, 6 and 8 had the least (n=1). One outbreak involved multiple states.

Figure 6
Percent of Foodborne Outbreaks With Food Vehicles Implicated, by Etiologic Agent
LAC, 2002 (N=16)



Contributing Factors: In 5 of 29 outbreak investigations, probable contributing factors of the cause of the outbreak were found (Figure 8). The most frequent factors identified were improper holding time/temperature (10%), contaminated raw product (3%), and infected food handler (3%).

Viral GE Summary: Eleven of the 29 foodborne outbreaks (38%) investigated in 2002 were categorized as viral GE. Laboratory testing was completed on 9 of these viral GE outbreaks, with six testing positive for NV. Viral GE was suspected in the remaining five outbreaks based on symptoms, incubation period, duration of symptoms, secondary cases in households, and/or negative bacterial test results. The mean number of cases per outbreak for 2002 was 28 cases. Almost half of the viral GE outbreaks (45%) had an undetermined implicated food item, possibly due to multiple contaminated food items or person-to-person transmission. Restaurants were the most common food source for the 2002 viral GE outbreaks (73%). In 91% of the viral GE outbreaks, contributing factors were undetermined.

Figure 7
Foodborne Outbreaks
by Place Food Eaten
LAC, 2002

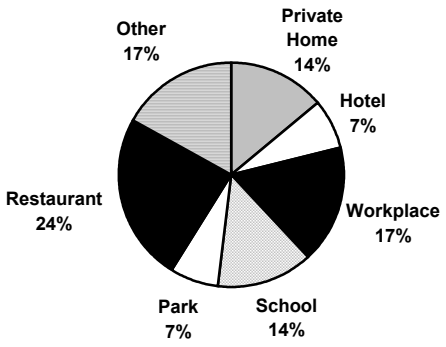
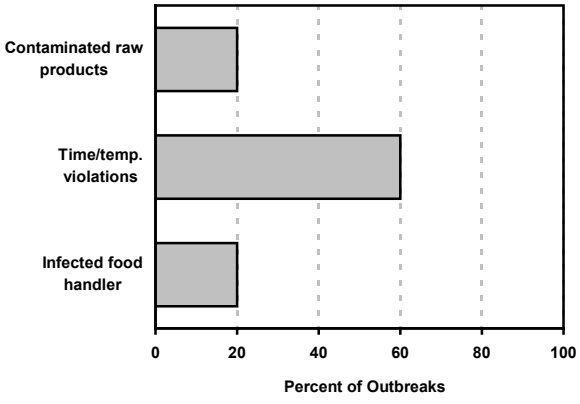


Figure 8
Foodborne Outbreaks with Known
Probable Contributing Factors (n=5)
LAC, 2002



COMMENTS

Since 1999, the LAC Public Health Laboratory has been testing human specimens for NV using the reverse transcription-polymerase chain reaction (RT-PCR) method. This method is still considered to be experimental and is only used to diagnose outbreaks as a whole, not for individual patients. There has been a marked increase in the number of viral GE and confirmed NV outbreaks since 1999.

PulseNet is a public health network sponsored by the CDC that uses the collaboration of laboratories and health departments at local, state, and federal levels to detect outbreaks through pulsed-field gel electrophoresis (PFGE) of pathogens. The PFGE results are monitored for matching pathogen strains of various etiologic agents. When matches are detected, an investigation may be initiated. In addition, a solitary case occurring locally can be linked to a larger, previously identified outbreak occurring on a wider geographical scale (i.e., the multistate E. Coli 0157:H7 outbreak). LAC was involved in the investigation of 1 of these multi-jurisdictional foodborne outbreaks in 2002. Mild symptoms, long incubation periods, and poor public and medical community awareness of public health procedures may contribute to under-reporting of foodborne disease.

Table 1. Foodborne Outbreaks in LAC, 2002 (N=29)

Agent	Subtype	Confirmed/ Suspected	Cases*	Jurisdictions / SPA
Campylobacter	jejuni	Lab Confirmed	5	2
Campylobacter	unknown	Lab Confirmed	12	7
E. Coli 0157:H7		Lab Confirmed	3	Multistate
E. Coli 0157:H7		Lab Confirmed	2	5
NV		Lab Confirmed	85	5
NV		Lab Confirmed	27	7
NV		Lab Confirmed	20	4
NV		Lab Confirmed	39	4
NV		Lab Confirmed	25	1
NV		Lab Confirmed	17	5
Salmonella	stanley	Lab Confirmed	8	3
Salmonella	newport	Lab Confirmed	21	6
Salmonella	copenhagen	Lab Confirmed	11	8
Bacterial		Suspected	8	3
Bacterial		Suspected	48	2
Bacterial Toxin		Suspected	11	7
Bacterial Toxin		Suspected	16	5
Bacterial Toxin		Suspected	9	7
NV		Suspected	15	2
NV		Suspected	19	4
NV		Suspected	18	5
NV		Suspected	15	2
NV		Suspected	30	5
Unknown			7	2
Unknown			6	4
Unknown			21	3
Unknown			24	5
Unknown			14	3
Unknown			4	2

* Includes only LAC cases.

Table 2. LAC Foodborne Outbreaks Laboratory Summary: Outbreaks by Suspect/Confirmed Etiologic Agent, 2002

	Bacterial	Bacterial Toxin	Norovirus	Unknown	Total
Number of outbreaks investigated	9	3	11	6	**29**
Number of outbreaks tested	9	2	9	3	**23**
Number of outbreaks with agent confirmed	7	0	6	--	**13**
Number of outbreaks identified by PHL surveillance	7	--	--	--	**7**

Table 3. Frequency of Foodborne Outbreaks by Location, 2002

SPA	Frequency	Percent
1	1	3
2	6	21
3	4	14
4	4	14
5	7	24
6	1	3
7	4	14
8	1	3
Multi-State	1	3
Total	29	100

ADDITIONAL RESOURCES

LAC resources:
- Communicable Disease Reporting System:
  Hotline: (888) 397-3993, Faxline: (888) 397-3779
- For reporting and infection control procedures consult the LAC DHS Foodborne Disease Section in B-73 Manual: www.lapublichealth.org/acd/procs/b73/b73fh.pdf

CDC:
- Foodborne and Diarrheal Diseases Branch: www.cdc.gov/ncidod/dbmd/foodborne/index.htm
- Outbreak Response and Surveillance Unit: www.cdc.gov/ncidod/dbmd/outbreak/
- FoodNet: www.cdc.gov/foodnet/

Other national agencies:
- FDA - Center for Food Safety and Applied Nutrition: www.vm.cfsan.fda.gov/list.html
- Gateway to Government Food Safety Information: www.FoodSafety.gov

HEALTHCARE FACILITY OUTBREAKS

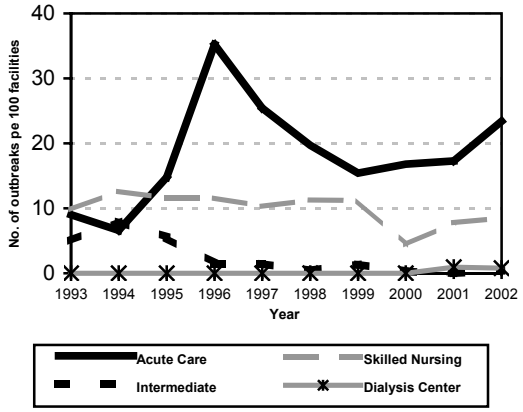
DEFINITION

Healthcare facility outbreaks are defined as clusters of nosocomial (health-facility acquired) or home-healthcare-associated infections related in time and place, or occurring above a baseline or threshold level for a facility, specific unit, or ward. Baseline is defined as what is normally observed in a particular setting.

DISEASE ABSTRACT

- More health facility outbreaks were reported in 2002 compared to 1998–2001 (Figure 1, Table 1).
- In 2002, acute care hospitals contributed to most of the increase from 2001.
- The most common type of outbreak in acute care facilities was scabies. Gastroenteritis was most common in skilled nursing facilities.

Figure 1
Healthcare Facility Outbreaks
LAC, 1993–2002



Denominator data from the Automated Certification and Licensing Administration Management System (ACLAIMS) database for LAC

Table 1. Number of Reported Outbreaks in Healthcare Facilities LAC, 1998–2002

	YEAR				
Type of Facility	**1998**	**1999**	**2000**	**2001**	**2002**
Acute Care Hospitals	24	18	20	19	26
Provider Offices	0	0	0	0	2
Dialysis Facilities	0	0	0	1	1
Home Health Agencies	1	0	0	0	0
Intermediate Care/Psych	1	4	1	0	1
Skilled Nursing Facilities	41	41	19	35	37
TOTAL	**67**	**63**	**40**	**55**	**67**

Table 2. Acute Care Outbreaks by Hospital Unit—LAC 2002

Outbreak Location	**No. of Outbreaks**
Neonatal Intensive Care Unit	12
Multiple Units	10
Medical/Surgical	1
Coronary Care Unit	1
Sub-acute	1
Newborn Nursery	1
Total	**26**

Acute Care Hospitals: There were 26 outbreaks reported in acute care hospitals in 2002 (Table 2)—an increase of 37% from 2001, but similar to numbers seen previously. Nearly half of the outbreaks (n=12, 46%) occurred in neonatal intensive care units (NICU), the majority (83%) with bacterial etiology. Of the remaining 54%, 71% involved multiple hospital units, with the remainder distributed among individual areas (Table 2). Four hospitals reported more than one outbreak. In 2002, the etiologic agents contributing the largest number of cases in acute care outbreaks were scabies (n=143), methicilllin-resistant *Staphylococcus aureus* (MRSA; n=23), and respiratory illness of undetermined etiology (n=20; Table 3).

Table 3. Acute Care Hospital Outbreaks by Disease/Condition
LAC, 2002

Disease/Condition/Etiologic Agent	No. of Outbreaks	No. of Cases
Scabies	6	143
Methicilli-resistant *Staphylococcus aureus*	3	23
Methicillin-sensitive *Staphylococcus aureus*	3	13
Serratia marcescens	2	6
Respiratory, etiology undetermined	2	20
Enterobacter cloacae	1	5
Enterobacter gergoviae	1	4
Extended-spectrum- **$**-lactamase *E. coli*	1	6
Klebsiella	1	4
Legionella	1	6
Pediculosis capitis	1	13
Necrotizing enterocolitis	1	4
Pseudomonas	1	13
Respiratory syncytial virus	1	7
Coagulase negative *Staphylococcus*	1	6
TOTAL	**26**	**273**

Sub-acute Facilities: In 2002, 37 outbreaks were reported in skilled nursing facilities (SNF), one in a dialysis facility and one in a psychiatric facility (Table 1). Five SNFs reported more than one outbreak. Gastroenteritis and scabies were the most common causes (Table 4). Gastroenteritis, norovirus (not reported in 2001) and unspecified gastroenteritis combined, accounted for 46% (n=17) of outbreaks and 307 cases in sub-acute care settings. Scabies outbreaks (n=14), the most frequently reported cause of outbreaks in the past few years, accounted for 38% of outbreaks. There were no scabies outbreaks associated with atypical or crusted scabies source cases.

Table 4. Sub-acute Care Outbreaks by Disease/Condition—LAC, 2002

Disease/Condition	No. of Outbreaks	No. of Cases
Gastroenteritis • unspecified (n=6) • norovirus (n=11)	17	307
Scabies (typical)	14	86
Respiratory illness, unspecified	2	20
Illness, unspecified	2	13
Salmonellosis	1	11
Hepatitis B	1	3
Total	**37**	**440**

COMMENTS

Outbreaks in healthcare facilities are investigated by the LAC DHS, long-term care facilities by the district public health nurse, and acute care hospitals by ACDC in collaboration with the infection control practitioner. Cooperative investigations occasionally occur. The extent of health department involvement varies depending on several factors such as the clinical significance of the disease or organism, the facilities' resources, the associated morbidity/mortality, and the potential for involvement with other jurisdictions, agencies or entities. In 2002, ACDC investigated a hepatitis B outbreak in a SNF (see Hepatitis B chapter) and outbreaks of two rarely encountered organisms—*Enterobacter gergoviae* in a NICU and *Alcaligenes xylosoxidans* in a private practice (see Special Reports).

To assist healthcare facilities and district staff, ACDC develops and publishes guidelines for management of clinically significant diseases of concern in LAC, such as scabies and antimicrobial resistant microorganisms (ARM). Developing strategies to prevent and control the emergence and spread of ARMs remains a priority. ACDC continues to collaborate with health facilities and community-based organizations to educate providers and consumers and to promote appropriate use of antimicrobials and management of ARMs.

ADDITIONAL INFORMATION

Useful information is available from the CDC including:

- outbreak management www.cdc.gov/ncidod/hip/OUTBREAK/outbreak.htm
- hand hygiene in healthcare settings www.cdc.gov/handhygiene/default.htm
- sterilization and disinfection www.cdc.gov/ncidod/hip/STERILE/Sterile.htm

Publications:

- CDC. Guidelines for environmental infection control in healthcare facilities: Recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC). MMWR 2003; 52(RR10): 1–42. Available at: www.cdc.gov/mmwr/preview/mmwrhtml/rr5210a1.htm
- Mangram AJ, Horan TC, Pearson ML, Silver LC, Jarvis WR. Guideline for prevention of surgical site infection. Infection Control and Hospital Epidemiology 1999; 20(4): 247–78. Available at: www.cdc.gov/ncidod/hip/SSI/SSI.pdf

Acute Communicable Disease Control

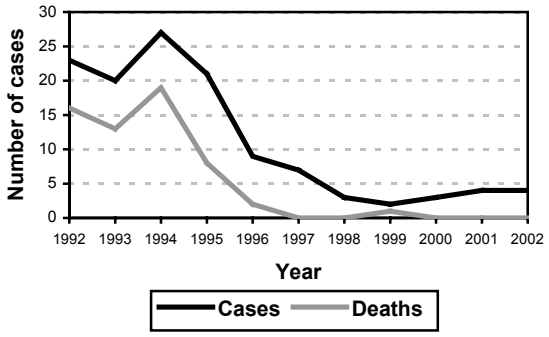
PEDIATRIC HIV/AIDS REPORTING PROJECT 2002

PEDIATRIC HUMAN IMMUNODEFICIENCY VIRUS (HIV) INFECTION and ACQUIRED IMMUNODEFICIENCY SYDROME (AIDS)

CRUDE DATA	
Number of Cases*	14
Annual Incidence[a]	
LA County	0.1[b]
California	0.1
United States	N/A
Case Fatality	
LA County	62%
United States	N/A

* Includes both HIV and incident AIDS cases.
[a] Cases per 100,000 population.
[b] Rates based on less than 20 observations are unreliable.

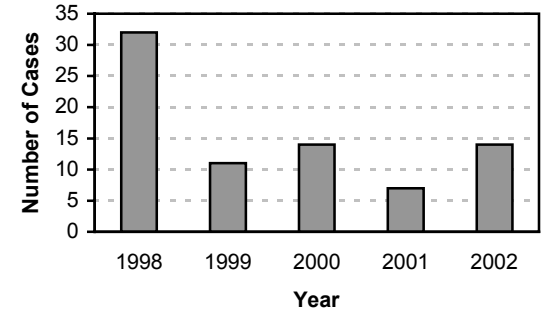
Figure 1
Pediatric AIDS Cases and Deaths
LAC, 1992–2002



DESCRIPTION

The spread of the HIV/AIDS epidemic to children has become one of the most serious public health problems in the US. The natural history of perinatal HIV disease in children less than 13 years of age differs from adults in that there is rapid progression of the disease in children as measured by age at AIDS diagnosis and an overall shorter survival. HIV, the virus that causes AIDS, can be transmitted from an infected mother to her newborn child at any one of three stages: antepartum (during pregnancy), intrapartum (during birth-labor or delivery) and postpartum, through breast feeding. A woman who has HIV and is pregnant can help decrease the risk of transmitting HIV from 20% to 8% or less if antiviral medications like ZDV (zidovudine, Retrovir®) are used during pregnancy and at the time of delivery. Transmission rates are lowest if the newborn takes ZDV for six weeks after birth.

Figure 2
Pediatric HIV/AIDS
Number of Cases Reported by Year
LAC, 1998–2002



DISEASE ABSTRACT

- California regulations for reporting HIV infection by non-name code (unique identifier) became effective on July 1, 2002.
- Perinatal transmission of HIV accounts for 91% of all pediatric acquired immunodeficiency syndrome (AIDS) cases in the United States and almost all new HIV infections in children.
- The number of perinatal HIV cases in LAC fell sharply after a peak of 32 in 1998 to 14 in 2002 (Figure 2).

- The number of children diagnosed with AIDS in LAC declined from a peak of 27 in 1994, to a minimum of one in 1999. In both 2001 and 2002, four incident cases of pediatric AIDS were reported (Figure 1).

Table 1: Description of Pediatric AIDS Cases Reported—LAC, 2002

	Case 1	Case 2	Case 3	Case 4
Place of birth	USA	USA	USA	USA
Gender	Female	Female	Male	Male
Race/ethnicity	Black	Latino	Black	Latino
AIDS defining illness	Cryptosporidiosis	HIV encephalopathy	Pneumocystis carinii pneumonia	Pneumocystis carinii pneumonia
Date mother was diagnosed with HIV	After child's birth	After child's birth	After child's birth	After child's birth
Mode of delivery	Vaginal	Vaginal	Vaginal	Cesarean section
Mother received zidovudine (ZDV) during pregnancy, labor and delivery	No	No	No	No
Breastfed	Yes	Unknown	Unknown	Yes

COMMENTS

- The risk of perinatal HIV transmission can be maximally reduced by early prenatal care, screening of all pregnant women for HIV, and if found positive, appropriate treatment of mother and child, cesarean delivery and not breast-feeding.
- While mother-to-infant transmission of HIV has declined both nationwide and locally, new cases of pediatric HIV are still being reported.
- Women who are most at risk of not receiving prenatal care, including HIV tests, include those who are drug addicts, incarcerated, homeless, non-English speakers, undocumented immigrants, uninsured or teenagers.
- The standard HIV serological tests, including enzyme linked immunosorbent assay (ELISA) and Western blot immunoassay, are not useful in the diagnosis of HIV infection during infancy because of the confounding presence in infants' blood of transplacentally derived maternal antibody.
- In the US, the HIV DNA polymerese chain reaction (PCR) assay is the most widely used test for diagnosis of HIV infection during infancy.
- For the purposes of clinical decision making, an infant less than 18 months of age is considered HIV-infected if he/she is known to be HIV-seropositive, or was born to an HIV-infected mother, and has positive results on two separate direct tests for HIV (i.e., HIV culture, PCR, or p24 antigen detection).
- The OraQuick Rapid HIV-1 Antibody Test recently approved by the federal government can provide reliable results within 20 minutes compared to the current products that can take days to process.

ADDITIONAL RESOURCES

For information about the reporting of HIV and AIDS cases in LAC see:
www.lapublichealth.org/hiv/hivreporting.htm

Pediatric HIV publications:

- CDC. Public Health Service Task Force recommendations for the use of antiretroviral drugs in pregnant women infected with HIV-1 for maternal health and for reducing perinatal HIV-1 transmission in the United States. MMWR 1998; 47:1–30. Available at: www.cdc.gov/mmwr/preview/mmwrhtml/00053202.htm

- Mofenson, LM, Committee on Pediatric AIDS. Technical report: Perinatal human immunodeficiency virus testing and prevention of transmission. Pediatrics 2000; 106:1–12. Available at: www.pediatrics.aappublications.org/cgi/reprint/106/6/e88.pdf

- CDC. Guidelines for national human immunodeficiency virus case surveillance, including monitoring for human immunodeficiency virus infection and acquired immunodeficiency syndrome. MMWR 1999; 48:1–28. Available at: www.cdc.gov/mmwr/preview/mmwrhtml/rr4813a1.htm

- CDC. HIV/AIDS Surveillance Report : Cases of HIV infection and AIDS in the United States, 2002. 2003; 14:1-48. Available at: www.cdc.gov/hiv/stats/hasr1402/2002SurveillanceReport.pdf

- CDC. Success in Implementing Public Health Service Guidelines to Reduce Perinatal Transmission of HIV—Louisiana, Michigan, New Jersey, and South Carolina, 1993, 1995, and 1996. MMWR 1998; 47:688–691. Available at: www.cdc.gov/mmwr/preview/mmwrhtml/00054649.htm

Acute Communicable Disease Control
Staff and Contributors
2002

LOS ANGELES COUNTY DEPARTMENT OF HEALTH
PUBLIC HEALTH

Medical Director, Public Health ..... James G. Haughton, MD, MPH

Acute Communicable Disease Control, Chief ..... Laurene Mascola, MD, MPH

- Immunization Program, Director ..... Cheri Todoroff, MPH
- Federal EIS Officer ..... Brhett Lash, MD & Dao Nguyen, MD
- Pediatric Spectrum of Disease and Pediatric HIV Reporting Projects, Project Director ..... Toni Frederick, PhD
- Epidemiology and Data Support Section, Chief Epidemiologist ..... Michael Tormey, MPH
- Hospital Infections Section, Senior Physician ..... David Dassey, MD, MPH
- Bloodborne Pathogens and Antimicrobial Resistance Unit, Physician Specialist ..... Elizabeth Bancroft, MD, SM
- Hospital Outreach Unit, Physician Specialist ..... Dawn Terashita, MD
- Food and Water Safety Section, Physician Specialist ..... Roshan Reporter, MD, MPH
- Bioterrorism Preparedness and Response Section, Senior Physician ..... Raymond Aller, MD
- Health Alert Network, Communications and Information Technology Infostructure Unit, Staff Analyst ..... David Cardenas, MPH
- Training Unit, Physician Specialist ..... Susan Robinson, MD
- Veterinary Epidemiology, Veterinarian ..... Brit Oiulfstad, DVM, MPH

ACUTE COMMUNICABLE DISEASE CONTROL
2002 PUBLICATIONS AND PRESENTATIONS

Publications:
The following publications as well as other ACDC-publications are available on the ACDC web-site at:
www.lapublichealth.org/acd/publications.htm

Arbeter A, Brunell P, Feldman S, Judelsohn R, Mascola L. Varicella: Changing epidemiology and parents' perceptions. Infectious Diseases in Children. 2002; April.

Buchholz U, Run G, Kool JL, Fielding J, Mascola L. A risk-based restaurant inspection system in Los Angeles County. Journal of Food Protection 2002; 65:367–372.

Frye DM, Zweig R, Sturgeon J, Tormey M, LeCavalier M, Lee I, Lawani L, Mascola L. An outbreak of febrile gastroenteritis associated with delicatessen meat contaminated with Listeria monocytogenes. CID 2002; 35:943–949.

Glaser CA, Gilliam S, Thompson WW, Dassey DE, Waterman SH, Saruwatari M, Shapiro S, Fukuda K. Medical care capacity for influenza outbreaks, Los Angeles. 2002; Emerg Infect Dis 2002; 8:569–74.

Hall S, Maupin T, Seward J, Jumaan AO, Peterson C, Goldman G, Mascola L, Wharton M. Second varicella infections: Are they more common than previously thought? Pediatrics 2002; 109:1068–1073

Harvey SM, Sturgeon J, Dassey DE. Botulism due to Clostridium baratii type F toxin. J Clin Microbiol 2002; 40:2260–2262.

Labarca J, Sturgeon J, Borenstein L, Salem N, Harvey S, Lehnkering E, Reporter R, Mascola M. Campylobacter upsaliensis: Another pathogen for consideration in the United States. Clinical Infectious Diseases 2002; 34:e59–60.

Mascola L. Immunizations: Do the benefits outweigh the risks? Los Angeles Family 2002; March:82.

Seward J, Watson BM, Peterson CL, Mascola L, Pelosi JW, Zhang JX, et al. Varicella disease after introduction of varicella vaccine in the United States, 1995–2000. JAMA 2002; 287:606–611.

Presentations:

McCoy LS, Knowles L, Nelson A. Completeness of hospital pertussis reporting in Los Angeles County: An evaluation of 1999 hospital discharge data. 36th National Immunization Conference 2002: Denver, Colorado.

Wang R, Gambill D, Pulido MJ, Todoroff C, Fujimoto G, Hartoonian L, Roby K. Hepatitis B and MMR vaccine coverage levels among children entering 7th grade in Los Angeles County. 36th National Immunization Conference 2002: Denver, Colorado.

Pulido MJ, Nelson A, Schellhase C, Gambill D. The effectiveness of the 2000–2001 Los Angeles County influenza campaign in reaching all racial/ethnic groups 60 years of age and older. 36th National Immunization Conference 2002: Denver, Colorado.

Pulido MJ, Knowles L, Gambill D. Expanded kindergarten retrospective survey, Los Angeles County—1996 and 1999. 36th National Immunization Conference 2002: Denver, Colorado.

Nelson A, Knowles L. The impact of PCV-7 utilization on other recommended vaccines administered in a public health clinic setting. 36th National Immunization Conference 2002: Denver, Colorado.

ACUTE COMMUNICABLE DISEASE CONTROL
2002 ANNUAL MORBIDITY REPORT

Program Report Contributors

- Amebiasis ..... David E. Dassey, MD, MPH
- Campylobacteriosis ..... Rita Bagby, RN, BSN, PHN
- Coccidiodomycosis ..... Alison Itano, MS
- Cryptosporidiosis ..... Amy Gallagher, MPH
- Encephalitis ..... Rachel Civen, MD, MPH
- *Escherichia coli* O157:H7 / Hemolytic Uremic Syndrome ..... Rita Bagby, RN, BSN, PHN
- Giardiasis ..... David E. Dassey, MD, MPH
- *Haemophilus Influenzae* Invasive Disease ..... Dulmini Kodagoda, MPH
- Hepatitis A ..... Rachael Lee, RN, BSN, PHN
- Hepatitis B, Acute (Non-perinatal) ..... Rachael Lee, RN, BSN, PHN
- Hepatitis B, Perinatal ..... Bridget Beeman, RN, BSN, PHN
- Hepatitis C, Acute ..... Rachael Lee, RN, BSN, PHN
- Legionellosis ..... Rachel Civen, MD, MPH
- Listeriosis, Nonperinatal ..... Ramon Guevara, MPH
- Listeriosis, Perinatal ..... Ramon Guevara, MPH
- Lyme Disease ..... Rachel Civen, MD, MPH
- Malaria ..... Rachel Civen, MD, MPH
- Measles ..... Dulmini Kodagoda, MPH
- Meningitis, Viral ..... Rachel Civen, MD, MPH
- Meningococcal Disease ..... Melba Veza, RN, BSN, PHN
- Mumps ..... Dulmini Kodagoda, MPH
- Pertussis (Whooping Cough) ..... Dulmini Kodagoda, MPH
- Salmonellosis ..... Sylvia Frumes, RN, BSN, PHN
- Shigellosis ..... Rita Bagby, RN, BSN, PHN
- Streptococcus, Group A Invasive Disease (IGAS) ..... Melba Veza, RN, BSN, PHN
- Typhoid Fever, Acute ..... Rita Bagby, RN, BSN, PHN
- Typhoid Fever, Carrier ..... Rita Bagby, RN, BSN, PHN
- Typhus ..... Rachel Civen, MD, MPH
- Vibriosis ..... Michael Tormey, MPH

Disease Outbreak Summaries

- Community-Acquired Disease Outbreaks ..... Amy Gallagher, MPH
- Foodborne Outbreaks ..... Amy Gallagher, MPH
- Healthcare Facility Outbreaks ..... Melba Veza, RN, BSN, PHN

Pediatric HIV/AIDS Reporting Project Report

- Pediatric Acquired Immunodeficiency Syndrome ..... Azita Naghdi, MPH

2002 Editors ..... David Dassey, MD, MPH
Sadina Reynaldo, PhD, Grace Run, MS

Data Services ..... Grace Run, MS

A number of other persons not listed above have contributed their time and energy to make this report possible. Among those who deserve recognition for their supportive work are public health nurses, public health investigators, public health registrars, data analysts, administrative and clerical staff.