ACUTE COMMUNICABLE DISEASE CONTROL

ANNUAL MORBIDITY REPORT
AND
SPECIAL STUDIES REPORT

2004

Los Angeles County
Department of Health Services

Public Health
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Acute Communicable Disease Control
Annual Morbidity Report
2004

● 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 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 immediate reporting by telephone to the LAC Department of Health Services (DHS) to reporting required within 7 days of identification.

In addition to disease surveillance and investigation, ACDC sets policy and makes procedural recommendations for DHS activities that are related to infectious and communicable disease prevention and control. 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 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. Pathogens of special interest include: *Listeria*, norovirus and *Salmonella*.
- **Vectorborne Diseases and Central Nervous System Infections Unit**: This unit conducts surveillance and provides disease consultation for a variety of vectorborne and zoonotic diseases (e.g., West Nile virus, meningococcal and other causes of encephalitis and meningitis). This unit also conducts special studies such as varicella (chickenpox) surveillance.
- **Hospital Outbreaks Unit:** This unit assists hospitals with outbreak investigations, consults on infection control issues and enhances public health communication with hospitals (i.e., by interacting with infection control practitioners, emergency departments and laboratories).
- **Bloodborne Pathogens and Antimicrobial Resistance Unit**: Conducts investigations and provides education and awareness of 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. Accordingly, one of the greatest challenges of disease surveillance, response and control in our county is responding to its enormous size. In 2003, 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, medical services in LAC are also extensive—LAC is home to approximately 120 hospitals, 80 emergency departments, more than 30,000 licensed physicians, and over 100 infection control professionals.

Another considerable challenge is the extensive diversity of our population coupled with our high level of immigration. In LAC, nearly half of our residents are Latino (46.9%), around one-third White (30.2%), and around one-in-ten Asian (13.3%) or Black (9.3%). Our residents report over 90 languages as their primary spoken language. 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 a 1999 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 reported settling in LAC. In addition to immigration, the population in our county is highly mobile. In terms of air travel alone, each year roughly 55 million travelers come through the Los Angeles International airport (40,346,127 domestic and 14,623,903 international)—making it the nation's 3rd busiest airport.

- **Immunization Program**: The mission of this program is to improve the immunization coverage levels of LAC and prevent the occurrence of vaccine-preventable diseases. Program activities include perinatal hepatitis B case management and the smallpox vaccine program.
- **Bioterrorism Preparedness and Response Unit**: The aim of this unit is to plan, train and enhance surveillance and epidemiology capacity to detect and respond to a bioterrorist event. Efforts also include syndromic surveillance and responding to notable instances identified by these systems.

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

Emerging and Re-Emerging Infectious Diseases—Los Angeles County, 2004

While optimists envision a day when we will conquer infectious diseases, the likelihood of this is far away as novel and reemerging diseases continually manifest—every year new diseases emerge and several existing diseases acquire added prominence, and 2004 was no exception. Undoubtedly, the most notable infectious disease to emerge in Los Angeles and California during 2004 was West Nile virus (WNV). WNV first appeared in Southern California in 2003 with one confirmed case of West Nile fever in an LAC resident. During that year, numerous other predictors of WNV-related disease (i.e., WNV-infected dead crows, sentinel chickens, and mosquito pools) indicated that substantial additional human cases would occur in subsequent years. In 2004, the first reports of WNV-infected dead crows occurred in early February, and reports greatly increased by May, especially in the San Gabriel Valley. By the third week of June, the first human case of West Nile fever was confirmed in the San Gabriel Valley. By the end of the season, LAC reported 309 WNV infections—the most of any other jurisdiction in California. Cases included: West Nile fever (n=149), encephalitis (n=47), meningitis (n=82), acute flaccid paralysis (n=7), and asymptomatic blood donors (n=24). Among these cases were 14 deaths; their median age was 76 years (range: 60-94 years). Both WNV-associated neuroinvasive disease (which includes encephalitis, meningitis, and acute flaccid paralysis) and WNV-associated fatalities were associated with older age; the lowest incidence rates of infection were seen in children, and rates dramatically increased among those over age 40. During 2004, the majority of cases occurred among those residing in the suburban valley, areas close to the San Gabriel River and in hillside communities—the coastal communities were spared.

Emerging Infectious Diseases

- During 2004, more cases of West Nile virus were identified in Los Angeles County than any other jurisdiction in California.
- West Nile virus is now endemic to our region.
- The incidence of MRSA infections is increasing significantly—outbreaks are now common in NICUs and among those who are incarcerated.
- Rabies continues to be of concern—two investigations following the importation of potentially infected animals occurred during 2004.

Continuing surveillance efforts have demonstrated that WNV is now endemic to our region. And while we cannot predict the pending severity of future seasons, one thing is certain, additional human cases will occur. As such, it is important that healthcare providers in our county be aware of proper diagnostic and testing procedures, understand the importance of prompt reporting, and educate their patients to protect themselves against infection—especially for those at high risk for complications from illness (e.g., the elderly and the immunocompromised—especially transplant patients).

Another emerging illness that now greatly affects residents of LAC is Methicillin resistant *Staphylococcus aureus* (MRSA) infections. While once an infection limited to healthcare settings, community associated strains are becoming increasingly prevalent. As has been reported previously in 2003, community associated MRSA-related outbreak investigations included populations as diverse as: athletic teams, men who have sex with men and those incarcerated in LAC's jail system.1 These infections are a continuing significant problem in LAC's jails—since despite intervention, community

1 See Special Studies Report 2003 at: www.lapublichealth.org/acd/reports/annual/Special_Report_2003.pdf.

associated MRSA is now endemic in the LAC jail population. Because MRSA infections are becoming increasingly common in LAC, physicians should become familiar with proper diagnosis and treatment practices. In particular, MRSA infections are often misdiagnosed as spider bites; this often prevents proper treatment and contributes to the spread of infection.2

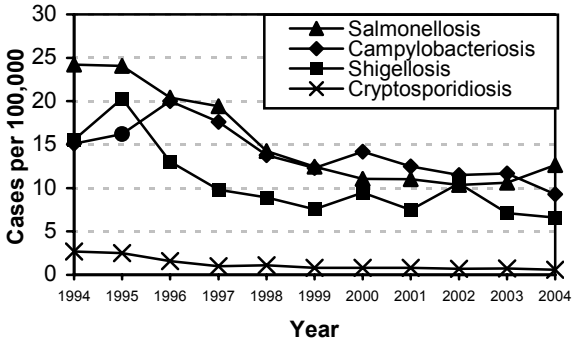
MRSA infections have also become a considerable problem in LAC newborn intensive care units (NICUs). In 2004, ACDC received reports of nine NICU MRSA outbreaks, while only one was reported in 2003 (see 2004 Special Reports). Since outbreaks are traditionally underreported, it is highly likely that MRSA is now well established in the LAC pediatric population. Risk factors for MRSA colonization and infection in this population include: low birth weight, young gestational age and multiple gestations. In two LAC investigations during 2004, it is likely that MRSA was passed from mothers to their infants though infected breast milk. In all of the LAC MRSA-related NICU outbreaks occurring in 2004, regardless of the method of acquisition of the index case, the infection was propagated to other infants within the NICU, most likely through poor infection control practices—with the organism being spread by the hands of healthcare workers. As such, proper hygiene procedures cannot be over-emphasized, especially among those involved in critical care. In addition, ACDC investigation also revealed the following areas most likely contributing to the spread of MRSA infection in NICUs: the use of multi-dose medication vials, lapses in asepsis, and improper cleaning of equipment.

Finally, while advances in public health have made rabies (both human and animal infections) especially rare, cases continue to emerge. In 2004, ACDC investigated two separate incidents involving the importation of animals with factors consistent with rabies infection (see 2004 Special Reports). And in 2005, the first LAC human rabies case in 30 years was identified.3 During all three events, many individuals were potentially exposed to rabies and required prophylaxis. These events should serve as a reminder that, while rare in LAC, rabies is endemic in many countries (e.g., El Salvador, Guatemala, Mexico) whose citizens frequently visit or immigrate to the Los Angeles area. Similarly, the importation of potentially infected animals also is a common occurrence that should not be overlooked. Thus, rabies continues to be an important and viable differential diagnosis in both humans and animals in LAC. In addition, any suspected human or animal case should be reported immediately to Public Health. Prompt reporting is mandated and critical to assist with the diagnosis and to administer prophylaxis as needed.

Food and Waterborne Diseases

Diseases spread by food and water make up much of the investigations and activities conducted by ACDC. Overall, food and waterborne diseases have declined considerably since the mid-1990's and have now stabilized at lower rates (Figure 1—see campylobacteriosis, cryptosporidiosis, listeriosis, salmonellosis, shigellosis, typhoid fever and vibriosis individual annual reports for more details). The declining trend in cases is most evident among the bacterial diseases campylobacteriosis and shigellosis. These findings mirror national trends depicting sustained decreases among many foodborne illnesses—particularly those of bacterial origin.4,5,6 While the underlying causes for these local and national trends are not known, the

Figure 1
Food and Waterborne Disease
Incidence Rates by Year
LAC, 1994–2004



2 For more information about MRSA visit www.lapublichealth.org/acd/MRSA.htm.
3 A full description will be included in the 2005 ACDC Annual Report and is presently available at: www.ladhs.org/media/tph/TPHMarch2005.pdf.
4 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
5 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.
6 CDC, Preliminary FoodNet Data on the Incidence of Infection with Pathogens Transmitted Commonly Through Food—Selected Sites, United States, 2003. MMWR 2004; 53(16);338-343.

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 for food handlers and the public regarding best practices to reduce foodborne disease.

A notable exception to the overall decreasing trend is the recent increase in salmonellosis. During 2004, 1,205 cases of salmonellosis were reported in LAC—rising above 1,000 cases again after an overall decrease of more than 100% during the previous 10 years. Nationally, the incidence of salmonellosis cases has been decreasing, but at a much slower rate than it has for LAC in the previous 10 years (Table 1). Although many food and water sources have been implicated in the transmission of salmonellosis, illness with this disease is most often associated with eggs, poultry and fresh produce. 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 agriculture, food processing and preparation practices. Another prominent source of salmonellosis is contact with reptiles, either directly or through surfaces or other people who have handled reptiles. In 2004, 99 (8.2%) cases had contact with turtles, lizards or snakes (see the 2004 Special Reports for more details).

Table 1. Food and waterborne disease incident cases: 10-year average versus incident cases in 2004, LAC

Disease	10-year average, 1994–2003	Number of cases 2004
Salmonellosis	1,395	1205
Campylobacteriosis	1,286	884
Shigellosis	970	625
Cryptosporidiosis*	111	56
Listeriosis, nonperinatal	22	21
Listeriosis, perinatal	7	6
Vibriosis	16	26
Typhoid fever, carrier	5	3
Typhoid fever, acute	25	13
E. coli O157:H7	21	18

* Advances in antiretroviral therapy may account for much of the decrease in cryptosporidiosis cases.

Food and Waterborne Diseases

- The incidence of food and waterborne diseases, especially bacterial diseases, has declined since the 1990s—stabilizing in recent years.
- An exception to the declining trend is recent the increase in salmonellosis.
- Despite decreasing incidence, these diseases continue to cause considerable morbidity and mortality; in 2004, ACDC investigated 40 foodborne outbreaks.

In 2004, ACDC investigated 40 foodborne disease outbreaks representing 742 individuals with illness. There were no waterborne disease outbreaks. A specific pathogen was identified by laboratory testing in 30% of outbreaks, 47% of these were caused by bacterial agents; 7 were caused by Salmonella species, 1 from enterotoxigenic *E. coli* and 3 norovirus. Among the remaining outbreaks the suspected cause for 2 was bacterial toxins and for 19 was norovirus. For more information, please refer to the Foodborne Outbreaks report.

While the overall incidence of these diseases has been decreasing, food and waterborne diseases continue to account for considerable morbidity and mortality—nationwide, thousands of preventable infections continue to occur yearly. The majority of people infected by these illnesses improve without complications, but these diseases may cause invasive disease 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. In LAC, reportable, food or waterborne diseases were a contributing factor in at least 15 deaths during 2004. Accordingly, further efforts to improve food and water quality and to educate food industry and the public about proper food handling are needed.

Vaccine Preventable Diseases

LAC continues to experience very low levels of most childhood vaccine preventable diseases, which is reflective of what has been observed nationally. Childhood vaccination coverage levels in LAC remain high and exceed the year 2010 goal of 80% for receipt of the recommended vaccination series for 19–35 year olds. Measles cases in LAC continue to be at record low levels with only one case identified in 2004; the case was associated with foreign travel and occurred in an individual without record of immunization. No cases of rubella (including congenital rubella) were reported in 2004. And the five mumps cases that were reported were all in adults over age 24, none of whom had documented records of immunization. For invasive disease caused by Haemophilus influenzae, only type b (Hib) is vaccine preventable; only two cases were reported in 2004 and both were in age groups not normally at high risk for Hib.

Aggressive efforts continue to prevent transmission of hepatitis B from infected mothers to their infants during the perinatal period. About 8% more perinatally exposed infants were identified in 2004 as compared to 2003 and most received appropriate prophylaxis with both passive and active immunization.

Vaccine Preventable Diseases

- Childhood vaccine coverage levels have been very high, currently exceeding the goal set for 2010, and the incidence of vaccine preventable diseases has been especially low.
- An exception to this trend has been the increase in pertussis rates; 2004 saw a 20% increase in cases since the previous year.

Controlling the incidence of pertussis remains the biggest challenge in LAC, as is true for the nation as a whole. While pertussis incidence remains low in comparison to what was seen prior to the introduction of pertussis vaccines in the 1940s, there has been a cyclical trend of increasing rates since the 1980s. Major increases in pertussis rates were noted nationally in 2004 and in LAC; the 156 cases reported represented a 20% increase over the previous year. A newly licensed booster tetanus, diphtheria and pertussis vaccines (Tdap) for adolescents is expected to help decrease the burden of pertussis.7

Antibiotic Resistance, Invasive Bacterial Infections and Hepatitis

Community-associated MRSA continued to be a primary focus of this team. These infections are continuing to be especially prevalent among inmates in the LAC jail system—a total of 2,461 cases were reported in 2004 versus 1,849 in 2003. However, the percentage of infections that were likely acquired *in the jail* has decreased to 54% and it appears that more inmates are being admitted to the jail with pre-existing infections—but it is unknown if these inmates are acquiring infections from previous incarcerations or from the community at large. The number of cases of community-associated MRSA in juvenile detention facilities has also increased from 55 in 2003 to 88 in 2004. Accordingly, ACDC continues to work with correctional facility administrations to implement control measures to resolve this problem. In addition, ACDC has developed and released comprehensive guidelines to reduce of the spread of *Staphylococcus aureus* in non-healthcare settings and we have updated our website (www.lapublichealth.org/acd/MRSA.htm) to provide guidance to physicians and the general public.

2004 was the first full year that every case of invasive group A streptococcus (IGAS) was investigated. While there was a 12 percent decrease in the incidence of IGAS, there was an increase in the number of streptococcal toxic shock syndrome cases (13% of the total) and an increase in the case fatality rate (26%), most likely due to the enhanced surveillance and increased follow-up. The highest rate of cases was seen in the elderly; there were no cases reported in those <1 year of age. The incidence of invasive pneumococcal disease increased 7% in 2004 and the percentage of isolates non-susceptible to penicillin increased for the first time since 2000. The etiology of these trends is unknown

The number of hepatitis A cases dropped in 2004, yielding the lowest rate ever recorded in our county. However, it was discovered in 2005 that one of the largest reporting sources of hepatitis A inadvertently stopped reporting cases for the final 3 months of 2004. Therefore, the number of cases of hepatitis A in the last quarter of 2004 is underestimated. Despite the overall decrease, the rate increased in persons aged 55 years or older—this may represent cases found on routine screening. The rate of

7 Description available at: www.cdc.gov/nip/pr/pr_tdap_jun2005.htm

acute hepatitis B remained the same as in 2003, but the number of confirmed cases of acute hepatitis C increased to a total of 5 in 2004. ACDC is developing a new district investigation form for acute hepatitis to better describe risk factors for these conditions in our county.

Bioterrorism Preparedness

In 2001, the mandated list of reportable diseases was modified to provide greater emphasis on diseases deemed significantly likely agents for bioterrorism activity (e.g., anthrax, botulism, brucellosis, plague, smallpox, tularemia and viral hemorrhagic fevers). Education to strengthen awareness and understanding of disease and outbreak reporting continued throughout 2004, and in 2004, ACDC provided tailored educational materials related to disease reporting to all veterinarians in the LAC.

Bioterrorism Preparedness

- In 2004, BT-related surveillance projects were expanded and integrated into public health. These systems were shown to be useful indicators of morbidity and mortality.
- Public Health participated actively in several drills and exercises in bioterrorism preparedness.

The primary achievements of ACDC's bioterrorism surveillance and preparedness unit during 2004 were the continued integration of activities into public health operations. Emergency Department syndromic surveillance, which includes detecting major trends from baseline patterns of illness that may potentially identify bioterrorist activity, was continued at several local hospitals and additional hospitals were added to the system. Our syndromic surveillance proved capable of detecting patterns of illness and community outbreaks and complemented traditional disease surveillance activities. Our Unusual Death Surveillance System, also a complementary surveillance system developed to identify deaths possibly related to bioterrorism or emerging infectious diseases, identified several previously undetected cases of reportable public health conditions. Public Health led LAC's first full-scale bio-terrorism exercise to deliver fictitious smallpox vaccinations at a mass smallpox vaccination center. And in May 2004, Public Health participated in a Biohazard Detection System (BDS) drill with the United States Postal Service to provide an opportunity to practice dispensing of prophylactic medications in the event of a BDS alarm.

Acute Communicable Disease Control

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PURPOSE

The Acute Communicable Disease Control (ACDC) Annual Morbidity Report of the Los Angeles County Department of Health Services (DHS), 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 2004 ACDC Annual Morbidity Report does not include information on tuberculosis, sexually transmitted diseases, or HIV and AIDS. Information regarding these diseases is available from their respective departments (see the LAC Public Health website for more information at www.lapublichealth.org.)

LAC DEMOGRAPHIC DATA

LAC population estimates used for this report are created by the Population Estimates and Projections System (PEPS) provided to the LAC DHS, Public Health by Urban Research. The LAC population is based on both estimates and projections that are adjusted when real relevant numbers become available (e.g., DMV records, Voters' registry, school enrollment and immigration records etc.).

National and California state counts of reportable diseases were obtained from the Centers for Disease Control and Prevention (CDC) Final 2004 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 2004 was 290,810,000 and the population of California was 35,484,000.

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 2004 reports of notifiable diseases. MMWR 2005; 54(31):770. Available at: www.cdc.gov/mmwr/preview/mmwrhtml/mm5431a4.htm

Table A. Los Angles County* population by year, 1999–2004

Year	Population	% change
1999	8,853,999	
2000	8,968,327	1.3%
2001	9,122,861	1.7%
2002	9,253,109	1.4%
2003	9,398,128	1.6%
2004	9,535,937	1.5%

* Does not include cities of Pasadena and Long Beach.

Table B. Los Angles County* population by age group, 2004

Age (in years)	Population	%
<1	144,408	1.5%
1–4	568,448	5.9%
5–14	1,484,686	15.6%
15–34	2,781,004	29.2%
35–44	1,512,514	15.8%
45–54	1,256,062	13.2%
55–64	819,332	8.6%
65+	969,483	10.2%
Total	**9,535,937**	**100.0%**

* Does not include cities of Pasadena and Long Beach.

Table C. Los Angles County* population by sex, 2004

Sex	Population	%
Male	4,715,022	49.4%
Female	4,820,915	50.6%
Total	**9,535,937**	**100.0%**

* Does not include cities of Pasadena and Long Beach.

Table D. Los Angles County* population by race, 2004

Race	Population	%
Asian	1,266,986	13.3%
Black	888,577	9.3%
Latino	4,467,589	46.9%
White	2,884,113	30.2%
Other**	28,672	0.3%
Total	**9,535,937**	**100.0%**

* Does not include cities of Pasadena and Long Beach.
** Includes American Indian, Alaskan Native, Eskimo and Aleut.

Table E. Los Angles County* population by health district and SPA, 2004

Health District	Population
SPA1	**334,951**
Antelope valley	334,951
SPA 2	**2,108,367**
East Valley	442,812
Glendale	352,549
San Fernando	466,096
West Valley	846,910
SPA 3	**1,700,113**
Alhambra	356,731
El Monte	465,076
Foothill	310,678
Pomona	567,628
SPA 4	**1,240,204**
Central	371,792
Hollywood Wilshire	534,322
Northeast	334,090
SPA 5	**646,770**
West	646,770
SPA 6	**1,031,700**
Compton	288,097
South	180,175
Southeast	168,732
Southwest	394,696
SPA 7	**1,369,589**
Bellflower	369,723
East Los Angeles	224,686
San Antonio	448,206
Whittier	326,974
SPA 8	**1,104,243**
Inglewood	430,198
Harbor	207,534
Torrance	466,511
Total	**9,535,937**

* 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 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.

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 during the year 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 surveillance2 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 during the year were not reported until after this annual report was completed. Slight differences in the number of cases and rates of disease for the year 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.

STANDARD REPORT FORMAT

1. Crude data.
   - **Number of Cases**: For most diseases, this number reflects new cases of the disease with an onset in 2004. If the onset was unknown, the date of diagnosis was used.
   - **Annual Incidence Rates in LAC**: Number of new cases in 2004 divided by 2004 LAC census population (minus Long Beach and Pasadena) multiplied by 100,000.
   - **Annual Incidence Rates in the US and California**: 2004 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.

2 CDC. Case Definitions for Infectious Conditions under Public Health Surveillance," MMWR 1997;46(RR-10):1-57. Available at: www.cdc.gov/mmwr/preview/mmwrhtml/00047449.htm

- **Range of Ages at Onset**: Ages of the youngest and oldest cases in 2004. For cases under one year of age, less than one (<1) was used.
- **Case Fatality**: Number of deaths in 2004 due to disease (when data were available) divided by the number of new cases of the disease in 2004, expressed as a percentage. Note that deaths may be due to infections acquired prior to 2004.

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 2004.

4. Stratified Data.
   - **Trends**: Any trends in case characteristics during recent years.
   - **Seasonality**: Number of cases that occurred during each month of 2004.
   - **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, 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.

TABLE F. LIST OF ACRONYMS

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

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

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**	Southwest
CN	Compton	**IW**	Inglewood	**TO**	Torrance
EL	East Los Angeles	**NE**	Northeast	**WE**	West
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, 1999-2004

Disease	Year of Onset						Previous 5-year Average	5-Yr 95% upper Limit[a]
	1999	2000	2001	2002	2003	2004		
Amebiasis	134	109	139	102	121	114	121	149
Botulism	3	0	2	2	0	3	1	4
Brucellosis	3	4	9	11	7	4	7	13
Campylobacteriosis	1089	1273	1141	1067	1100	884	1134	1278
Cholera	0	0	0	0	1	0	0	1
Coccidioidomycosis [b]	48	58	68	76	73	133	65	85
Cryptosporidiosis	71	68	77	62	71	56	70	79
Cysticercosis	28	43	37	18	12	8	28	50
Dengue	3	3	5	7	0	5	4	8
E. *coli* O157:H7	12	27	31	31	27	18	26	39
Encephalitis [b]	39	49	41	61	38	133	46	62
Foodborne outbreaks	39	40	48	29	25	40	36	52
Giardiasis	592	509	446	441	401	320	478	609
Haemophilus influenzae type b	0	1	5	4	0	2	2	6
Hansen's Disease (Leprosy)	10	9	2	11	9	9	8	14
Hepatitis A [c]	1120	839	542	438	374	321	663	1209
Hepatitis B	66	65	44	32	73	72	56	86
Hepatitis C	21	10	1	3	0	5	7	22
Hepatitis unspecified	9	11	1	0	1	0	4	13
Kawasaki syndrome	29	35	24	9	14	41	22	41
Legionellosis	16	14	18	25	21	15	19	26
Listeriosis, nonperinatal	21	19	27	14	17	21	20	28
Listeriosis, perinatal	12	8	3	7	3	6	7	13
Lyme disease	8	7	5	8	6	0	7	9
Malaria	62	43	46	38	60	51	50	68
Measles	1	5	8	0	0	1	3	9
Meningitis, viral	226	263	378	466	899	807	446	920
Meningococcal infections	49	53	58	46	32	28	48	65
Mumps	23	29	17	16	10	5	19	32
Pertussis	238	102	103	172	130	156	149	249
Psittacosis	1	0	1	0	0	0	0	1
Q-fever	0	1	1	4	0	4	1	4
Relapsing fever	1	0	0	1	0	0	0	1
Rheumatic fever, acute	1	1	6	0	0	1	2	6
Rubella	0	3	0	0	0	0	1	3
Salmonellosis [b]	1101	990	1006	956	995	1205	1010	1105
Shigellosis	669	849	684	974	669	625	769	1010
Strongyloidiasis	5	1	0	0	0	0	1	5
Tetanus	2	0	2	2	1	2	1	3
Trichinosis	0	0	0	0	0	0	0	0
Tularemia	0	0	0	0	1	0	0	1
Typhoid fever, case	20	21	17	33	16	13	21	33
Typhoid fever, carrier	4	6	1	6	2	3	4	8
Typhus fever	6	17	8	11	12	8	11	18
Vibrio [b]	3	13	15	14	13	26	12	20

[a] The normal distribution assumption may not apply to some rare diseases.

[b] 2004 data over 95% upper limit.

[c] The number of Hepatitis A cases may be artificially low due to a reporting error.

Table H. Annual Incidence Rates of Selected Notifiable Diseases by Year of Onset
Los Angeles County, 1999-2004

Disease	Annual Incidence Rate (Cases per 100,000) [b]					
	1999	2000	2001	2002	2003	2004
Amebiasis	1.51	1.22	1.52	1.10	1.29	1.20
Botulism	0.03	-	0.02	0.02	-	0.03
Brucellosis	0.03	0.04	0.10	0.12	0.07	0.04
Campylobacteriosis	12.30	14.19	12.50	11.50	11.70	9.27
Cholera	-	-	-	-	0.01	-
Coccidioidomycosis	0.54	0.65	0.75	0.82	0.78	1.39
Cryptosporidiosis	0.80	0.76	0.84	0.67	0.75	0.59
Cysticercosis	0.32	0.48	0.41	0.19	0.13	0.08
Dengue	0.03	0.03	0.05	0.08	-	0.05
E. *coli* O157:H7	0.14	0.30	0.34	0.33	0.29	0.19
Encephalitis	0.44	0.55	0.45	0.66	0.40	1.39
Giardiasis	6.69	5.68	4.89	4.75	4.26	3.36
Haemophilus influenzae type b	-	0.01	0.05	0.04	-	0.02
Hansen's Disease (Leprosy)	0.11	0.10	0.02	0.12	0.10	0.09
Hepatitis A[c]	12.65	9.36	5.94	4.72	3.98	3.37
Hepatitis B	0.75	0.72	0.48	0.34	0.78	0.76
Hepatitis C	0.24	0.11	0.01	0.03	-	0.05
Hepatitis unspecified	0.10	0.12	0.01	0.00	0.01	-
Kawasaki syndrome	0.33	0.39	0.26	0.10	0.15	0.43
Legionellosis	0.18	0.16	0.20	0.27	0.22	0.16
Listeriosis, nonperinatal	0.24	0.21	0.30	0.15	0.18	0.22
Listeriosis, perinatal[a]	8.26	5.46	2.05	4.96	2.12	4.25
Lyme disease	0.09	0.08	0.05	0.09	0.06	-
Malaria	0.70	0.48	0.50	0.41	0.64	0.53
Measles	0.01	0.06	0.09	-	-	0.01
Meningitis, viral	2.55	2.93	4.14	5.02	9.56	8.46
Meningococcal infections	0.55	0.59	0.64	0.50	0.34	0.29
Mumps	0.26	0.32	0.19	0.17	0.11	0.05
Pertussis	2.69	1.14	1.13	1.85	1.38	1.64
Psittacosis	0.01	-	0.01	-	-	-
Q-fever	-	0.01	0.01	0.04	-	0.04
Relapsing fever	0.01	-	-	0.01	-	-
Rheumatic fever, acute	0.01	0.01	0.07	-	-	0.01
Rubella	-	0.03	-	-	-	-
Salmonellosis	12.44	11.04	11.02	10.30	10.58	12.64
Shigellosis	7.56	9.47	7.50	10.50	7.11	6.55
Strongyloidiasis	0.06	0.01	-	-	-	-
Tetanus	0.02	-	0.02	0.02	0.01	0.02
Trichinosis	-	-	-	-	-	-
Tularemia	-	-	-	-	0.01	-
Typhoid fever, case	0.23	0.23	0.19	0.36	0.17	0.14
Typhoid fever, carrier	0.05	0.07	0.01	0.06	0.02	0.03
Typhus fever	0.07	0.19	0.09	0.12	0.13	0.08
Vibrio	0.03	0.14	0.16	0.15	0.14	0.27

[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.

[c] The incidence rate of Hepatitis A may be artificially low due to a reporting error.

Table I. Five –Year Average of Notifiable Diseases by Month of Onset Los Angeles County, 2000-2004

Disease	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Amebiasis	7.4	8.0	8.2	9.0	9.4	7.2	9.6	11.0	9.8	8.4	7.0	8.4	116.4
Botulism	0.2	0.2	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.2	1.2
Brucellosis	0.8	1.0	0.8	0.2	0.2	0.0	1.0	0.8	0.2	1.2	0.4	0.2	7.0
Campylobacteriosis	72.4	60.4	72.2	83.0	112.2	115.6	124.6	113.4	97.6	90.0	79.0	58.2	1086.4
Cholera	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.2
Coccidioidomycosis	6.6	4.2	4.8	6.2	6.4	4.8	7.0	7.2	7.6	6.8	5.0	3.4	78.8
Cryptosporidiosis	6.0	3.6	3.0	4.4	4.6	4.8	6.0	10.0	6.8	3.8	4.6	4.8	66.2
Cysticercosis	2.2	0.8	2.6	2.4	3.0	0.6	1.0	2.2	1.4	1.8	0.6	1.0	21.6
Dengue	0.2	0.4	0.0	0.4	0.4	0.2	0.8	0.2	0.6	0.0	0.2	0.2	4.0
E. *coli* O157:H7	1.8	0.4	1.4	1.0	1.6	3.2	5.8	4.4	3.4	2.2	1.0	0.2	26.6
Encephalitis	3.0	3.4	3.8	3.4	4.0	4.6	7.4	11.4	7.0	4.0	3.6	4.6	63.8
Giardiasis	31.8	22.2	31.4	33.2	33.0	34.6	41.8	42.6	39.2	30.2	30.0	21.8	421.8
Haemophilus influenzae type b	0.4	0.2	0.4	0.2	0.4	0.2	0.0	0.2	0.2	0.0	0.2	0.0	2.4
Hansen's Disease (Leprosy) [a]	-	-	-	-	-	-	-	-	-	-	-	-	-
Hepatitis A[c]	52.4	42.4	42.2	37.2	40.8	35.6	44.0	49.0	54.0	40.2	32.4	25.8	496.0
Hepatitis B	5.2	4.6	5.5	6.0	5.0	5.0	4.2	4.2	2.2	5.6	5.0	5.0	56.4
Hepatitis C[b]	0.2	0.2	0.0	0.2	0.2	0.2	0.2	0.0	0.0	0.2	0.2	0.2	1.8
Hepatitis unspecified	0.0	0.2	0.2	0.0	0.4	0.0	0.0	0.0	0.2	0.0	0.0	0.2	3.6
Kawasaki syndrome	2.6	2.4	4.0	1.6	1.8	2.6	1.2	1.8	1.2	0.8	1.0	1.0	23.2
Legionellosis	1.0	1.6	0.8	1.0	2.0	2.0	1.6	1.2	0.6	1.8	1.8	1.0	18.4
Listeriosis, nonperinatal	0.4	0.6	1.6	1.2	2.2	4.0	2.0	2.2	1.6	1.4	1.0	1.4	19.6
Listeriosis, perinatal	0.0	0.2	0.4	0.8	0.6	0.8	0.6	0.8	0.8	0.4	0.0	0.0	5.4
Lyme disease	0.0	0.0	0.2	0.0	0.0	0.6	0.6	0.6	0.2	0.6	0.0	0.2	3.0
Malaria[a]	-	-	-	-	-	-	-	-	-	-	-	-	-
Measles	0.2	0.4	0.6	0.2	0.6	0.6	0.2	0.0	0.0	0.0	0.0	0.0	2.8
Meningitis, viral	18.0	14.4	16.4	21.2	26.6	44.8	75.4	98.8	72.6	42.6	33.6	18.6	562.6
Meningococcal infections	6.4	5.6	6.0	5.8	1.8	3.0	2.2	1.4	2.0	2.8	1.8	4.0	43.6
Mumps	1.8	2.2	1.4	0.4	2.0	1.4	1.2	0.8	0.8	1.4	0.8	1.2	15.4
Pertussis	10.6	7.2	6.0	8.0	10.2	11.6	11.8	14.6	14.2	14.0	9.8	14.6	132.6
Psittacosis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2
Q-fever	0.4	0.4	0.0	0.2	0.4	0.2	0.0	0.4	0.0	0.0	0.0	0.0	2.0
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	0.0	0.0	0.0	0.2	0.0	0.0	0.2	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	72.0	52.8	68.2	84.0	96.2	103.4	113.6	113.4	113.2	91.4	69.0	52.6	1029.8
Shigellosis	66.0	31.8	33.0	33.0	39.0	54.6	92.2	116.6	97.8	85.2	55.2	52.6	757.0
Strongyloidiasis	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Tetanus	0.2	0.0	0.0	0.0	0.2	0.2	0.0	0.2	0.0	0.4	0.0	0.2	1.4
Trichinosis	0	0	0	0	0	0	0	0	0	0	0	0	0
Tularemia	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Typhoid fever, case	0.8	0.6	2.6	1.8	1.8	3.0	2.2	2.8	2.0	1.0	0.4	1.0	20.0
Typhoid fever, carrier	0.0	0.0	0.8	0.0	0.4	0.6	0.4	0.4	0.2	0.0	0.4	0.2	3.6
Typhus fever	0.2	0.0	0.2	0.6	0.6	1.4	1.4	1.2	1.4	1.2	1.8	0.4	10.2
Vibrio	0.4	0.4	0.4	0.2	0.8	2.0	2.8	2.0	1.8	2.2	1.4	0.2	15.4

[a] Not applicable.

[b] Four years average due to definition changed in 2001.

[c] The number of Hepatitis A cases may be artificially low due to a reporting error.

Table J. Number of Cases of Selected Notifiable Diseases by Age Group
Los Angeles County, 2004

Disease	<1	1-4	5-14	15-34	35-44	45-54	55-64	65+	Total[a]
Amebiasis	1	3	19	35	22	17	6	10	114
Botulism	0	0	0	1	1	1	0	0	3
Brucellosis	0	0	0	2	0	1	1	0	4
Campylobacteriosis	35	102	121	227	116	82	84	117	884
Cholera	0	0	0	0	0	0	0	0	0
Coccidioidomycosis	0	0	1	35	33	33	20	10	133
Cryptosporidiosis	0	4	6	12	18	10	6	0	56
Cysticercosis	0	0	1	4	2	0	0	1	8
Dengue	0	0	2	1	1	1	0	0	5
E. *coli* O157:H7	0	4	4	8	1	0	0	1	18
Encephalitis	4	6	18	17	12	9	16	47	133
Giardiasis	6	57	61	59	64	31	20	16	320
Haemophilus influenzae type b	0	1	0	1	0	0	0	0	2
Hansen's Disease (Leprosy)	0	0	0	5	0	0	2	2	9
Hepatitis A [c]	0	2	26	86	44	39	33	91	321
Hepatitis B	0	0	0	29	18	9	10	6	72
Hepatitis C	0	0	0	1	0	0	1	3	5
Hepatitis unspecified	0	0	0	0	0	0	0	0	0
Kawasaki syndrome	7	29	5	0	0	0	0	0	41
Legionellosis	0	0	0	0	2	2	4	5	15
Listeriosis, nonperinatal	0	0	0	1	0	2	7	11	21
Listeriosis, perinatal[b]	0	0	0	5	1	0	0	0	6
Lyme disease	0	0	0	0	0	0	0	0	0
Malaria	0	1	6	20	10	9	4	1	51
Measles	0	0	0	1	0	0	0	0	1
Meningitis, viral	85	37	192	202	112	78	51	47	807
Meningococcal infections	2	2	4	9	3	3	3	2	28
Mumps	0	0	0	1	2	1	1	0	5
Pertussis	87	10	17	29	4	5	2	1	156
Psittacosis	0	0	0	0	0	0	0	0	0
Q-fever	0	0	0	0	1	3	0	0	4
Relapsing fever	0	0	0	0	0	0	0	0	0
Rheumatic fever, acute	0	0	1	0	0	0	0	0	1
Rubella	0	0	0	0	0	0	0	0	0
Salmonellosis	99	178	218	270	129	109	68	133	1205
Shigellosis	9	139	181	110	82	58	26	20	625
Strongyloidiasis	0	0	0	0	0	0	0	0	0
Tetanus	0	0	0	0	0	2	0	0	2
Trichinosis	0	0	0	0	0	0	0	0	0
Tularemia	0	0	0	0	0	0	0	0	0
Typhoid fever, case	0	1	2	3	3	2	1	1	13
Typhoid fever, carrier	0	0	0	0	0	2	1	0	3
Typhus fever	0	0	0	5	0	2	1	0	8
Vibrio	1	0	0	8	4	1	4	8	26

[a] Totals include cases with unknown age.

[b] Mother's age.

[c] The number of Hepatitis A cases may be artificially low due to a reporting error.

Table K. Incidence Rates of Selected Notifiable Diseases by Age Group
Los Angeles County, 2004

Disease	Age-group Rates (Cases per 100,000) [b]							
	<1	1-4	5-14	15-34	35-44	45-54	55-64	65+
Amebiasis	0.7	0.5	1.3	1.3	1.5	1.4	0.7	1.0
Botulism	-	-	-	-	0.1	0.1	-	-
Brucellosis	-	-	-	0.1	-	0.1	0.1	-
Campylobacteriosis	24.2	17.9	8.1	8.2	7.7	6.5	10.3	12.1
Cholera	-	-	-	-	-	-	-	-
Coccidioidomycosis	-	-	0.1	1.3	2.2	2.6	2.4	1.1
Cryptosporidiosis	-	0.7	0.4	0.4	1.2	0.8	0.7	0.0
Cysticercosis	-	-	0.1	0.1	0.1	-	-	0.1
Dengue	-	-	0.1	-	0.1	0.1	-	-
E. *coli* O157:H7	-	0.7	0.3	0.3	0.1	-	-	0.1
Encephalitis	2.8	1.1	1.2	0.6	0.8	0.7	2.0	4.8
Giardiasis	4.2	10.0	4.1	2.1	4.2	2.5	2.4	1.7
Haemophilus influenzae type b	-	0.2	-	-	-	-	-	-
Hansen's Disease (Leprosy)	-	-	-	0.2	-	-	0.2	0.2
Hepatitis A[c]	-	0.4	1.8	3.1	2.9	3.1	4.0	9.4
Hepatitis B	-	-	-	1.0	1.2	0.7	1.2	0.6
Hepatitis C	-	-	-	-	-	-	0.1	0.3
Hepatitis unspecified	-	-	-	-	-		-	-
Kawasaki syndrome	4.8	5.1	0.3	-	-	-	-	-
Legionellosis	-	-	-	-	0.1	0.2	0.5	0.5
Listeriosis, nonperinatal	-	-	-	-	-	0.2	0.9	1.1
Listeriosis, perinatal[a]	-	-	-	4.3	4.0	-	-	-
Lyme disease	-	-	-	-	-	-	-	-
Malaria	-	0.2	0.4	0.7	0.7	0.7	0.5	0.1
Measles	-	-	-	-	-	-	-	-
Meningitis, viral	58.9	6.5	12.9	7.3	7.4	6.2	6.2	4.8
Meningococcal infections	1.4	0.4	0.3	0.3	0.2	0.2	0.4	0.2
Mumps	-	-	-	-	0.1	0.1	0.1	-
Pertussis	60.2	1.8	1.1	1.0	0.3	0.4	0.2	0.1
Psittacosis	-	-	-	-	-	-	-	-
Q-fever	-	-	-	-	0.1	0.2	-	-
Relapsing fever	-	-	-	-	-	-	-	-
Rheumatic fever, acute	-	-	0.1	-	-	-	-	-
Rubella	-	-	-	-	-	-	-	-
Salmonellosis	68.6	31.3	14.7	9.7	8.5	8.7	8.3	13.7
Shigellosis	6.2	24.5	12.2	4.0	5.4	4.6	3.2	2.1
Strongyloidiasis	-	-	-	-	-	-	-	-
Tetanus	-	-	-	-	-	0.2	-	-
Trichinosis	-	-	-	-	-	-	-	-
Tularemia	-	-	-	-	-	-	-	-
Typhoid fever, case	-	0.2	0.1	0.1	0.2	0.2	0.1	0.1-
Typhoid fever, carrier	-	-	-	-	-	0.2	0.1	-
Typhus fever	-	-	-	0.2	-	0.2	0.1	-
Vibrio	0.7	-	-	0.3	0.3	0.1	0.5	0.8

[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.

[c] The incidence rate Hepatitis A may be artificially low due to a reporting error.

Table L. Number of Cases of Selected Notifiable Diseases by Race/Ethnicity Los Angeles County, 2004

Disease	Asian	Black	Hispanic	White	Other[a]	Unknown
Amebiasis	3	13	53	37	5	0
Botulism	0	0	3	0	0	0
Brucellosis	0	0	3	1	0	0
Campylobacteriosis	98	30	370	374	3	9
Cholera	0	0	0	0	0	0
Coccidioidomycosis	11	24	50	41	1	3
Cryptosporidiosis	2	13	20	17	0	4
Cysticercosis	0	0	7	1	0	0
Dengue	2	0	0	2	0	1
E. *coli* O157:H7	6	0	2	10	0	0
Encephalitis	9	8	45	63	2	6
Giardiasis	34	15	118	129	13	4
Haemophilus influenzae type b	0	1	1	0	0	0
Hansen's Disease (Leprosy)	4	0	5	0	0	0
Hepatitis A [c]	58	15	95	107	3	42
Hepatitis B	12	12	23	24	0	1
Hepatitis C	0	0	1	4	0	0
Hepatitis unspecified	0	0	0	0	0	0
Kawasaki syndrome	12	5	19	4	1	0
Legionellosis	1	1	5	3	0	0
Listeriosis, nonperinatal	1	3	8	9	0	0
Listeriosis, perinatal[b]	0	0	4	2	0	0
Lyme disease	0	0	0	0	0	0
Malaria	7	26	12	5	0	0
Measles	1	0	0	0	0	0
Meningitis, viral	33	85	416	224	9	33
Meningococcal infections	1	4	14	9	0	0
Mumps	0	0	1	3	0	1
Pertussis	5	7	101	41	0	2
Psittacosis	0	0	0	0	0	0
Q-fever	0	1	1	2	0	0
Relapsing fever	0	0	0	0	0	0
Rheumatic fever, acute	0	0	0	1	0	0
Rubella	0	0	0	0	0	0
Salmonellosis	98	104	574	367	1	11
Shigellosis	11	24	461	113	0	15
Strongyloidiasis	0	0	0	0	0	0
Tetanus	0	0	2	0	0	0
Trichinosis	0	0	0	0	0	0
Tularemia	0	0	0	0	0	0
Typhoid fever, case	3	0	5	5	0	0
Typhoid fever, carrier	0	0	2	1	0	0
Typhus fever	0	0	2	6	0	0
Vibrio	1	2	12	8	0	3

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

[b]Mother's race.

[c]The number of Hepatitis A cases may be artificially low due to a reporting error.

Table M. Incidence Rates of Selected Notifiable Diseases by Race/Ethnicity
Los Angeles County, 2004

Disease	Race/Ethnicity Rates (Cases per 100,000) [b]			
	Asian	Black	Hispanic	White
Amebiasis	0.2	1.5	1.2	1.3
Botulism	-	-	0.1	-
Brucellosis	-	-	0.1	-
Campylobacteriosis	7.7	3.4	8.3	13.0
Cholera	-	-	-	-
Coccidioidomycosis	0.9	2.7	1.1	1.4
Cryptosporidiosis	0.2	1.5	0.4	0.6
Cysticercosis	-	-	0.2	-
Dengue	0.2	-	-	0.1
E. *coli* O157:H7	0.5	-	-	0.3
Encephalitis	0.7	0.9	1.0	2.2
Giardiasis	2.7	1.7	2.6	4.5
Haemophilus influenzae type b	-	-	-	-
Hansen's Disease (Leprosy)	0.3	-	0.1	-
Hepatitis A[c]	4.6	1.7	2.1	3.7
Hepatitis B	0.9	1.4	0.5	0.8
Hepatitis C	-	-	-	0.1
Hepatitis unspecified	-	-	-	-
Kawasaki syndrome	0.9	0.6	0.4	0.1
Legionellosis	0.1	0.1	0.1	0.1
Listeriosis, nonperinatal	0.1	0.3	0.2	0.3
Listeriosis, perinatal[a]	-	-	4.5	7.9
Lyme disease	-	-	-	-
Malaria	0.6	2.9	0.3	0.2
Measles	0.1	-	-	-
Meningitis, viral	2.6	9.6	9.3	7.8
Meningococcal infections	0.1	0.5	0.3	0.3
Mumps	-	-	-	0.1
Pertussis	0.4	0.8	2.3	1.4
Psittacosis	-	-	-	-
Q-fever	-	0.1	-	0.1
Relapsing fever	-	-	-	-
Rheumatic fever, acute	-	-	-	-
Rubella	-	-	-	-
Salmonellosis	7.7	11.7	12.8	12.7
Shigellosis	0.9	2.7	10.3	3.9
Strongyloidiasis	-	-	-	-
Tetanus	-	-	-	-
Trichinosis	-	-	-	-
Tularemia	-	-	-	-
Typhoid fever, case	0.2	-	0.1	0.2
Typhoid fever, carrier	-	-	-	-
Typhus fever	-	-	-	0.2
Vibrio	0.1	0.2	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.

[c] The incidence rate of Hepatitis A may be artificially low due to a reporting error.

Table N. Number of Cases and Annual Incidence Rate of Selected Notifiable Diseases by Sex
Los Angeles County, 2004

Disease	Male		Female	
	Cases	Rate (Cases per 100,000)[b]	Cases	Rate (Cases per 100,000)[b]
Amebiasis	73	1.5	40	0.8
Botulism	3	0.1	0	-
Brucellosis	1	0.0	3	0.1
Campylobacteriosis	494	10.5	388	8.0
Cholera	0	-	0	-
Coccidioidomycosis	85	1.8	48	1.0
Cryptosporidiosis	42	0.9	14	0.3
Cysticercosis	4	0.1	4	0.1
Dengue	4	0.1	1	0.0
E. *coli* O157:H7	12	0.3	6	0.1
Encephalitis	78	1.7	54	1.1
Giardiasis	198	4.2	118	2.4
Haemophilus influenzae type b	1	0.0	1	0.0
Hansen's Disease (Leprosy)	6	0.1	3	0.1
Hepatitis A[c]	151	3.2	166	3.4
Hepatitis B	53	1.1	19	0.4
Hepatitis C	4	0.1	1	0.0
Hepatitis unspecified	0	-	0	-
Kawasaki syndrome	23	0.5	18	0.4
Legionellosis	6	0.1	8	0.2
Listeriosis, nonperinatal	12	0.3	9	0.2
Listeriosis, perinatal[a]	2	2.8	3	4.3
Lyme disease	0	-	0	-
Malaria	34	0.7	17	0.4
Measles	1	0.0	0	-
Meningitis, viral	430	9.1	374	7.8
Meningococcal infections	15	0.3	13	0.3
Mumps	2	0.0	3	0.1
Pertussis	74	1.6	82	1.7
Psittacosis	0	-	0	-
Q-fever	4	0.1	0	-
Relapsing fever	0	-	0	-
Rheumatic fever, acute	0	-	1	0.0
Rubella	0	-	0	-
Salmonellosis	555	11.8	650	13.5
Shigellosis	339	7.2	286	5.9
Strongyloidiasis	0	-	0	-
Tetanus	1	0.0	1	0.0
Trichinosis	0	-	0	-
Tularemia	0	-	0	-
Typhoid fever, case	5	0.1	8	0.2
Typhoid fever, carrier	2	0.0	1	0.0
Typhus fever	4	0.1	4	0.1
Vibrio	18	0.4	8	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.

[c] The number of cases and incidence rate of Hepatitis A may be artificially low due to a reporting error.

Table O-1. Selected Notifiable Diseases
SPA 1. Antelope Valley Area
Los Angeles County, 2004

Disease	Frequency	Rate (Cases per 100,000) [b]
	Antelope	Antelope
Amebiasis	4	1.2
Botulism	0	-
Brucellosis	1	0.3
Campylobacteriosis	16	4.8
Cholera	0	-
Coccidioidomycosis	50	14.9
Cryptosporidiosis	5	1.5
Cysticercosis	1	0.3
Dengue	0	-
E. *coli* O157:H7	0	-
Encephalitis	5	1.5
Giardiasis	13	3.9
Haemophilus influenzae type b	0	-
Hansen's Disease (Leprosy)	0	-
Hepatitis A[c]	8	2.4
Hepatitis B	0	-
Hepatitis C	0	-
Hepatitis unspecified	0	-
Kawasaki syndrome	0	-
Legionellosis	0	-
Listeriosis, nonperinatal	0	-
Listeriosis, perinatal[a]	0	-
Lyme disease	0	-
Malaria	2	0.6
Measles	0	-
Meningitis, viral	41	12.2
Meningococcal infections	1	0.3
Mumps	0	-
Pertussis	5	1.5
Psittacosis	0	-
Q-fever	2	0.6
Relapsing fever	0	-
Rheumatic fever, acute	0	-
Rubella	0	-
Salmonellosis	31	9.3
Shigellosis	8	2.4
Strongyloidiasis	0	-
Tetanus	0	-
Trichinosis	0	-
Tularemia	0	-
Typhoid fever, case	1	0.3
Typhoid fever, carrier	0	-
Typhus fever	0	-
Vibrio	1	0.3

[a]Rates for perinatal listeriosis were calculated as cases per 100,000 women aged 15 to 44 years.

[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.

[c]The number of cases and incidence rate of Hepatitis A may be artificially low due to a reporting error.

Table O-2. Selected Notifiable Diseases
SPA 2. San Fernando Area
Los Angeles County, 2004

Disease	Frequency					Rate (Cases per 100,000) [b]				
	EV	GL	SF	WV	TOTAL	EV	GL	SF	WV	TOTAL
Amebiasis	2	7	4	17	30	0.5	2.0	0.9	2.0	1.4
Botulism	0	0	0	0	0	-	-	-	-	-
Brucellosis	0	0	0	0	0	-	-	-	-	-
Campylobacteriosis	30	37	53	85	205	6.8	10.5	11.4	10.0	9.7
Cholera	0	0	0	0	0	-	-	-	-	-
Coccidioidomycosis	2	4	4	24	34	0.5	1.1	0.9	2.8	1.6
Cryptosporidiosis	3	0	1	5	9	0.7	-	0.2	0.6	0.4
Cysticercosis	0	0	2	0	2	-	-	0.4	-	0.1
Dengue	0	0	0	1	1	-	-	-	0.1	0.0
E. *coli* O157:H7	2	1	2	2	7	0.5	0.3	0.4	0.2	0.3
Encephalitis	5	6	10	12	33	1.1	1.7	2.1	1.4	1.6
Giardiasis	14	23	16	34	87	3.2	6.5	3.4	4.0	4.1
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[c]	8	22	11	32	73	1.8	6.2	2.4	3.8	3.5
Hepatitis B	3	1	1	14	19	0.7	0.3	0.2	1.7	0.9
Hepatitis C	1	1	1	0	3	0.2	0.3	0.2	-	0.1
Hepatitis unspecified	0	0	0	0	0	-	-	-	-	-
Kawasaki syndrome	0	0	2	1	3	-	-	0.4	0.1	0.1
Legionellosis	0	3	0	1	4	-	0.9	-	0.1	0.2
Listeriosis, nonperinatal	0	0	2	4	6	-	-	0.4	0.5	0.3
Listeriosis, perinatal[a]	0	0	2	0	2	-	-	2.0	-	0.4
Lyme disease	0	0	0	0	0	-	-	-	-	-
Malaria	4	1	2	5	12	0.9	0.3	0.4	0.6	0.6
Measles	0	0	0	0	0	-	-	-	-	-
Meningitis, viral	17	26	55	54	152	3.8	7.4	11.8	6.4	7.2
Meningococcal infections	0	0	0	8	8	-	-	-	0.9	0.4
Mumps	0	0	0	3	3	-	-	-	0.4	0.1
Pertussis	3	4	6	8	21	0.7	1.1	1.3	0.9	1.0
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	1	1	-	-	-	0.1	0.0
Rubella	0	0	0	0	0	-	-	-	-	-
Salmonellosis	29	44	74	139	286	6.5	12.5	15.9	16.4	13.6
Shigellosis	19	15	20	62	116	4.3	4.3	4.3	7.3	5.5
Strongyloidiasis	0	0	0	0	0	-	-	-	-	-
Tetanus	0	0	0	1	1	-	-	-	0.1	0.0
Trichinosis	0	0	0	0	0	-	-	-	-	-
Tularemia	0	0	0	0	0	-	-	-	-	-
Typhoid fever, case	1	0	0	0	1	0.2	-	-	-	0.0
Typhoid fever, carrier	0	0	0	0	0	-	-	-	-	-
Typhus fever	0	0	0	0	0	-	-	-	-	-
VIbrio	2	2	1	0	5	0.5	0.6	0.2	-	0.2

[a] Rates for perinatal listeriosis were calculated as cases per 100,000 women aged 15 to 44 years.

[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.

[c] The number of cases and incidence rate of Hepatitis A may be artificially low due to a reporting error.

Table O-3. Selected Notifiable Diseases
SPA 3. San Gabriel Area
Los Angeles County, 2004

Disease	Frequency					Rate (Cases per 100,000) [b]				
	AH	EM	FH	PO	TOTAL	AH	EM	FH	PO	TOTAL
Amebiasis	3	0	5	5	13	0.8	-	1.6	0.9	0.8
Botulism	0	0	1	1	2	-	-	0.3	0.2	0.1
Brucellosis	0	0	0	1	1	-	-	-	0.2	0.1
Campylobacteriosis	38	10	34	42	124	10.7	2.2	10.9	7.4	7.3
Cholera	0	0	0	0	0	-	-	-	-	-
Coccidioidomycosis	1	0	1	2	4	0.3	-	0.3	0.4	0.2
Cryptosporidiosis	0	0	3	2	5	-	-	1.0	0.4	0.3
Cysticercosis	0	0	1	1	2	-	-	0.3	0.2	0.1
Dengue	1	0	1	1	3	0.3	-	0.3	0.2	0.2
E. *coli* O157:H7	2	1	0	2	5	0.6	0.2	-	0.4	0.3
Encephalitis	13	0	13	9	35	3.6	-	4.2	1.6	2.1
Giardiasis	23	3	9	16	51	6.4	0.6	2.9	2.8	3.0
Haemophilus influenzae type b	0	0	0	0	0	-	-	-	-	-
Hansen's Disease (Leprosy)	1	1	0	0	2	0.3	0.2	-	-	0.1
Hepatitis A[c]	15	1	15	19	50	4.2	0.2	4.8	3.3	2.9
Hepatitis B	2	2	4	3	11	0.6	0.4	1.3	0.5	0.6
Hepatitis C	0	0	0	1	1	-	-	-	0.2	0.1
Hepatitis unspecified	0	0	0	0	0	-	-	-	-	-
Kawasaki syndrome	0	1	2	2	5	-	0.2	0.6	0.4	0.3
Legionellosis	2	0	1	1	4	0.6	-	0.3	0.2	0.2
Listeriosis, nonperinatal	1	1	0	2	4	0.3	0.2	-	0.4	0.2
Listeriosis, perinatal[a]	0	0	0	0	0	-	-	-	-	-
Lyme disease	0	0	0	0	0	-	-	-	-	-
Malaria	0	0	1	8	9	-	-	0.3	1.4	0.5
Measles	0	0	0	0	0	-	-	-	-	-
Meningitis, viral	39	11	61	58	169	10.9	2.4	19.6	10.2	9.9
Meningococcal infections	2	3	0	1	6	0.6	0.6	-	0.2	0.4
Mumps	0	0	0	0	0	-	-	-	-	-
Pertussis	7	1	10	6	24	2.0	0.2	3.2	1.1	1.4
Psittacosis	0	0	0	0	0	-	-	-	-	-
Q-fever	0	0	1	0	1	-	-	0.3	-	0.1
Relapsing fever	0	0	0	0	0	-	-	-	-	-
Rheumatic fever, acute	0	0	0	0	0	-	-	-	-	-
Rubella	0	0	0	0	0	-	-	-	-	-
Salmonellosis	38	16	76	59	189	10.7	3.4	24.5	10.4	11.1
Shigellosis	21	3	17	24	65	5.9	0.6	5.5	4.2	3.8
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	0	0	1	0	1	-	-	0.3	-	0.1
Typhoid fever, carrier	1	0	0	0	1	0.3	-	-	-	0.1
Typhus fever	2	0	1	0	3	0.6	-	0.3	-	0.2
Vibrio	1	0	0	1	2	0.3	-	-	0.2	0.1

[a] Rates for perinatal listeriosis were calculated as cases per 100,000 women aged 15 to 44 years.

[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.

[c] The number of cases and incidence rate of Hepatitis A may be artificially low due to a reporting error.

Table O-4. Selected Notifiable Diseases
SPA 4. Metro Area
Los Angeles County, 2004

Disease	Frequency				Rate (Cases per 100,000) [b]			
	CE	HW	NE	TOTAL	CE	HW	NE	TOTAL
Amebiasis	5	13	2	20	1.3	2.4	0.6	1.6
Botulism	0	0	0	0	-	-	-	-
Brucellosis	0	1	0	1	-	0.2	-	0.1
Campylobacteriosis	32	46	32	110	8.6	8.6	9.6	8.9
Cholera	0	0	0	0	-	-	-	-
Coccidioidomycosis	7	2	1	10	1.9	0.4	0.3	0.8
Cryptosporidiosis	8	11	1	20	2.2	2.1	0.3	1.6
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	4	1	2	7	1.1	0.2	0.6	0.6
Giardiasis	12	32	17	61	3.2	6.0	5.1	4.9
Haemophilus influenzae type b	0	0	0	0	-	-	-	-
Hansen's Disease (Leprosy)	0	1	2	3	-	0.2	0.6	0.2
Hepatitis A[c]	12	37	9	58	3.2	6.9	2.7	4.7
Hepatitis B	2	10	2	14	0.5	1.9	0.6	1.1
Hepatitis C	0	0	0	0	-	-	-	-
Hepatitis unspecified	0	0	0	0	-	-	-	-
Kawasaki syndrome	3	3	1	7	0.8	0.6	0.3	0.6
Legionellosis	1	0	0	1	0.3	-	-	0.1
Listeriosis, nonperinatal	1	2	0	3	0.3	0.4	-	0.2
Listeriosis, perinatal[a]	0	0	0	0	-	-	-	-
Lyme disease	0	0	0	0	-	-	-	-
Malaria	3	4	0	7	0.8	0.7	-	0.6
Measles	0	0	0	0	-	-	-	-
Meningitis, viral	18	18	20	56	4.8	3.4	6.0	4.5
Meningococcal infections	0	3	1	4	-	0.6	0.3	0.3
Mumps	0	0	0	0	-	-	-	-
Pertussis	11	9	5	25	3.0	1.7	1.5	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	55	68	46	169	14.8	12.7	13.8	13.6
Shigellosis	49	64	34	147	13.2	12.0	10.2	11.9
Strongyloidiasis	0	0	0	0	-	-	-	-
Tetanus	0	0	0	0	-	-	-	-
Trichinosis	0	0	0	0	-	-	-	-
Tularemia	0	0	0	0	-	-	-	-
Typhoid fever, case	0	4	1	5	-	0.7	0.3	0.4
Typhoid fever, carrier	0	0	0	0	-	-	-	-
Typhus fever	1	0	3	4	0.3	-	0.9	0.3
Vibrio	2	2	1	5	0.5	0.4	0.3	0.4

[a] Rates for perinatal listeriosis were calculated as cases per 100,000 women aged 15 to 44 years.

[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.

[c] The number of cases and incidence rate of Hepatitis A may be artificially low due to a reporting error.

Table O-5. Selected Notifiable Diseases
SPA 5. West Area
Los Angeles County, 2004

Disease	Frequency	Rate (Cases per 100,000) [b]
	West	West
Amebiasis	19	2.9
Botulism	0	-
Brucellosis	0	-
Campylobacteriosis	123	19.0
Cholera	0	-
Coccidioidomycosis	4	0.6
Cryptosporidiosis	4	0.6
Cysticercosis	1	0.2
Dengue	0	-
E. *coli* O157:H7	1	0.2
Encephalitis	2	0.3
Giardiasis	44	6.8
Haemophilus influenzae type b	0	-
Hansen's Disease (Leprosy)	0	-
Hepatitis A[c]	16	2.5
Hepatitis B	7	1.1
Hepatitis C	0	-
Hepatitis unspecified	0	-
Kawasaki syndrome	3	0.5
Legionellosis	2	0.3
Listeriosis, nonperinatal	3	0.5
Listeriosis, perinatal[a]	2	1.3
Lyme disease	0	-
Malaria	7	1.1
Measles	0	-
Meningitis, viral	28	4.3
Meningococcal infections	1	0.2
Mumps	1	0.2
Pertussis	10	1.5
Psittacosis	0	-
Q-fever	0	-
Relapsing fever	0	-
Rheumatic fever, acute	0	-
Rubella	0	-
Salmonellosis	96	14.8
Shigellosis	40	6.2
Strongyloidiasis	0	-
Tetanus	0	-
Trichinosis	0	-
Tularemia	0	-
Typhoid fever, case	2	0.3
Typhoid fever, carrier	1	0.2
Typhus fever	0	-
Vibrio	3	0.5

[a] Rates for perinatal listeriosis were calculated as cases per 100,000 women aged 15 to 44 years.

[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.

[c] The number of cases and incidence rate of Hepatitis A may be artificially low due to a reporting error.

Table O-6. Selected Notifiable Diseases
SPA 6. South Area
Los Angeles County, 2004

Disease	Frequency					Rate (Cases per 100,000) [b]				
	CN	SO	SE	SW	TOTAL	CN	SO	SE	SW	TOTAL
Amebiasis	1	4	3	4	12	0.3	2.2	1.8	1.0	1.2
Botulism	1	0	0	0	1	0.3	-	-	-	0.1
Brucellosis	0	0	0	0	0	-	-	-	-	-
Campylobacteriosis	18	5	16	23	62	6.2	2.8	9.5	5.8	6.0
Cholera	0	0	0	0	0	-	-	-	-	-
Coccidioidomycosis	2	1	2	5	10	0.7	0.6	1.2	1.3	1.0
Cryptosporidiosis	1	1	0	3	5	0.3	0.6	-	0.8	0.5
Cysticercosis	0	0	1	0	1	-	-	0.6	-	0.1
Dengue	0	0	0	0	0	-	-	-	-	-
E. *coli* O157:H7	0	0	0	0	0	-	-	-	-	-
Encephalitis	4	2	0	4	10	1.4	1.1	-	1.0	1.0
Giardiasis	6	1	7	3	17	2.1	0.6	4.1	0.8	1.6
Haemophilus influenzae type b	0	1	0	0	1	-	0.6	-	-	0.1
Hansen's Disease (Leprosy)	0	0	0	0	0	-	-	-	-	-
Hepatitis A[c]	14	4	8	13	39	4.9	2.2	4.7	3.3	3.8
Hepatitis B	2	2	0	2	6	0.7	1.1	-	0.5	0.6
Hepatitis C	0	0	0	0	0	-	-	-	-	-
Hepatitis unspecified	0	0	0	0	0	-	-	-	-	-
Kawasaki syndrome	0	1	1	3	5	-	0.6	0.6	0.8	0.5
Legionellosis	1	0	0	0	1	0.3	-	-	-	0.1
Listeriosis, nonperinatal	0	1	0	0	1	-	0.6	-	-	0.1
Listeriosis, perinatal[a]	0	0	0	0	0	-	-	-	-	-
Lyme disease	0	0	0	0	0	-	-	-	-	-
Malaria	0	0	1	4	5	-	-	0.6	1.0	0.5
Measles	0	0	0	0	0	-	-	-	-	-
Meningitis, viral	35	18	9	25	87	12.1	10.0	5.3	6.3	8.4
Meningococcal infections	1	1	0	0	2	0.3	0.6	-	-	0.2
Mumps	0	0	0	0	0	-	-	-	-	-
Pertussis	13	4	1	6	24	4.5	2.2	0.6	1.5	2.3
Psittacosis	0	0	0	0	0	-	-	-	-	-
Q-fever	1	0	0	0	1	0.3	-	-	-	0.1
Relapsing fever	0	0	0	0	0	-	-	-	-	-
Rheumatic fever, acute	0	0	0	0	0	-	-	-	-	-
Rubella	0	0	0	0	0	-	-	-	-	-
Salmonellosis	35	15	27	51	128	12.1	8.3	16.0	12.9	12.4
Shigellosis	30	23	22	29	104	10.4	12.8	13.0	7.3	10.1
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	0	0	0	1	0.3	-	-	-	0.1
Typhoid fever, carrier	0	1	0	0	1	-	0.6	-	-	0.1
Typhus fever	0	0	1	0	1	-	-	0.6	-	0.1
VIbrio	0	1	1	2	4	-	0.6	0.6	0.5	0.4

[a] Rates for perinatal listeriosis were calculated as cases per 100,000 women aged 15 to 44 years.

[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.

[c] The number of cases and incidence rate of Hepatitis A may be artificially low due to a reporting error.

Table O-7. Selected Notifiable Diseases
SPA 7. East Area
Los Angeles County, 2004

Disease	Frequency					Rate (Cases per 100,000) [b]				
	BF	EL	SA	WH	TOTAL	BF	EL	SA	WH	TOTAL
Amebiasis	2	2	5	1	10	0.5	0.9	1.1	0.3	0.7
Botulism	0	0	0	0	0	-	-	-	-	-
Brucellosis	0	0	0	0	0	-	-	-	-	-
Campylobacteriosis	25	25	34	43	127	6.8	11.1	7.6	13.2	9.3
Cholera	0	0	0	0	0	-	-	-	-	-
Coccidioidomycosis	0	2	5	4	11	-	0.9	1.1	1.2	0.8
Cryptosporidiosis	1	0	3	0	4	0.3	-	0.7	-	0.3
Cysticercosis	0	0	0	0	0	-	-	-	-	-
Dengue	0	0	0	0	0	-	-	-	-	-
E. *coli* O157:H7	0	0	1	0	1	-	-	0.2	-	0.1
Encephalitis	7	1	4	6	18	1.9	0.4	0.9	1.8	1.3
Giardiasis	4	8	6	4	22	1.1	3.6	1.3	1.2	1.6
Haemophilus influenzae type b	0	0	1	0	1	-	-	0.2	-	0.1
Hansen's Disease (Leprosy)	0	0	0	1	1	-	-	-	0.3	0.1
Hepatitis A[c]	7	11	25	12	55	1.9	4.9	5.6	3.7	4.0
Hepatitis B	1	4	2	0	7	0.3	1.8	0.4	-	0.5
Hepatitis C	0	0	0	0	0	-	-	-	-	-
Hepatitis unspecified	0	0	0	0	0	-	-	-	-	-
Kawasaki syndrome	3	1	2	1	7	0.8	0.4	0.4	0.3	0.5
Legionellosis	0	0	0	2	2	-	-	-	0.6	0.1
Listeriosis, nonperinatal	0	0	3	0	3	-	-	0.7	-	0.2
Listeriosis, perinatal[a]	0	1	1	0	2	-	2.0	1.0	-	0.7
Lyme disease	0	0	0	0	0	-	-	-	-	-
Malaria	2	0	0	0	2	0.5	-	-	-	0.1
Measles	0	0	0	0	0	-	-	-	-	-
Meningitis, viral	47	21	59	50	177	12.7	9.3	13.2	15.3	12.9
Meningococcal infections	0	1	2	1	4	-	0.4	0.4	0.3	0.3
Mumps	0	0	0	0	0	-	-	-	-	-
Pertussis	7	5	4	2	18	1.9	2.2	0.9	0.6	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	29	19	47	41	136	7.8	8.5	10.5	12.5	9.9
Shigellosis	15	14	36	28	93	4.1	6.2	8.0	8.6	6.8
Strongyloidiasis	0	0	0	0	0	-	-	-	-	-
Tetanus	1	0	0	0	1	0.3	-	-	-	0.1
Trichinosis	0	0	0	0	0	-	-	-	-	-
Tularemia	0	0	0	0	0	-	-	-	-	-
Typhoid fever, case	1	0	0	0	1	0.3	-	-	-	0.1
Typhoid fever, carrier	0	0	0	0	0	-	-	-	-	-
Typhus fever	0	0	0	0	0	-	-	-	-	-
VIbrio	1	0	1	0	2	0.3	-	0.2	-	0.1

[a] Rates for perinatal listeriosis were calculated as cases per 100,000 women aged 15 to 44 years.

[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.

[c] The number of cases and incidence rate of Hepatitis A may be artificially low due to a reporting error.

Table O-8. Selected Notifiable Diseases
SPA 8. South Bay Area
Los Angeles County, 2004

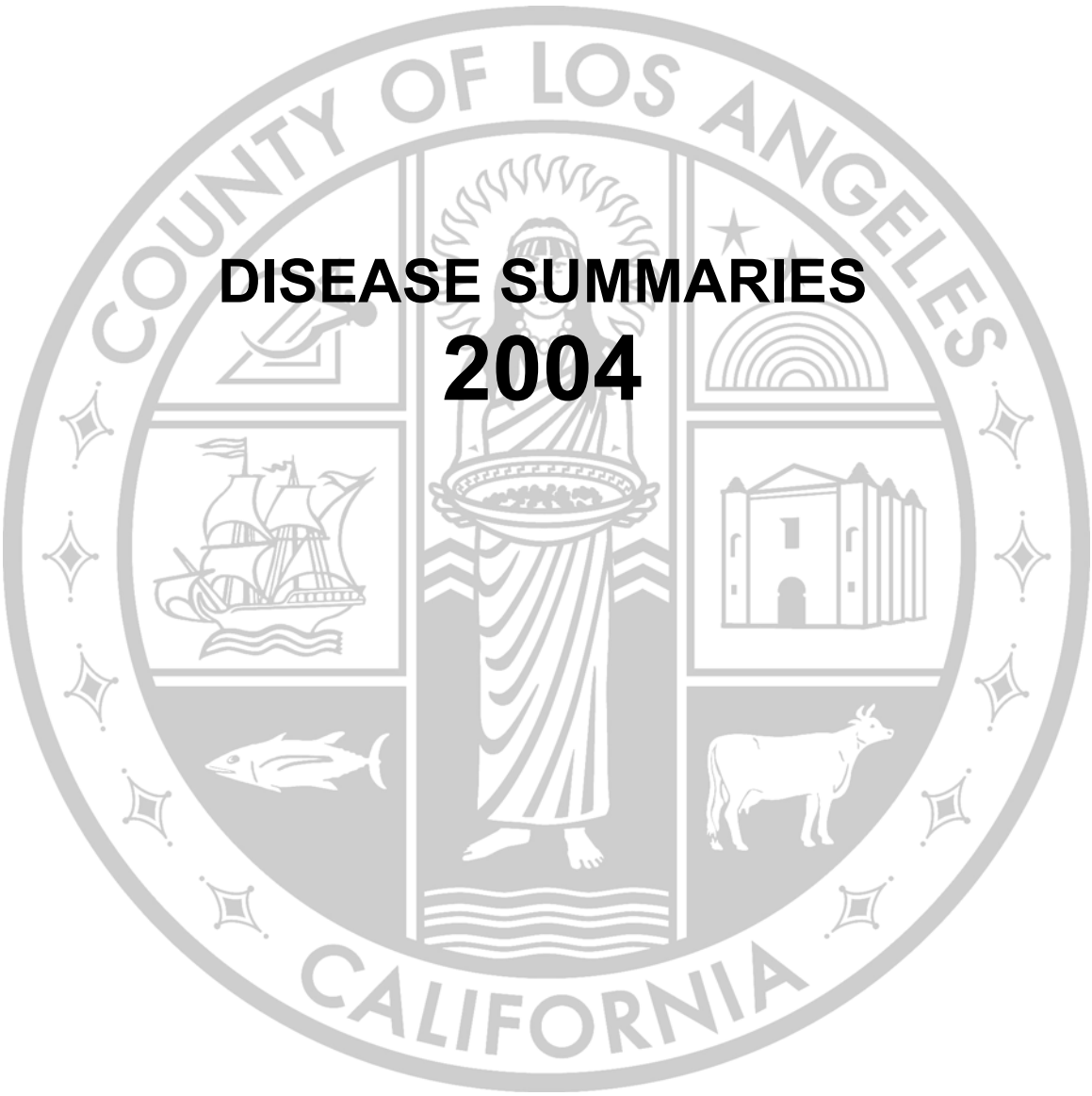
Disease	Frequency				Rate (Cases per 100,000)[b]			
	HB	IW	TO	TOTAL	HB	IW	TO	TOTAL
Amebiasis	1	4	1	6	0.5	0.9	0.2	0.5
Botulism	0	0	0	0	-	-	-	-
Brucellosis	0	0	1	1	-	-	0.2	0.1
Campylobacteriosis	32	29	56	117	15.4	6.7	12.0	10.6
Cholera	0	0	0	0	-	-	-	-
Coccidioidomycosis	4	4	2	10	1.9	0.9	0.4	0.9
Cryptosporidiosis	1	3	0	4	0.5	0.7	-	0.4
Cysticercosis	0	0	0	0	-	-	-	-
Dengue	1	0	0	1	0.5	-	-	0.1
E. *coli* O157:H7	2	0	1	3	1.0	-	0.2	0.3
Encephalitis	4	4	3	11	1.9	0.9	0.6	1.0
Giardiasis	11	5	8	24	5.3	1.2	1.7	2.2
Haemophilus influenzae type b	0	0	0	0	-	-	-	-
Hansen's Disease (Leprosy)	0	0	0	0	-	-	-	-
Hepatitis A[c]	1	13	8	22	0.5	3.0	1.7	2.0
Hepatitis B	4	3	1	8	1.9	0.7	0.2	0.7
Hepatitis C	0	0	1	1	-	-	0.2	0.1
Hepatitis unspecified	0	0	0	0	-	-	-	-
Kawasaki syndrome	0	7	4	11	-	1.6	0.9	1.0
Legionellosis	0	1	0	1	-	0.2	-	0.1
Listeriosis, nonperinatal	0	1	0	1	-	0.2	-	0.1
Listeriosis, perinatal[a]	0	0	0	0	-	-	-	-
Lyme disease	0	0	0	0	-	-	-	-
Malaria	0	4	2	6	-	0.9	0.4	0.5
Measles	0	0	1	1	-	-	0.2	0.1
Meningitis, viral	26	28	34	88	12.5	6.5	7.3	8.0
Meningococcal infections	1	1	0	2	0.5	0.2	-	0.2
Mumps	0	1	0	1	-	0.2	-	0.1
Pertussis	8	6	15	29	3.9	1.4	3.2	2.6
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	38	55	75	168	18.3	12.8	16.1	15.2
Shigellosis	11	27	14	52	5.3	6.3	3.0	4.7
Strongyloidiasis	0	0	0	0	-	-	-	-
Tetanus	0	0	0	0	-	-	-	-
Trichinosis	0	0	0	0	-	-	-	-
Tularemia	0	0	0	0	-	-	-	-
Typhoid fever, case	1	0	0	1	0.5	-	-	0.1
Typhoid fever, carrier	0	0	0	0	-	-	-	-
Typhus fever	0	0	0	0	-	-	-	-
Vibrio	1	0	2	3	0.5	-	0.4	0.3

[a] Rates for perinatal listeriosis were calculated as cases per 100,000 women aged 15 to 44 years.

[b] Rates of disease based on less than 20 cases or events are considered "unreliable." A zero rate made from no events is especiallly 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.

[c] The number of cases and incidence rate of Hepatitis A may be artificially low due to a reporting error.

DISEASE SUMMARIES
2004

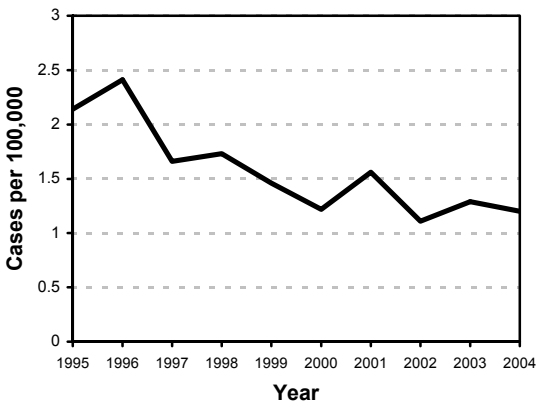


AMEBIASIS

CRUDE DATA	
Number of Cases	114
Annual Incidence[a]	
LA County	1.20
United States	N/A
Age at Diagnosis	
Mean	34
Median	34
Range	2–86 years
Case Fatality	
LA County	0%
United States	N/A

[a] Cases per 100,000 population.

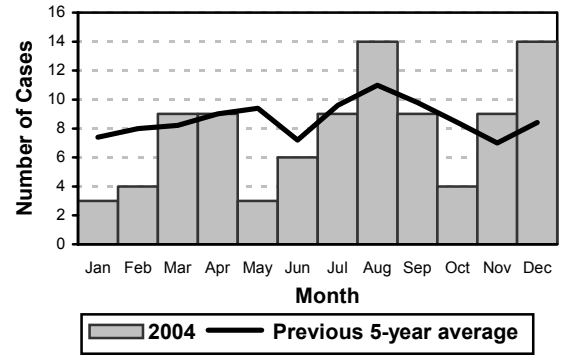
Figure 1
Amebiasis
Incidence Rates by Year
LAC, 1995–2004



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 fomites. Incubation period is 1-4 weeks. 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, 2004



DISEASE ABSTRACT

- Amebiasis incidence has decreased substantially over the past 10 years, in 2004 the rate decreased only slightly from 2003 (1.29 to 1.20 per 100,000).
- 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 2004.

STRATIFIED DATA

Trends: After a small increase in 2003, the 2004 amebiasis incidence rate decreased slightly to 1.20 per 100,000 (Figure 1).

Seasonality: Amebiasis incidence usually peaks during the summer months. In 2004, however, the greatest number of cases occurred in August and December (Figure 2).

Age: While amebiasis is ubiquitous, it is a disease more often contracted among adults (Figure 3). About two-thirds of the cases occurring in LAC during 2004 were among those aged 15–54 (n=72, 65%). Amebiasis is rare among those below age 5 and especially rare among those below age 2. Dysentery in infants is typically due to shigellae.

Sex: Males (65%) continue to be more likely to contract amebiasis than females, with a ratio of 1.9:1, which could be due to MSM.

Race/Ethnicity: In 2004, Blacks had the highest rate, closely followed by Whites and Latinos (Figure 4). The rate for Asians decreased from 0.7 per 100,000 in 2003 to 0.2 in 2004.

Location: Three SPAs had rates greater than the county mean rate: SPA 2 (1.4 per 100,00), SPA 4 (1.6) and SPA 5 (2.9).

Risk factors: Forty three cases (38%) were recent immigrants (less than 6 months) and 19 cases (17%) reported recent foreign travel.

Figure 3
Amebiasis
Incidence Rates by Age Group
LAC, 2004

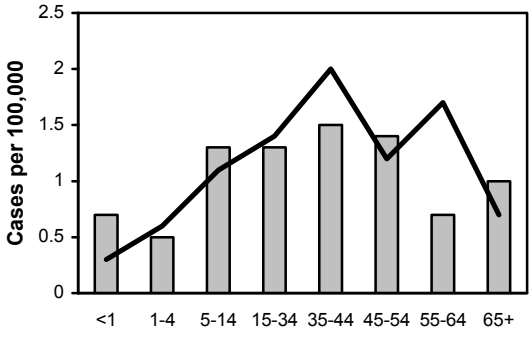
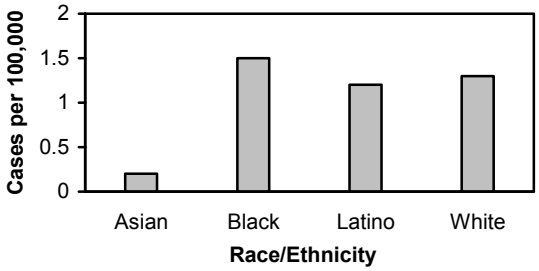


Figure 4
Amebiasis
Incidence Rates by Race/Ethnicity
LAC, 2004



COMMENTS

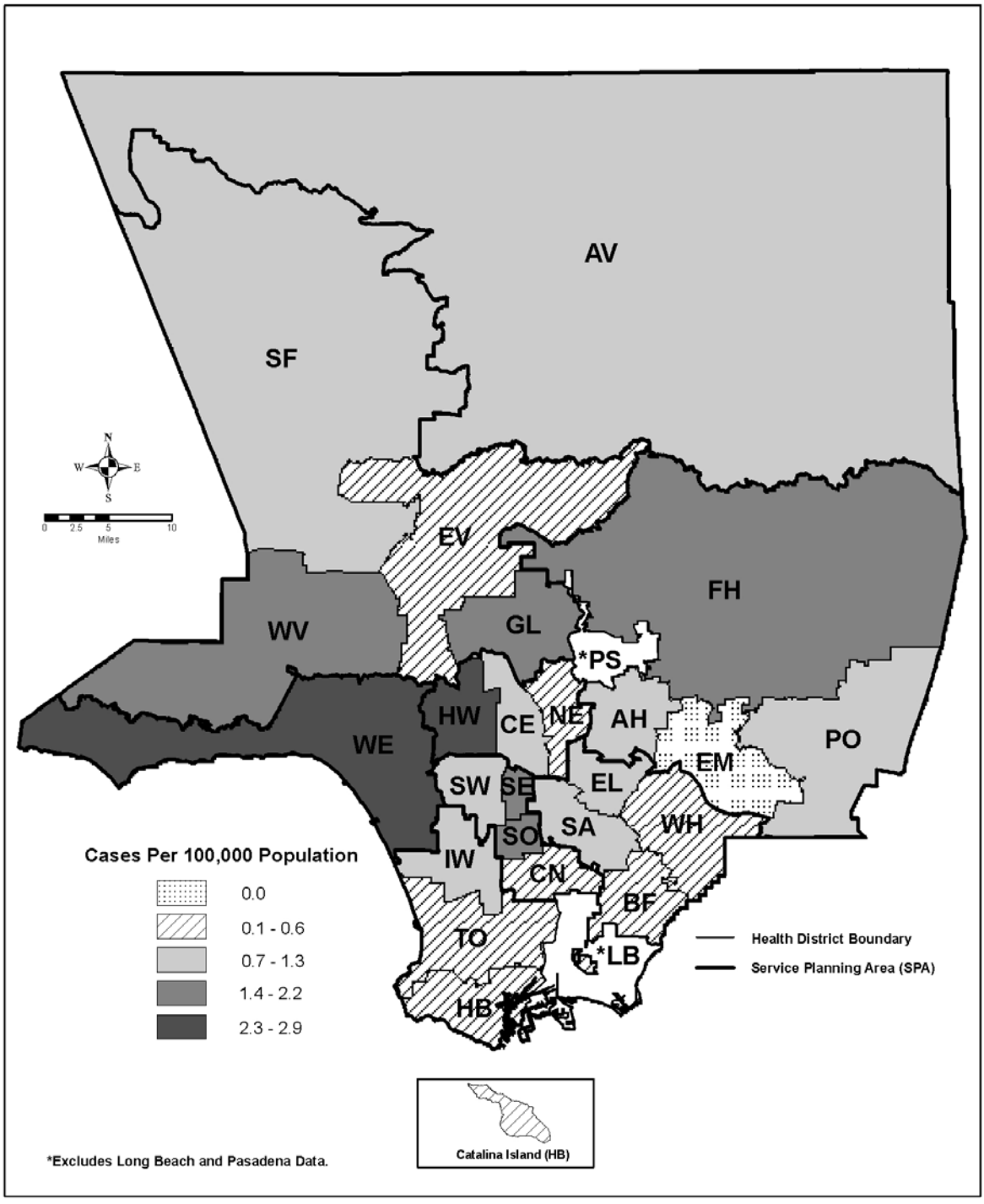
Amebiasis is no longer nationally reportable, so there are no current national rates for comparison. The disease remains reportable in California because a large proportion of the population travels to endemic countries in Asia and Central America. The impact of new tests that distinguish *E. histolytica* 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:
www.cdc.gov/travel/diseases/amebiasis.htm

More CDC Information on Amebiasis:
www.cdc.gov/ncidod/dpd/parasites/amebiasis/default.htm

Map 1. Amebiasis
Rates by Health District, Los Angeles County, 2004*

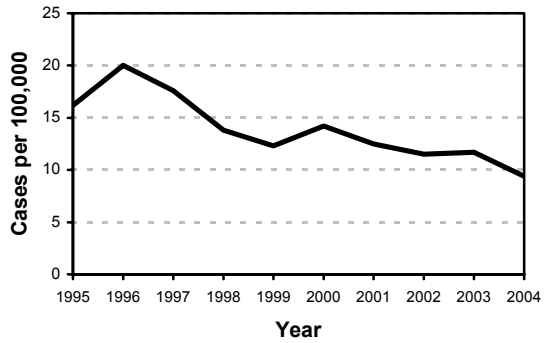


CAMPYLOBACTERIOSIS

CRUDE DATA	
Number of Cases	884
Annual Incidence[a]	
LA County	9.3
United States	N/A
Age at Diagnosis	
Mean	33.5
Median	31
Range	0–89
Case Fatality	
LA County	<1%
United States	N/A

[a] Cases per 100,000 population.

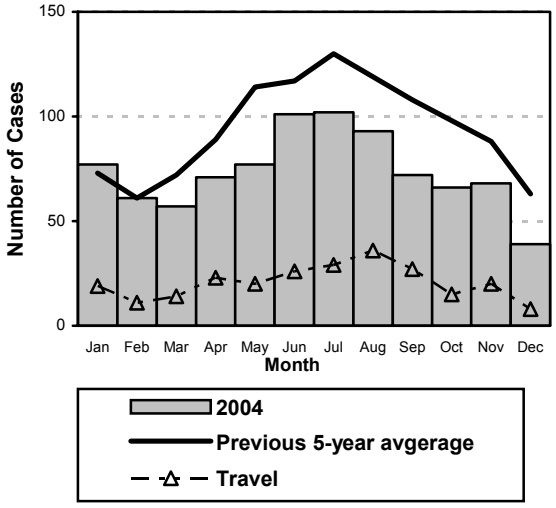
Figure 1
Campylobacteriosis
Incidence Rates by Year of Onset
LAC, 1995–2004



DESCRIPTION

Campylobacteriosis is a bacterial disease caused by gram-negative bacilli transmitted through ingestion of organisms via consumption of undercooked poultry or other meat, contaminated food, water or raw milk, or contact with infected animals. The incubation period is 2-5 days. 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.

Figure 2
Campylobacteriosis
Cases and Travel History by
Month of Onset
LAC, 2004



DISEASE ABSTRACT

- There was a 19.6% decrease in the incidence of campylobacteriosis in 2004.
- In 2004, overall age-adjusted rates were highest for Whites.
- There was one outbreak of probable campylobacteriosis investigated in 2004.

STRATIFIED DATA

Trends: The incidence of campylobacteriosis decreased by 19.6 % in 2004. After two years of relative stability, the rate of campylobacteriosis decreased significantly from 11.7 cases per 100,000 to 9.3 ($p < 0.05$).

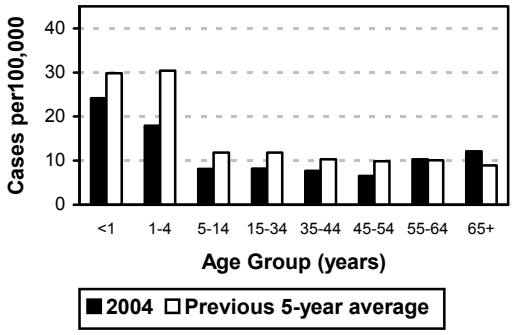
Seasonality: Overall incidence decreased as compared to the previous five-year average starting in March 2004. The number of cases still increased in the spring and summer. Peaks in the number of cases may be associated with the increase in travel during those months. In 2004, incidence peaked in July. Travel related incidence peaked in August (Figure 2).

Age: The highest rates continued to be among infants aged <1 year and children, aged 1-4 years (Figure 3). These age groups had significantly higher rates than any other age group but the rates were lower than the previous five-year average. In developed countries, children younger than five years and young adults have the highest incidence of this disease. The rates for persons older than 55 years were higher than the previous five-year average.

Sex: The male-to-female rate ratio was 1.3:1. The preponderance of males is typical and the reason for this is not known [1].

Race/Ethnicity: The highest overall age-adjusted rate was in Whites (13.0 cases per 100,000 population). In 2004 age-adjusted rates decreased for Latinos (8.2) although Latinos had similar incidence to Whites. Age-adjusted rates for Asians (8.3) and Blacks (3.5) decreased. Latino infants continued to have higher age-adjusted rates compared to other race/ethnicities (Figure 4).

Figure 3
Campylobacteriosis
Incidence Rates by Age Group
LAC, 2004



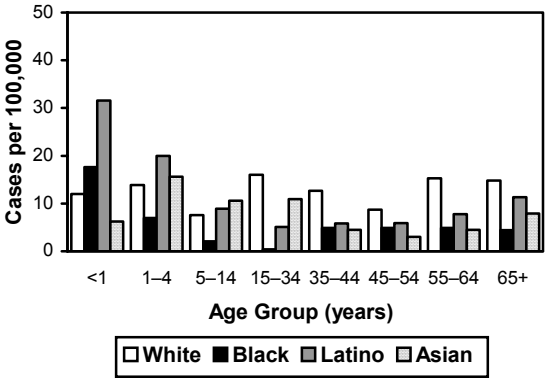
Location: SPA 2 again had the highest number of cases at 205 (9.7 per 100,000), and SPA 5 had the highest rate with 19 per 100,000 (N= 123). The higher rate in SPA 5 is consistent with previous years and is significantly higher than the county average.

Severity of Illness: Thirteen percent of campylobacteriosis cases (N=112) were hospitalized for at least two days. One campylobacteriosis-associated death occurred in a 48 year-old woman with multiple medical problems. There were two reports of Guillain-Barré syndrome (GBS) subsequent to a campylobacteriosis diagnosis. Six percent of campylobacteriosis cases were immunocompromised (N=54). Reasons for being immunocompromised included HIV, diabetes and recent diagnosis of cancer.

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 or their juices. Hands should be thoroughly washed before, during and after food preparation. The fluids from raw poultry or meat should not be allowed to drip on other foods in the refrigerator or in the shopping cart. It is especially important to wash hands and avoid cross contamination of infant foods, bottles and eating utensils. It is recommended to consume only pasteurized milk, milk products or juices. In addition, it is important to wash hands after coming in contact with any animal or its environment.

Figure 4
Campylobacteriosis Incidence Rates by
Age Group and Race/Ethnicity
LAC, 2004 (N=872)



COMMENTS

In 2004, 250 cases (28%) reported travel during the incubation period. Of these, 30% traveled within the US. Mexico was the most commonly named (32%) travel destination outside the US. Visiting countries where food safety is questionable may increase risk of campylobacteriosis. Travel may also be associated with eating in restaurants more often which can be a risk factor for this disease. Consuming raw milk or raw milk products was a risk factor for thirteen sporadic cases; ten of these cases consumed the milk or product while traveling outside the USA.

One cluster of campylobacteriosis was investigated in 2004. All five cases consumed raw beef liver. This outbreak could not be confirmed as a campylobacteriosis outbreak as there was only one laboratory confirmed case.

REFERENCES

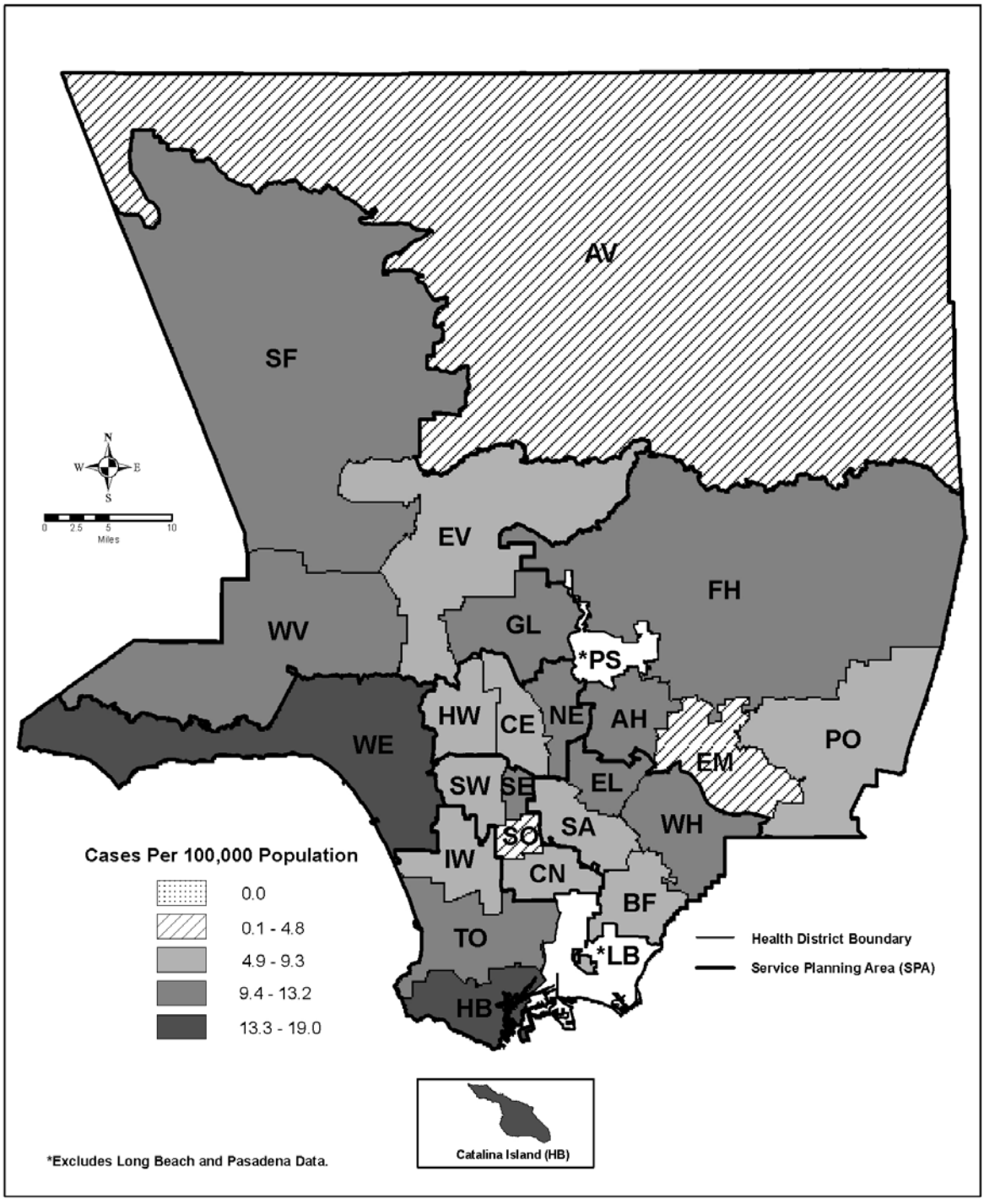
1. Allos, B.M. Campylobacter jejuni infections: update on emerging issues and trends. Clinical Infectious Diseases 2001;32:1201-6.

ADDITIONAL RESOURCES

Disease information is available from the CDC at:
www.cdc.gov/ncidod/dbmd/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, 2004*

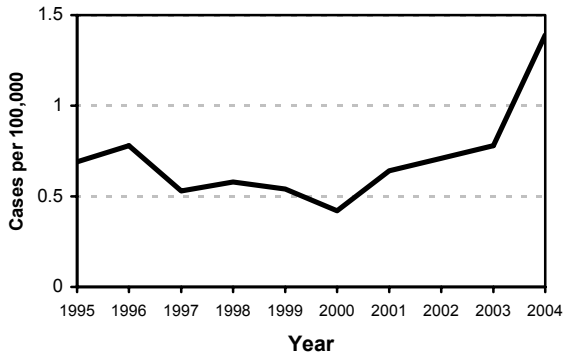


COCCIDIOIDOMYCOSIS

CRUDE DATA	
Number of Cases	133
Annual Incidence[a]	
LA County	1.39
California	7.44
United States	2.22
Age at Diagnosis	
Mean	45
Median	44
Range	12-99 years
Case Fatality	
LA County	9.8%
United States	N/A

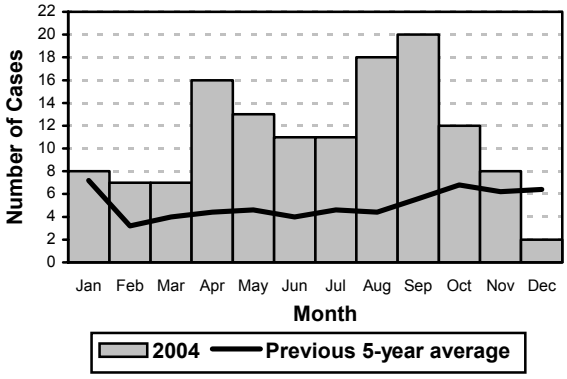
[a] Cases per 100,000 population.

Figure 1
Coccidioidomycosis
Incidence Rates by Year of Onset
LAC, 1995–2004



DESCRIPTION

Figure 2
Coccidioidomycosis
by Month of Onset
LAC, 2004 (N=133)



Coccidioidomycosis, or "Valley Fever," is a common fungal disease transmitted through the inhalation of *Coccidiodes immitis spores* 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.

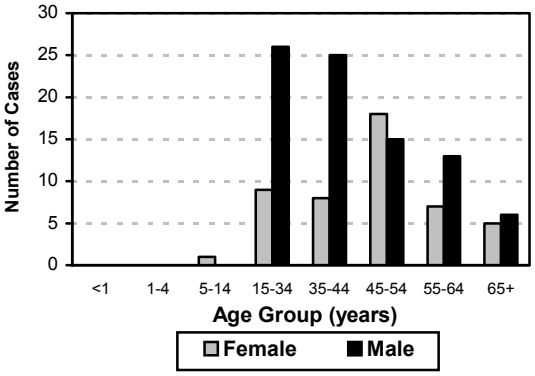
- Cost in terms of disease severity and hospitalization was substantial. Though the case fatality rate was lower, the actual number of deaths was higher because the incidence of coccidioidomycosis was greater than last year. Young adults, males, Blacks, and residents of the West Valley and Antelope Valley were at higher risk for disease.

STRATIFIED DATA

Trends: The incidence rate was 1.39 cases per 100,000 population for 2004 which was 78% higher than last year (Figure 1).

Seasonality: The highest number of cases per month was observed in the middle of the year. The number of cases per month through most of 2004 was well above the previous five-year average (Figure 2). Comparing cases from the summer months July-September 2004 to a 5-year previous average of cases for the same time period, LAC observed an increase of 229% in 2004 (48 vs. 14.6 cases). Climate conditions most likely contributed to the increase of cases. Cases commonly occur in the summer after a rainy winter or spring, especially after wind and dust storms.

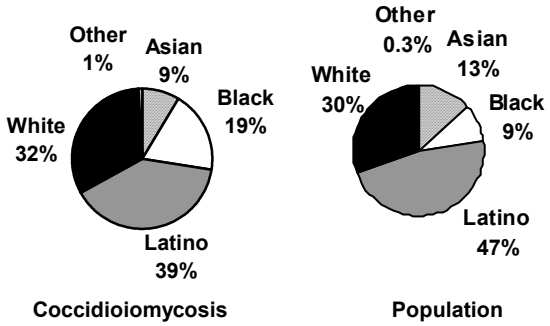
Figure 3
Coccidioidomycosis
Incidence by Age and Sex
LAC, 2004 (N=133)



Age: For 2004, males had an overall higher incidence and especially predominated in the young adult age groups. The greatest numbers of cases reported were in persons aged 15-34 years (Figure 3) which was a change from previous years where the greatest numbers were in persons aged 45-54. This was largely due to an increase in males with the disease in the 15-34 age group. The greatest incidence rate was in the 45-54 age group (2.6/100,000). The youngest case was 12 years of age.

Sex: The male-to-female rate ratio was 1.8:1. The mean age for males was 42 years and for females was 48 years (Figure 3). Two female cases reported being pregnant during infection. Of the 68 cases reporting occupation, the high risk occupations such as construction, demolition, firefighting, roofer, farm laborer, and concrete pourer comprised (16%). Also of interest, four cases (6%) worked outdoors with airplanes.

Figure 4
Coccidioidomycosis
Percent Cases by Race/Ethnicity
LAC, 2004



Race/Ethnicity: The highest incidence rate of 2.7 cases per 100,000 was in the Black population although these rates are unstable due to small numbers (24 cases). Latinos and Whites had the greatest number of cases with 50 and 41, respectively (Figure 4).

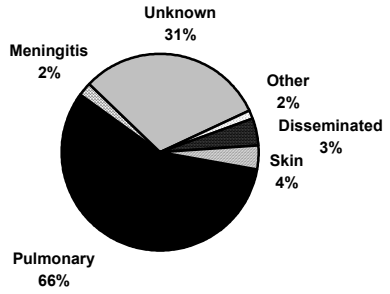
Location: Antelope Valley (n=50) and West Valley (n=24) districts had the highest number of cases reported (56% of the total). This has added significance because the incidence rate per 100,000 in Antelope Valley is 14.9 and West Valley is 2.8, compared to the overall LAC incidence rate of 1.39. These districts are more arid than the rest of the county, thus have a higher risk.

Travel: Twenty-nine cases reported travel within four weeks before onset of illness: 15 traveled within California (San Fernando Valley, Central Valley and adjacent counties, Riverside County, Imperial County near San Diego) and 16 traveled outside California to Arizona, Hawaii, Utah, Nevada, Mexico, El Salvador, and Europe (2 cases reported travel within and outside of California). The fungus is known to be endemic in most of these areas. Four cases were incarcerated in areas of high endemicity.

Underlying Disease: Of 21 cases known to have underlying disease, 10 cases were diabetic, 2 had a malignancy, 6 had HIV, and 3 had organ transplants.

Severity of Disease: Sites of infection were reported as primary pulmonary 66% (n=76), disseminated 3% (n=6), meningitis 2% (n=3), skin 4% (n=5), and other (chest cavity mass, lymph node, neck node) 1% (n=2); in 31% (n=41) of the cases infection site was not stated (Figure 5). 34% of the cases were culture-confirmed (n=46) and 96 cases were diagnosed by serological, histopathological, or molecular evidence. Some cases had multiple labs available for diagnosis. Of the 108 cases where information was available, 81% (n=87) were hospitalized. Thirteen cases died. The 2004 case fatality rate (9.8%) was lower than last year's rate (12%).

Figure 5
Coccidioidomycosis
by Infection Site
LAC, 2004 (N=133)



COMMENTS

In LAC, the 2004 incidence for coccidioidomycosis was higher than the previous year. Overall, the rate has been increasing since 2000. The significant increase started in the fall of 2003. The October 2003 wildfires in southern California may have contributed by destroying vegetation and increasing dust exposure. Warm temperatures, below normal precipitation, and Santa Ana winds were ideal conditions for disseminating *Coccidioides immitus* spores. 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 young adults were affected instead of the elderly, who are normally at high risk for illness. This may reflect an increased likelihood for this younger age group to have outdoor recreational or occupational exposure in areas of high risk.

One city in the neighboring county of Kern experienced a four-fold increase of coccidioidomycosis in 2003 compared to 2002. An Epi-Aid investigation was performed in December 2004 to identify factors associated with the increased incidence. A higher rate of disease was detected among persons in the 10-19 age group. No specific outdoor activity or location was implicated.

PREVENTION/INTERVENTION

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.

Since coccidioidomycosis is treatable, emphasis should also be placed on preventing progression of disease by rapid identification and treatment by physicians. Residents, especially those at high risk, should be encouraged to seek care early if they develop signs or symptoms of disease. An article for medical professionals called "Coccidioidomycosis: Cases of Valley Fever on the Rise in Southern California" was published in the April 2004 edition of The Public's Health.

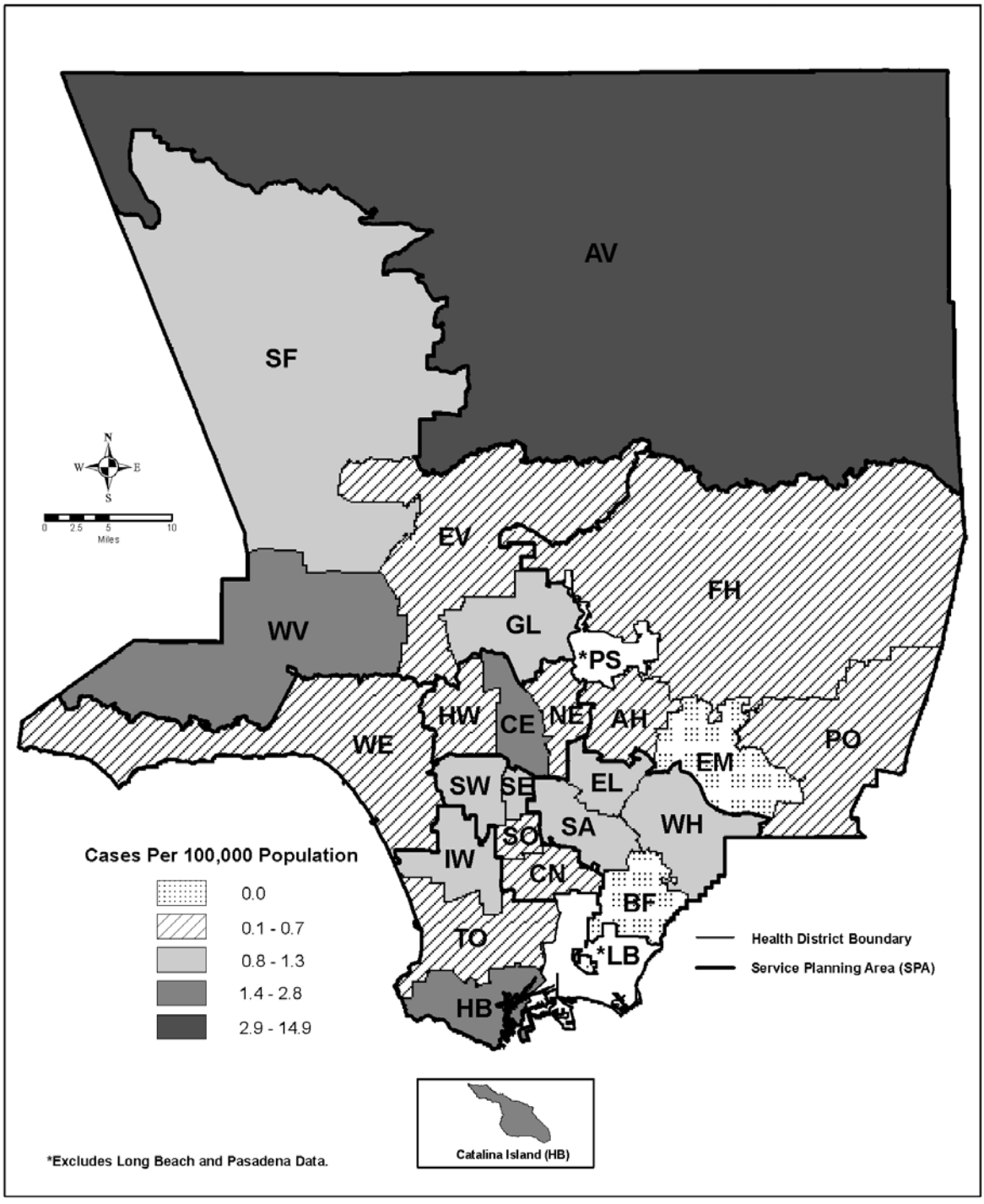
ADDITIONAL RESOURCES

National Fire Weather Report 2003 by Larry Van Bussum, National Weather Service, Boise, ID See report at: http://fire.boi.noaa.gov/FIREWX/AnnualReport/2003NationalReport.pdf

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, 2004*

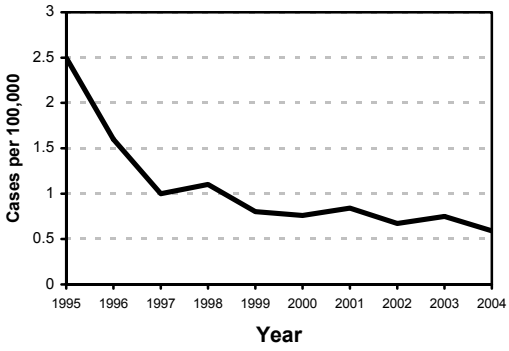


CRYPTOSPORIDIOSIS

CRUDE DATA	
Number of Cases	56
Annual Incidence[a]	
LA County	0.59
United States	1.23
Age at Diagnosis	
Mean	34
Median	37
Range	2–64
Case Fatality	
LA County	1.8%
United States	N/A

[a] Cases per 100,000 population.

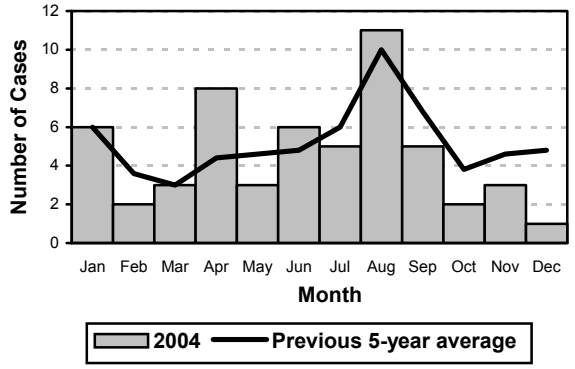
Figure 1
Cryptosporidiosis
Incidence Rates by Year of Onset
LAC, 1995–2004



DESCRIPTION

Cryptosporidiosis is fecal-orally transmitted when 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, 2004 (n=55)



DISEASE ABSTRACT

- The incidence rate for this disease decreased from 0.75 per 100,000 in 2003 to 0.59 per 100,000 in 2004. This is the lowest incidence rate in the past ten years. 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 (0.59 cases per 100,000) decreased slightly in 2004 (Figure 1).

Seasonality: In 2004, 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 followed by the 45-54 age group (Figure 3).

Sex: The male-to-female ratio was 3:1 (14 females). This may be due to the high rate of cryptosporidiosis in MSM.

Race/Ethnicity: Blacks had the highest incidence rate (Figure 4), followed by Whites and Latinos. Race was unknown for 4 cases (7%). The rate for Blacks increased from 1.0 per 100,000 in 2003 to 1.5 per 100,000 in 2004.

Location: Location information was available for all 56 cases. Central Health District had the highest incidence rate, 2.2 per 100,000 (n=8), followed closely by Hollywood-Wilshire Health District which had 2.1 per 100,000 (n=11).

Risk Factors: Complete risk factor data was not available for all cases; 9 cases (16%) were either unable to be located or refused to be interviewed (Figure 5). HIV infection and AIDS accounted for 50% of the cases, 1 case was female. Animal contact (34%), outdoor activities (25%, including swimming, camping and hiking) and recent international travel (20%) were the other most common risk factors following HIV status. Many cases had more than one risk factor.

COMMENTS

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 males. In 2004 the majority of HIV male cases were Hispanic (45%), slightly less than 2003 (54%). Seven cases (13%) had unknown HIV status. 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].

Figure 3
Cryptosporidiosis
Incidence Rates by Age Group
LAC, 2004

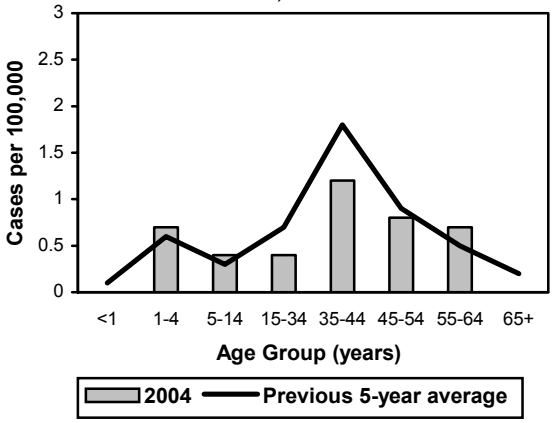


Figure 4
Cryptosporidiosis
Incidence Rate by Race/Ethnicity
LAC, 2004

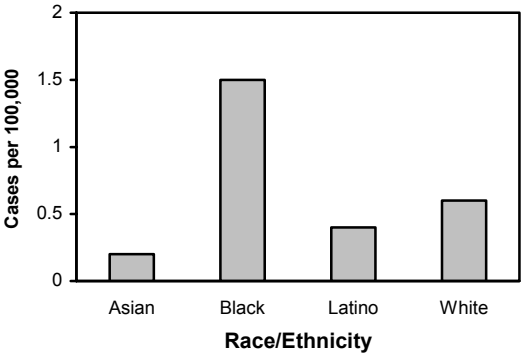
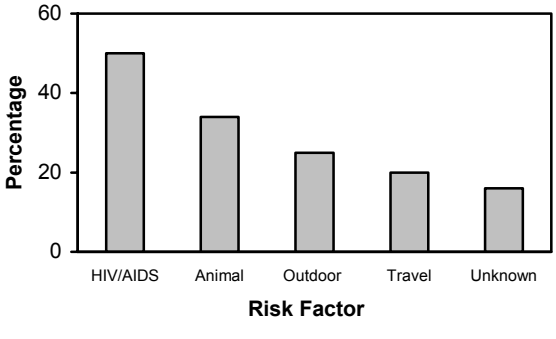


Figure 5
Cryptosporidiosis
by Reported Risk Factor
LAC, 2004



RESOURCES

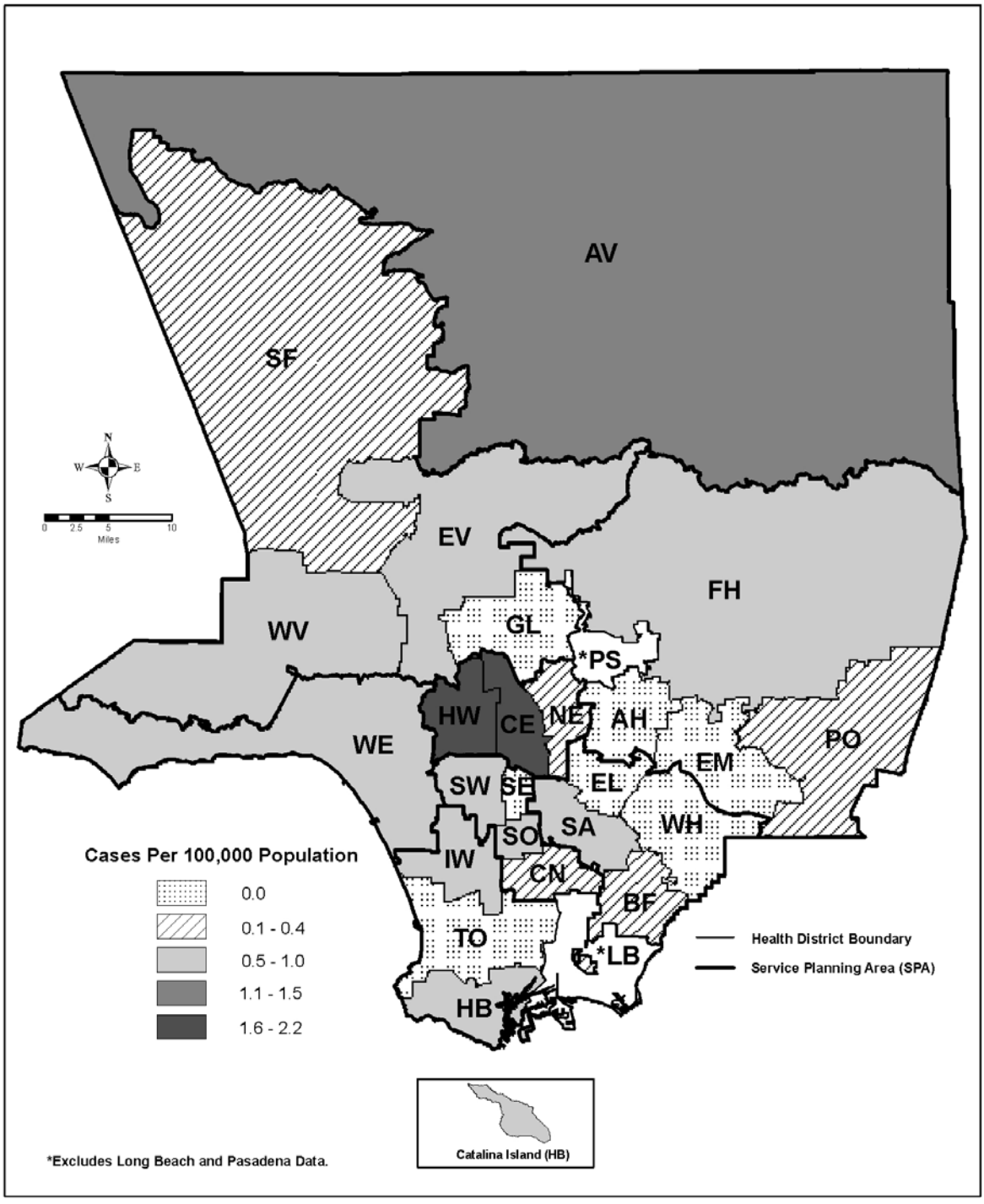
1. Sorvillo FJ, Fujioka K, Nahlen B, Tormey MP, Kebabjian R, Mascola L. Swimming-associated cryptosporidiosis. Am J Public Health 1992; 82(5): 742-4.

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

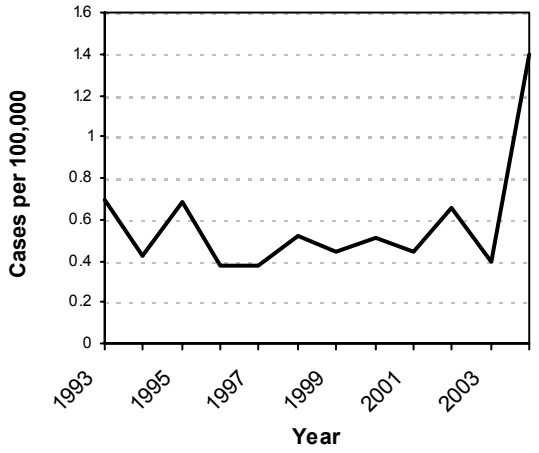
Map 4. Cryptosporidiosis
Rates by Health District, Los Angeles County, 2004*



ENCEPHALITIS

CRUDE DATA	
Number of Cases	133
Annual Incidence[a,b]	
LA County	1.4
California	N/A
United States	N/A
Age at Diagnosis	
Mean	47
Median	50
Range	0-93 years
Case Fatality	
LA County[b]	7%
United States	N/A

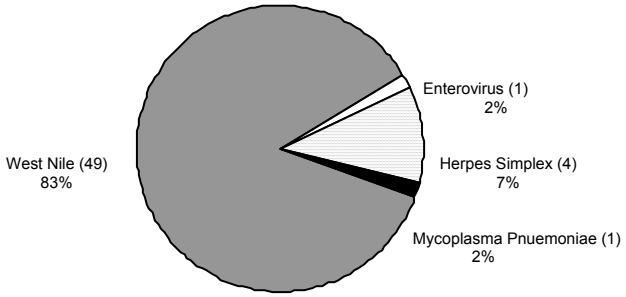
Figure 1
Encephalitis
Incidence Rates by Year of Onset
LAC 1993–2004



[a] Cases per 100,000 population.
[b] Excludes AIDS encephalopathy cases.

DESCRIPTION

Figure 2.
Encephalitis by Etiology
LAC, 2004 (N=59)



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 (mosquito-borne) encephalitis, which can be prevented by personal protection and mosquito control (See WNV section). Arthropod-borne viruses, i.e., arboviruses, are viruses that are maintained in nature through biological transmission between susceptible vertebrate hosts by blood feeding arthropods (mosquitoes, psychodids, ceratopogonids, and ticks). All arboviral encephalitides are zoonotic, being maintained in complex life cycles involving a nonhuman primary vertebrate host and a primary arthropod vector. Arboviral encephalitides have a global distribution. There are five main viral agents of encephalitis in the United States: West Nile virus (WNV), eastern equine encephalitis (EEE), western equine encephalitis (WEE), St. Louis encephalitis (SLE) and La Crosse (LAC) encephalitis, all of which are transmitted by mosquitoes. In 2004, the most frequently diagnosed arboviral etiology for reported encephalitis cases was WNV infection (Figure 2).

DISEASE ABSTRACT

- In 2004, there were 133 viral encephalitis cases reported. Of these, 49 were due to WNV infection. (See WNV Report for details).
- The incidence of viral encephalitis increased by over three times in 2004, 1.4 cases per 100,000 population, compared to 0.4 cases per 100,000 population in 2003 (Figure 1).
- In 2004, the case fatality, 7% (n=9), was lower than prior years, with 13% and 16% reported in 2003 and 2002, respectively.
- The majority of encephalitis cases occurred in those greater than 40 years of age; 61 (47%) cases occurred in those greater than 55 years of age and 28 (22%) cases were in children less than 15 years of age.
- Non-Hispanic Whites accounted for the greatest number of encephalitis cases, 63 (50%), followed by Hispanics, 44 (35%), Blacks, 8 (6%), Asians, 9 (7%), and unknown race, 2 (2%).
- The underlying etiologies of encephalitis were identified in 59 (44%) cases and included: 49 (83%) with WNV, 4 (7%) herpes simplex virus (HSV), 1 (2%) *Mycoplasma pneumoniae*, and 1 (2%) case due to enterovirus infection (Figure 2).
- The number of reported encephalitis cases was highest in SPA 3 (n=35, 2.1 per 100,000), followed by SPA 2 (n=33, 1.6 per 100,000) and SPA 7 (n=18, 1.3 per 100,000).

The reported annual incidence of acute encephalitis reported in the medical literature varies from 3.5-7.4 cases per 100,000 person-years. In 2004, the overall Los Angeles County viral encephalitis rate of 1.4 per 100,000 person-years is far lower that rates quoted in surveillance literature. Reasons to explain the lower rate could be the exclusion of other infectious etiologies (such as bacterial, fungal, protozoal, HIV-related) from our encephalitis surveillance data, misclassification of encephalitis cases as meningitis, under diagnosis of encephalitis cases, and under reporting of hospitalized encephalitis cases, since all reporting is passive. The case fatality from encephalitis has ranged from a high of 38 % in 1997 to a low of 7% in 2004 and remains lower than the 2004 overall case fatality rate of 16% from the California Encephalitis Project. The higher encephalitis mortality rate reported by the California Encephalitis Project, a California Department of Health Services' research project, may be biased to include more severely ill individuals in their data than LAC surveillance data.

Of particular public health concern in LAC are the arthropod-borne (arboviral) encephalitides, SLE, WEE and WN viruses which are endemic to California. 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 remains endemic in LAC. Beginning in 2001, arboviral disease surveillance has included WNV, in addition to SLE and WEE. Beginning in 2001, the LAC PHL has served as a reference laboratory and provided human testing for West Nile virus (WNV).

In 2004, 49 reported encephalitis cases had laboratory-confirmed WNV thought to be locally acquired, compared to one case acquired out of state in 2003. Like SLE virus, WNV is transmitted principally by *Culex* species mosquitoes, but also can be transmitted by *Aedes*, *Anopheles*, and other species. The predominance of urban *C. pipiens*, *C. tarsalis*, and *C. quinquefasciatus*, mosquitoes trapped during the 2004 outbreak suggests an important role for this species. Enhanced surveillance for early detection of virus activity in birds and mosquitoes will be crucial to guide control measures in 2005. It is expected that WNV will remain endemic in LAC and will spread through most of CA in 2005.

Prevention measures for arboviral infections consist of personal protection, screened 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 (See WNV section).

Future Directions: Surveillance for WNV infection in humans, mosquitoes, sentinel chickens, and dead birds will continue throughout the state of CA. and LAC. Research is underway to develop a WNV vaccine and treatment for humans. No human vaccine is available for SLE, WEE, and WNV. A human vaccine exists for Japanese Equine encephalitis.

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.

Trevejo RT. Acute Encephalitis Hospitalizations, California, 1990-1999: Unrecognized arboviral encephalitis? Emerging Inf Dis 2004; 10:8: 1442-1449.

For information on mosquito-borne encephalitis: www.cdc.gov/ncidod/dvbid/arbor/index.htm

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

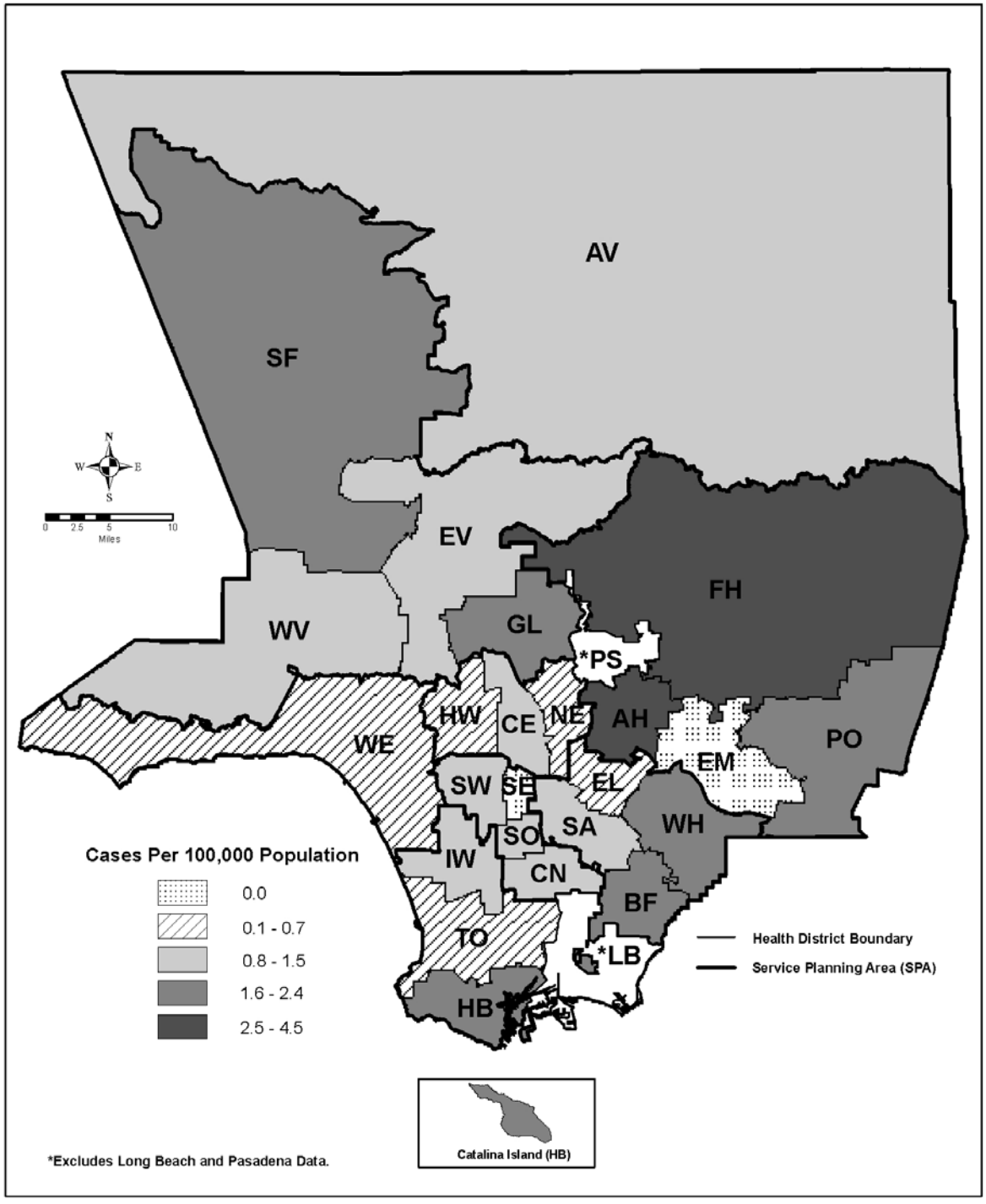
For more detailed information such as causal information and effective management strategies: www.postgradmed.com/issues/1998/03_98/guti.htm

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

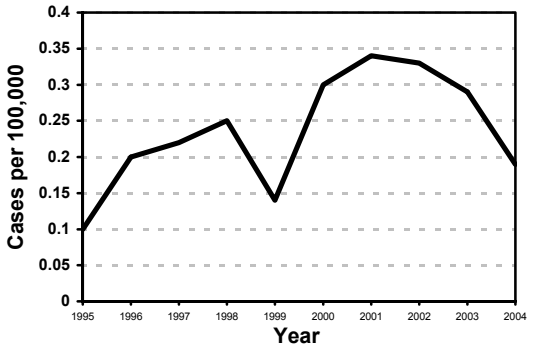
Map 5. Encephalitis
Rates by Health District, Los Angeles County, 2004*



ESCHERICHIA COLI O157:H7 / HEMOLYTIC UREMIC SYNDROME

CRUDE DATA	
Number of Confirmed Cases	18
Annual Incidence[a]	
LA County	--- [b]
California	0.67
United States	0.87
Age at Diagnosis	
Mean	20.3
Median	17
Range	3-79 years
Case Fatality	
LA County	0.0%
United States	N/A

Figure 1
Escherichia coli O157:H7
Incidence Rates by Year of Onset
LAC 1995–2004*



* Rates based on less than 20 observations are unreliable.

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

DESCRIPTION

Escherichia coli O157:H7, a gram-negative bacillus, is a specific serotype of the Shiga-toxin producing class of *E. coli* (STEC). Incubation period is 2-8 days. 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, fresh produce, unpasteurized juice, raw milk) and person-to-person (e.g., day-care settings). There also have been outbreaks associated with exposure to animals and their environments and 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

- There was a 33 % decrease in the frequency of confirmed cases in 2004.
- There were no LAC outbreaks in 2004, although one traveler was associated with an outbreak in Alberta, Canada.

STRATIFIED DATA

Trends: After peaking in 2001, rates of *E.coli* O157:H7 have been steadily decreasing. Eighteen cases is the first time there have been fewer than twenty cases in LAC since 1999 (Figure 1).

Seasonality: In 2004, 83% of confirmed cases occurred during the spring and summer months with a peak in August (Figure 2). This was consistent with the 5-year average, although the 2004 peak was

later. Late winter cases were not seen in 2004.

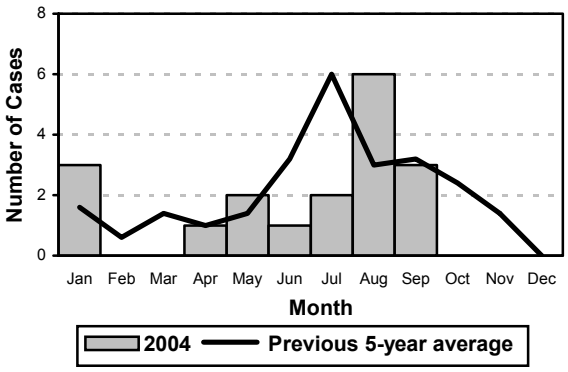
Age: In 2004, more laboratory confirmed cases were in adults (56%). All but one adult case were sporadic and not linked to an outbreak.

Sex: The male to female ratio of confirmed cases was 2:1.

Race/Ethnicity: The highest percentage of confirmed cases was again among Whites (55%; N=10). Asians (33%; N=6) and Latinos (11%; N=2) had higher representations when compared to 2003. Blacks had no confirmed cases.

Location: SPA 2 again had the most confirmed cases (39%; N= 7) followed by SPA 3 (28%; N= 5) and SPA 8 (16%; N=3). SPAs 7, 5 and 4 each had a single confirmed case. SPAs 2 and 4 each had an HUS only case.

Figure 2
Esherichia coli O157:H7
Cases by Month of Onset
LAC, 2004



Severity of Illness: Of confirmed cases with available information, 94% reported diarrhea, 77% reported abdominal cramps, 72% had bloody diarrhea, and 33% reported having fever (mean temperature was 100.7^{0}F). One confirmed case was asymptomatic and was tested as a household contact to a case. Ten confirmed cases (55%) required hospitalization. There were no reported deaths in confirmed cases.

HUS: In 2004, there was one LAC case with both confirmed *E. coli* O157:H7 and HUS and two reported cases of HUS without lab confirmation of *E. coli* O157:H7. Two were aged one to three years of age; the third was a 53 y/o man. All three required hospitalization. All three had some sort of recent antibiotic therapy prior to onset of HUS. Two cases required dialysis. The male adult was immunocompromised with a history of travel to Mexico where he had become ill and received quinolone therapy. He returned to the US, where he died in January 2004. The other unconfirmed case was in a two y/o girl with probable strep pneumonia and diarrhea who tested negative for *E.coli* O157:H7.

Risk Factors: In the week prior to onset, confirmed cases with available information reported eating ground beef (56%), lettuce (56%), fast food (72%) or food from other types of restaurants (56%). Seventeen percent (N= 3) traveled, two outside the US and one outside California. Three confirmed cases received antibiotic therapy; one of these developed HUS.

COMMENTS

There were no outbreaks of confirmed *E. coli* O157:H7 investigated in LAC during 2004. There was one traveler who was interviewed as part of an outbreak from Canada associated with an ethnic dish made with ground meat. There were three family clusters identified with a total of six cases.

Collaborative efforts among physicians, laboratories and the health department are important for enhancement of surveillance activities. Physicians should 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. All cases of HUS should be reported immediately and physicians should request testing for *E.coli* O157:H7 for these patients.

Laboratory analysis through PFGE has been helpful 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. In 2004, five LAC isolates were identified as matches to patterns in the PulseNet database, but no epidemiological links were found.

PREVENTION

Increased public education to prevent *E. coli* O157:H7 infection is needed. Information should focus on safe food handling practices, proper hygiene and identifying high-risk foods and activities both in the home and while eating out. To avoid infection, beef products should be cooked thoroughly. Produce, including pre-washed products should be thoroughly rinsed prior to eating. In addition, 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 or being around 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

General information about this disease can be found at:
www.cdc.gov/ncidod/diseases/submenus/sub_ecoli.htm

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

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

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

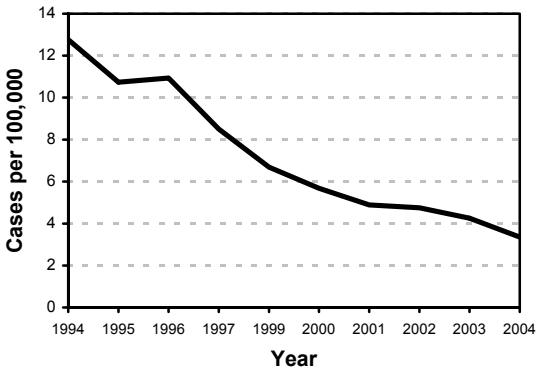
General information and reporting information about this and other foodborne diseases in LAC is available at: www.lapublichealth.org/acd/food.htm

GIARDIASIS

CRUDE DATA	
Number of Cases	320
Annual Incidence[a]	
LA County	3.36
United States	7.10
Age at Diagnosis	
Mean	27
Median	24
Range	<1–89 years
Case Fatality	
LA County	0.0%
United States	N/A

[a] Cases per 100,000 population.

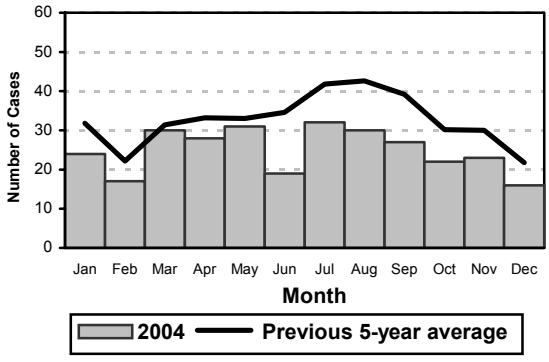
Figure 1
Giardiasis
Incidence Rates by Year of Onset
LAC, 1994–2004



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. Incubation can range from 3-25 days or longer, but the median incubation time is 7-10 days. While usually asymptomatic, symptoms can include sulfurous burps, chronic diarrhea, frequent loose and pale greasy stools, 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, 2004



DISEASE ABSTRACT

- The incidence of *Giardia* in Los Angeles County has dropped annually over the past 10 years, and has reached an all-time low in 2004.
- 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 and has reached an all-time low during 2004; the number of cases reported decreased more than 72% over the past 10 years (1,161 cases reported in 1994, Figure 1). In fact, 2004 Giardiasis incidence in LAC is the lowest reported in the last 20 years.

Seasonality: The number of cases typically increases during summer months when recreational exposure is more likely (i.e., swimming in infected pools, lakes, etc.) (Figure 2).

Age: As in previous years, the highest age-specific incidence rate occurred among children aged 1–4 years (10.0 cases per 100,000); the children aged <1 group, the 5–14 age group and the 35–44 age group followed with an incidence of about 4.1 cases per 100,000 each (Figure 3).

Sex: Males continue to be more likely to contract *Giardia* than females (1.7:1).

Race/Ethnicity: Whites continue to have higher race/ethnicity specific incidence rates than other races. Compared to the previous five year average, the incidence for Hispanics has decreased 46% and the incidence for Blacks has decreased 23% (Figure 4); Hispanics continue to have a higher race/ethnicity specific incidence than Blacks. The race/ethnicity specific incidence rate for Asians increased (42%) compared to previous years.

Location: Of the eight SPAs across LAC, four had rates that were higher than the overall county mean rate for this disease: SPA 1, Antelope Valley area (3.9 per 100,000); SPA 2, San Fernando area (4.1 per 100,000); SPA 4 Metro area (4.9 per 100,000); and SPA 5 West (6.8 per 100,000). The rate in SPA 8 South Bay dropped substantially from 3.8 to 2.2 cases per 100,000 population.

Figure 3
Giardiasis
Incidence Rates by Age Group
LAC, 2004

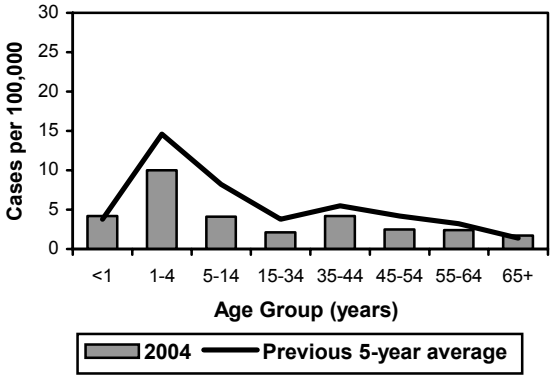
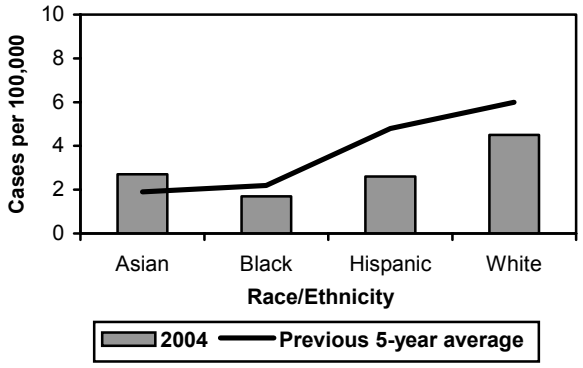


Figure 4
Giardiasis
Incidence Rates by Race/Ethnicity
LAC, 2004



COMMENTS

There has been a considerable decline in incidence of *Giardia* over the past decade. While the specific reasons for this decrease are 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 was one outbreak reported in 2004, three children were ill at a daycare center.

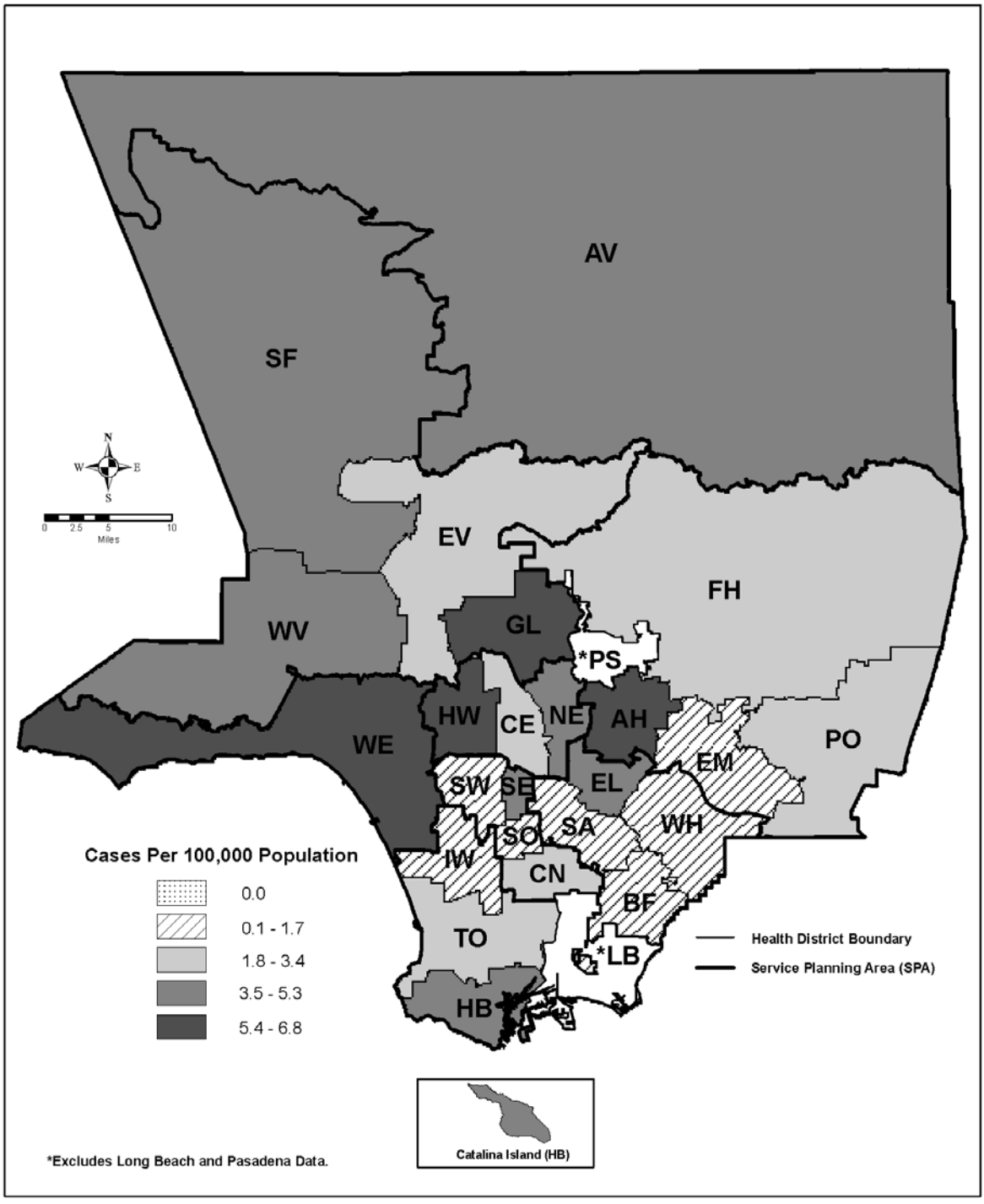
ADDITIONAL RESOURCES

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, 2004*

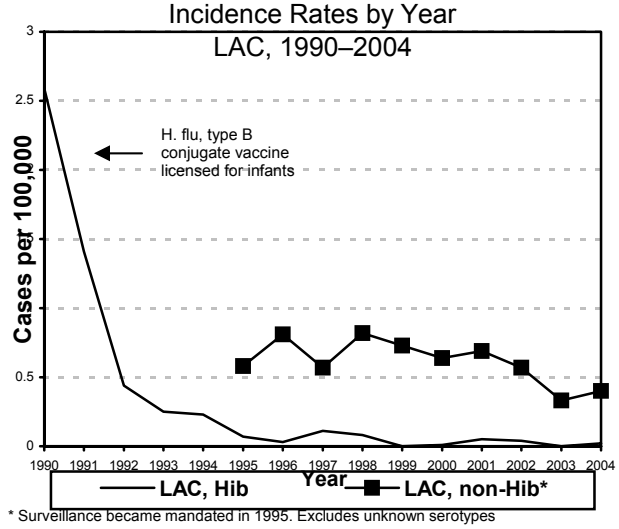


HAEMOPHILUS INFLUENZAE INVASIVE DISEASE

CRUDE DATA	
Number of Cases	111
Annual Incidence[a]	
LA County	1.16
California[b]	0.15
United States	0.72
Age at Diagnosis	
Mean	56.9
Median	63.0
Range	<1 – 98.0
Case Fatality	
LA County	5.4%
United States	

[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, 1990–2004

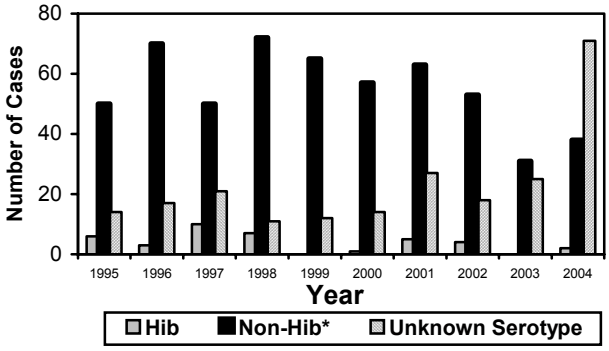


* Surveillance became mandated in 1995. Excludes unknown serotypes

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. Currently, 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, typeable strains (a–f) and unencapsulated, nontypeable 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 2
H. influenzae Invasive Disease
Cases by Year of Onset
LAC, 1995–2004



* Surveillance became mandated in 1995. Excludes unknown serotypes

DISEASE ABSTRACT

- The widespread use of the Hib vaccine since 1990 has dramatically decreased the incidence of *H. influenzae* type b disease in LAC (Figure 1, 2).
- Although more *H. influenzae* cases were reported in 2004 than in previous years, only 2 Hib cases were identified.
- The epidemiology of H. *influenzae* invasive disease is now being shaped by non-Hib and unknown

serotypes (Table 1, Figure 3).

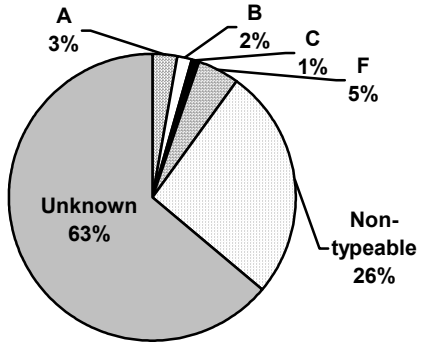
Table 1: *H. influenzae* Crude Data by Serotype, 2004 vs. Previous 5-Year Average

	B		Non-Hib		Unknown type	
	2004	Previous 5-Year Average	2004	Previous 5-Year Average	2004	Previous 5-Year Average
Number of Cases	2	2.0	38	53.0	71	21.4
Age at Onset						
Mean	14.0	43.6	32.8	42.5	71.0	60.7
Median	14.0	37.2	23.0	42.8	71.0	67.6
Range	4.0 – 24.0	25.3 – 75.3	Birth – 96.0	Birth - 93.0	30.0 – 98.0	4.6 – 95.4
LAC Case Fatality	50%	10%	0%	6.1%	7.0%	5.8%

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.

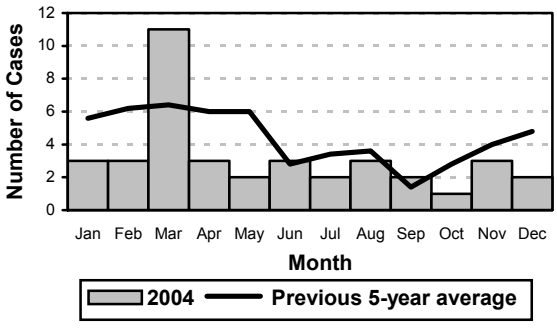
Figure 3
H. influenzae Invasive Disease
Percent Cases by Serotype
LAC, 2004 (N=111)



STRATIFIED DATA

Seasonality: The 2 Hib cases had disease onset in January and November. A temporal pattern has been evidenced in LAC, with a peak in non-Hib cases that begins in September and declines after May. However, non-Hib cases in 2004 seemed to follow an unusual pattern in comparison to previous years. With the exception of March that accounted for 29.0% (n=11) of cases, the onset of cases was distributed fairly uniformly throughout the year (Figure 4).

Figure 4
H. influenzae Invasive Disease
Cases Due to Non-Hib Serotype
by Month of Onset
LAC, 2004 (N=38)

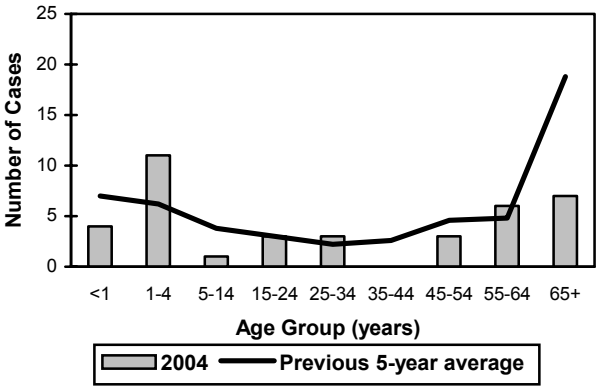


Sex: Both Hib cases occurred in males. The male-to-female ratio of non-Hib and unknown serotype cases was 1:0.8 and 1:1.2, respectively.

Age: The 2 Hib cases were 4 and 24 years of age. Unlike the trend of previous years, the age group most affected by non-Hib invasive disease in 2004 was the 1-4 year age group (29.0%, n=11) followed by the 65+ age group (18.4%, n=7) (Figure 5). All 71 cases with unknown serotype were over the age of 30 and were not actively investigated for serotype as detailed in LAC's priority investigation criteria.

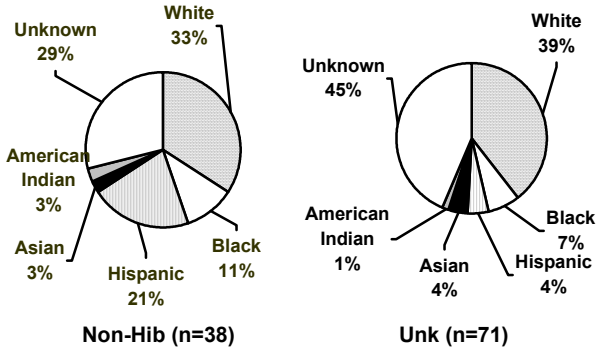
Race/Ethnicity: One of the Hib cases was Black and the other Hib case was Hispanic. Among the non-Hib cases where the race/ethnicity was known (n=27), Whites accounted for 48.1% (n=13) of the cases, followed by Hispanics (n=8; 29.6%). Among the unknown serotype cases of whom race/ethnicity was identified (n=40), 70.0% were among Whites (n=28), followed by Blacks (n=5; 12.5%) (Figure 6.)

Figure 5
H. influenzae Invasive Disease
Serotype Non-Hib Cases by Age Group
LAC, 2004 (N=38)



Location: The 2 Hib cases resided in SPA 6 and SPA 7. The number of non-Hib cases per SPA ranged from 2 to 6. San Fernando Valley (SPA 2), San Gabriel Valley (SPA 3), Metro (SPA 4), and East (SPA 7) accounted for 6 non-Hib cases each. South (SPA 6) had 5 cases, South Bay (SPA 8) had 3 cases, and Antelope Valley (SPA 1) had 2 cases. An additional 10.5% (n=4) of non-Hib cases had no identified SPA. The number of unknown serotype cases per SPA ranged from 2 to 9, with SPA 2 and SPA 3 accounting for 9 cases each and SPA 5 with 2 cases. An additional 42.3% (n=30) of the unknown serotype cases did not have a residence indicated.

Figure 6
H. influenzae Invasive Disease
Percent Cases by Race/Ethnicity
LAC, 2004



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 in 1990. Among the 111 cases, only 2 (1.8%) were Hib cases. Neither of the cases had any known exposure to a confirmed/suspected case. The Hib case that was 24 years old had a preexisting medical condition and subsequently died of severe bronchopneumonia. The 4 year old Hib case had meningitis but recovered.

Although the 4 year old Hib case had documented evidence of being up to date with the Hib vaccination for his age, invasive Hib disease in a completely vaccinated infant is very rare. More than 95% of infants will develop protective antibody levels after a primary series of 2 or 3 doses. Clinical efficacy has been estimated at 95% to 100%.

Case Fatalities: There were six fatalities among *H. influenzae* cases: one case was typed as serotype B and five were unknown serotypes. Five of the fatalities (83.3%) were in persons over the age of 30 so the cases were not investigated for further information. However, information on complications was provided for three cases. One case had bacteremia, one had meningitis, and one had pneumonia. Males accounted for four of the six case fatalities. Two of the fatalities were White, one was Black, and three were of unknown race/ethnicity.

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 to LAC is available from:

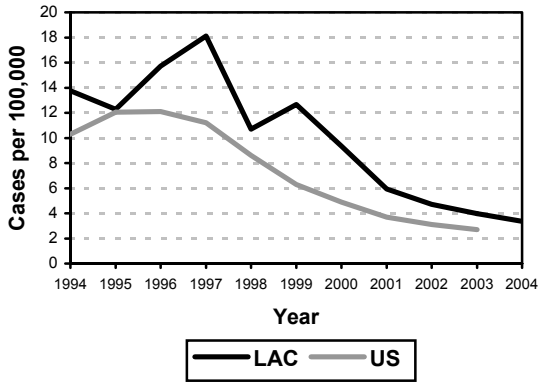
- LAC DHS Immunization Program at: www.lapublichealth.org/ip
- ACDC: www.lapublichealth.org/acd/procs/b73/b73index.htm

HEPATITIS A

CRUDE DATA	
Number of Cases	321
Annual Incidence[a]	
LA County	3.37
California	2.49
United States	2.05
Age at Diagnosis	
Mean	46
Median	45
Range	2–91 years
Case Fatality	
LA County	0.0%
United States	N/A

[a] Cases per 100,000 population.

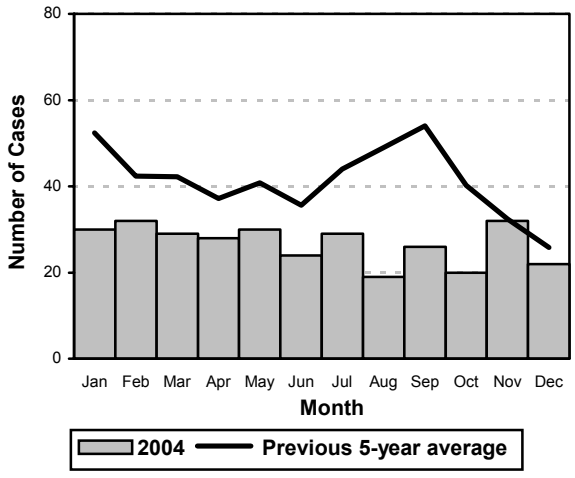
Figure 1
Hepatitis A
Incidence Rates by Year
LAC and US, 1994–2004



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). Recovery usually occurs within one month. Infection confers life-long immunity. For surveillance purposes in LAC, 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., a household or sexual contact of an infected person during the 15–50 days before the onset of symptoms).

Figure 2
Hepatitis A
Cases by Month of Onset
LAC, 2004



DISEASE ABSTRACT

- The overall annual incidence rate of hepatitis A cases reported in LAC decrease in 2004.
- Hepatitis A incidence rates among those aged 55+ were higher in 2004.

STRATIFIED DATA

Trends: There has been a steady decrease in the number of cases in LAC. From 2000 to 2004, the rate decreased from 9 to 3 per 100,000. In 2004, 321 cases were reported, a rate of 3.37 cases per 100,000 (Figure 1).

Seasonality: During the previous five years (from 1999 to 2004), the incidence of cases occurring during July to September was slightly higher than other months, but this seasonal pattern did not occur during 2004 (Figure 2).

Age: During 2004, the overall mean age for hepatitis A cases in LAC was 46 years. The mean age differed significantly by race and ethnic groups. The mean age for Latinos was 34 years while, White, Asian and Black cases had mean ages of 48, 58, and 49 years, respectively. In 2004, the age specific rate in those 55 years and older was higher than the previous year (Figure 3).

Sex: The hepatitis A male-to-female rate ratio was 1:1. The male-to-female ratio for those aged greater than 18 years was 1:1.2. Among Latino cases, the male-to-female rate ratio was 1:0.9, while among White, Asian, and Black cases, incidence rates ratios were higher among males, at 1:1.3, 1:1.2, and 1:1.8, respectively.

Race/Ethnicity: The overall hepatitis A crude rate decreased for all ethnic groups in 2004. As shown in Figure 4, the highest rate in 2004 was among Asians (4.6 per 100,000), followed by Whites (3.7), Latinos (2.1), and Blacks (1.7).

Location: Figure 5 shows district-specific HAV cases for 2004. The highest number of cases occurred in SPA 4 (4.7 per 100,000) closely followed by SPA 7 (4.0), SPA 6 (3.8), SPA 2 (3.5), SPA 3 (2.9), SPA 5 (2.5), SPA 1 (2.4), and SPA 8 (2.0).

Severity of Illness: Among all HAV cases in 2004, there was one reported fatality (case-fatality rate=0.31%) aged 86 years. 11.5% were hospitalized for their illness. Hospitalization was most prevalent among young adults (15-44).

Risk Factors: Out of 321 HAV cases, there were 41 cases that did not have completed hepatitis A investigation forms. Of the 280 cases with completed hepatitis A investigation forms, recent travel outside of the US (n=61, 21%) was the most common risk factor reported in 2004 (Figure 6).

Figure 3
Hepatitis A Incidence Rates
by Age Group LAC 2004 (N=321)*

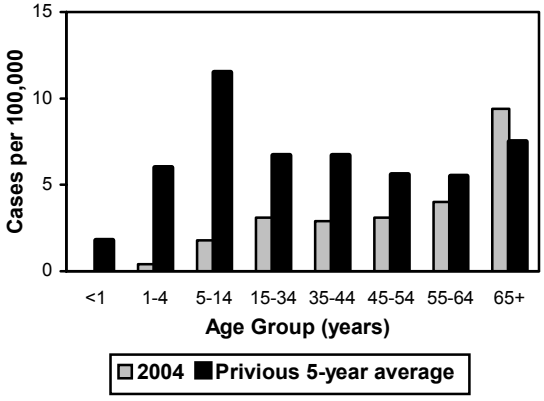


Figure 4
Hepatitis A Incidence Rates
by Race/Ethnicity
LAC, 2004

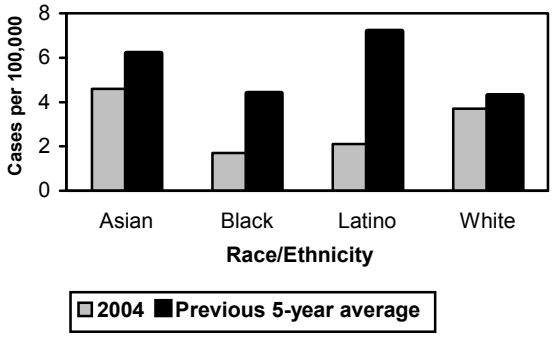
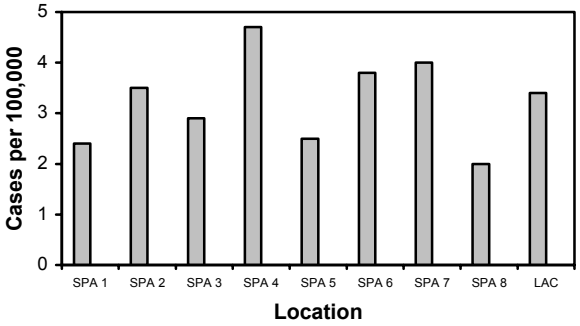


Figure 5
Hepatitis A Rates
by Location
LAC, 2004

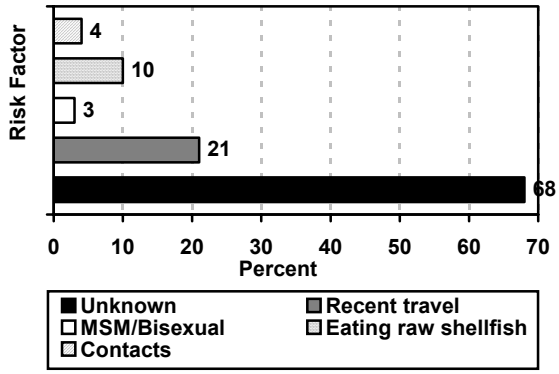


Other risk factors include eating raw shellfish (n=29, 10%), and being in contact with another case (n=12, 4%), and MSM (n=9, 3%). For many cases (68%) risk factors were unknown or not reported. Among travelers, South and Central American destinations (67%) were most frequently cited.

PREVENTION

Effective strategies for decreasing the number of hepatitis A cases in LAC include adding hepatitis A vaccine to the children immunization program and Public Health Nurses providing immune globulin (IG) to close contacts of cases and educating clients about the importance of hand hygiene on reducing infections when cases of acute hepatitis A are reported to LAC DHS. Close contacts, such as household contacts, sexual partners, and other intimate contacts are offered post-exposure prophylaxis with IG.

Figure 6
Hepatitis A Reported Risk Factors
LAC, 2003



*Includes cases identifying multiple risks.

COMMENTS

In late 2005, one of the largest reporting sources of hepatitis A inadvertently stopped reporting cases for the final 3 months of 2004. Therefore, the number of cases of hepatitis A in the last quarter of 2004, and for all of 2004, may be underestimated. Nonetheless, since there were only 6 confirmed cases in 2003 during this same time period from the same reporting source, the lack of reporting should not affect the overall trends in hepatitis A for 2004. A more detailed explanation of this situation will be included in the 2005 Special Reports.

Overall, there has been a steady decrease in the number of cases of hepatitis A reported in Los Angeles County. However, the number of cases in older adults (ages 55-91) increased in 2004. District public health nurses anecdotally reported that older adult cases received hepatitis A screening tests as a part of their routine check ups and not when they were acutely ill. Therefore, we reviewed all of the epidemiology (risk factor) forms for cases age 55 years or older. Many of these cases were diagnosed with acute hepatitis A by virtue of only having a positive test for Hepatitis A IgM and the cases did not have any signs and symptoms for hepatitis A and no elevated aminotransferase (ALT) levels. The CDC/CSTE criteria for acute hepatitis A require the following: an acute illness with discrete onset of symptoms (abdominal pain, fever, fatigue) and jaundice or elevated ALT levels and a positive test for HAV IgM. Therefore, with only a positive test for IgM, many of the cases in the older adult group did not meet the CDC/CSTE criteria for acute hepatitis A and may have been false positive cases. This is a phenomenon that has been noted in other communities in the United States www.cdc.gov/mmwr/preview/mmwrhtml/mm5418a1.htm. In 2005, Acute Communicable Disease Control will adhere to the CDC/CSTE criteria for acute hepatitis A in all age groups. This may decrease the overall number of confirmed hepatitis A cases in LAC.

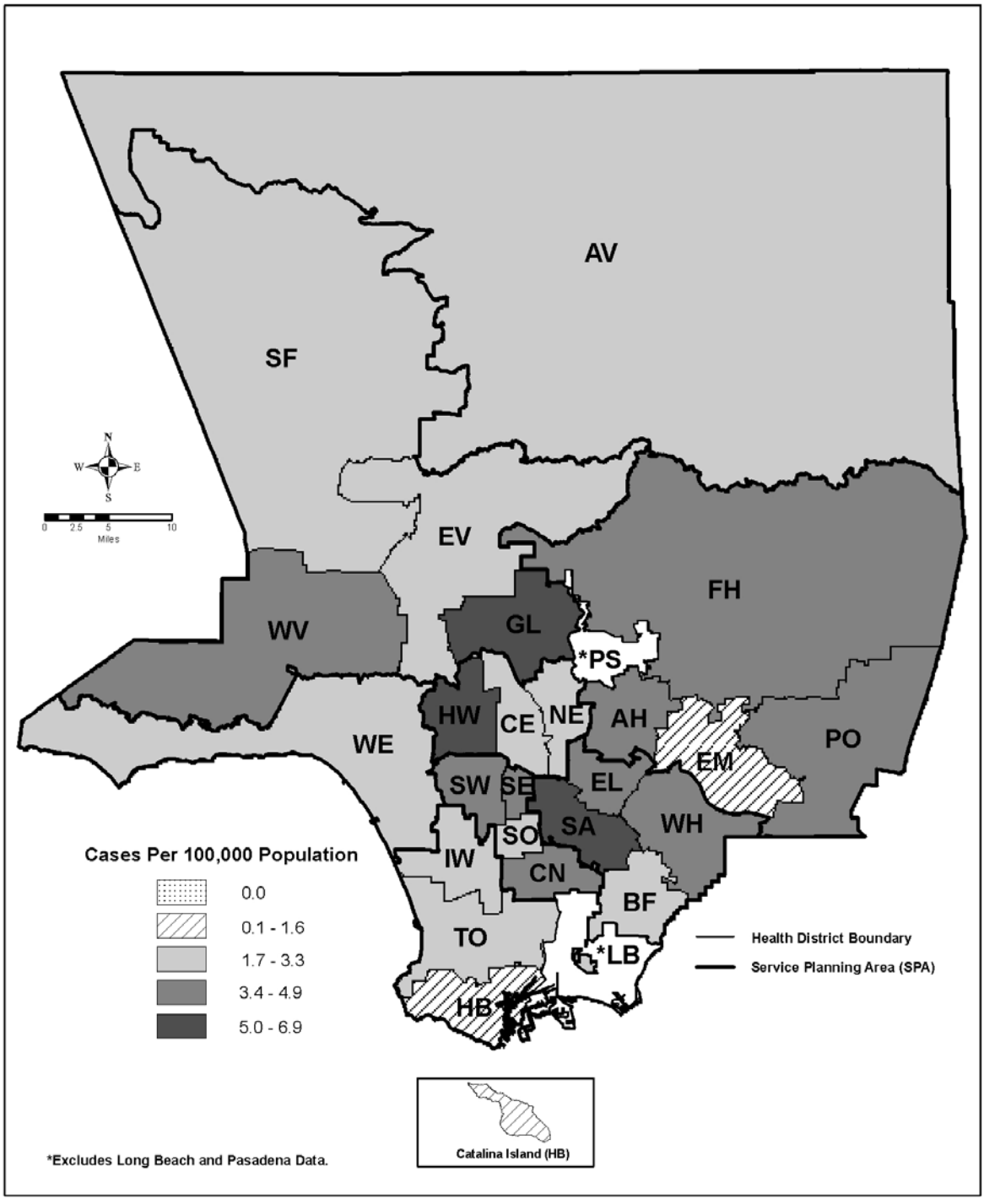
In 2004, the significant risk factors are international travelers, followed by those who eat raw shellfish, and those who reported contact with a household member or sexual partner who has HAV, and MSM. Therefore, it is important to educate travelers, consumers of raw shellfish, and MSM about hepatitis A vaccinations. Moreover, hepatitis A can be prevented by vaccination. Sustaining and further reducing hepatitis A incidence can be achieved by improving vaccination coverage in all US children starting at 2 years of age. Increased awareness of the public about the mode of hepatitis transmission and the importance of good personal hygiene also lead to a significant reduction in disease incidence.

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, 2004*

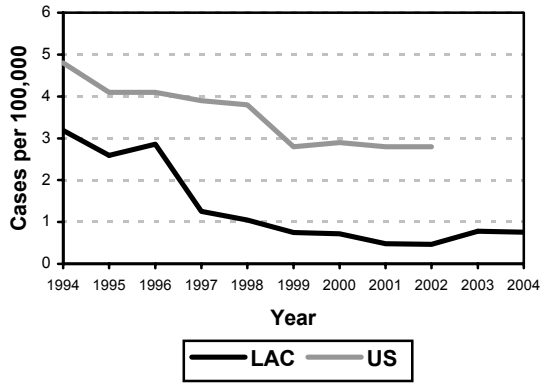


HEPATITIS B, ACUTE (NON-PERINATAL)

CRUDE DATA	
Number of Cases	72
Annual Incidence[a]	
Los Angeles	0.76
California	N/A
United States	N/A
Age at Diagnosis	
Mean	41
Median	38
Range	16–87years
Case Fatality	
LA County	0.0%
United States	N/A

[a] Cases per 100,000 population.

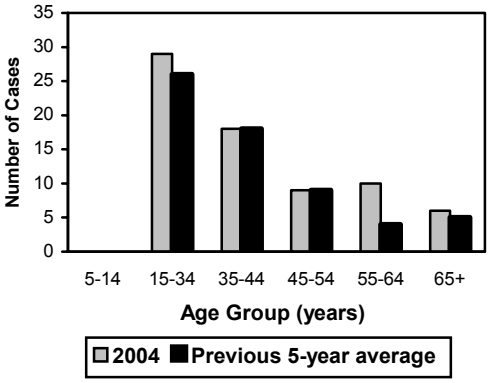
Figure 1
Hepatitis B
Incidence Rates by Year
LAC and US, 1994–2004



DESCRIPTION

Hepatitis B is more prevalent and infectious than AIDS. Hepatitis B is a vaccine-preventable disease transmitted through parenteral or mucous membrane exposure (via sex or drugs) 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. 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. 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.

Figure 2
Acute Hepatitis B
Number Cases by Age Group
LAC, 2004



For the purpose of surveillance, LAC uses the CDC/CSTE criteria for acute hepatitis B which include: 1) discrete onset of symptoms and 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).

DISEASE ABSTRACT

- In 2004, the number of cases of acute hepatitis B remained nearly the same as 2003 (Figure 1).
- All acute cases were among young adults aged 16 years or older and the majority of cases were males.
- Multiple sexual partners remained the most frequently identified risk factor.
- One outbreak was investigated in 2004.

STRATIFIED DATA

Seasonality: None.

Age: Cases ranged in age from 16 to 87 years (the median age was 38) with 68% occurring in those aged under 45 years (Figure 2).

Sex: The male-to-female rate ratio was 2.8:1. The number of cases in males exceeded those in females in all ethnic groups.

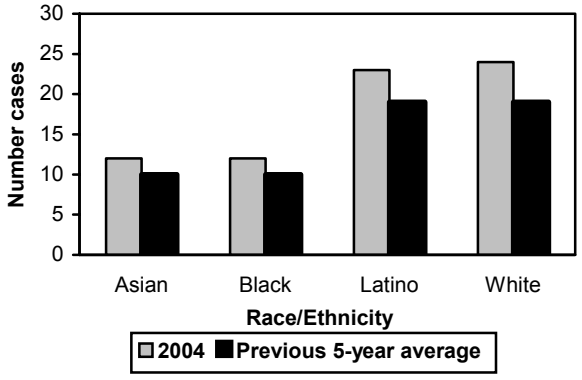
Race/Ethnicity: The highest number of cases was seen in Whites (n=24) followed by Latinos (n=23), Asians (n=12) and Blacks (n=12) respectively (Figure 3).

Location: SPA 2 (n=19) had the most cases, followed by SPA 4 (n=14), SPA 3 (n=11), SPA 7 (n=8), SPA 8 (n=8), SPA 5 (n=7), SPA 6 (n=5).

Severity of Illness: Among all acute HBV cases in 2004, there were no fatalities reported.

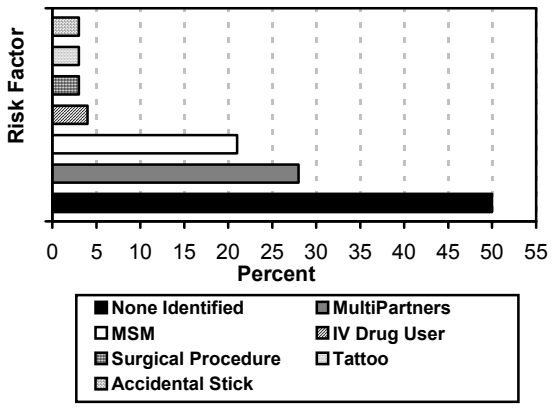
Risk Factors: Risk factors were reported for 50% of the cases (including some cases with multiple risk factors). Having multiple sexual partners (n=20, 28%) was the most common risk factor reported in 2004, followed by MSM (n=15, 21%), and IV drug user (n=3, 4%) (Figure 4).

Figure 3
Acute Hepatitis B
Number cases by Race/Ethnicity*
LAC, 2004



* Excludes perinatal cases.

Figure 4
Hepatitis B Reported Risk Factors
LAC, 2004



*Includes cases identifying multiple risks.

PREVENTION

Decreasing rates of acute hepatitis B in children under age 19 is evidence of the successful immunization strategy to eliminate HBV transmission in LAC. The immunization strategy includes: preventing perinatal HBV transmission by screening all pregnant women for HBsAg and providing immunoprophylaxis to infants of HBV-infected women, routine immunization of all infants, and catch-up vaccination of all previously unvaccinated children aged < 19 years.

New strategies are needed to reduce high-risk behaviors and provide resources for low-cost hepatitis B immunization particularly for adults with the highest rates of transmission. Development and implementation of such strategies is possible through collaboration between public health, community-based organizations, and other agencies that serve target populations. Additionally, promoting hepatitis health education aims at eliminating, reducing, or mitigating high-risk behaviors in sexually active adults and increasing awareness and knowledge in the community.

COMMENTS

In 2004, the number of cases of acute hepatitis B remained nearly the same as 2003. All acute hepatitis cases were aged 16 years or older. Sixty-five percent were in younger adults aged 16-44 years. No risk factor was identified in 50% of cases. This may indicate hesitancy of the interviewee to reveal information considered sensitive. Changes in interviewing techniques to obtain this information may be useful. ACDC is in the process of revising our hepatitis epidemiology form. This revised form will serve as a new tool for our district public health nurses to conduct interviews; it is hoped that the information collected will improve the identification of risk groups that can be targeted for the prevention of hepatitis B as well as improving general surveillance for the disease.

In January 2004, ACDC investigated an outbreak in a retirement center. Eight residents were determined to have acute hepatitis B. Four of them had the signs and symptoms of acute hepatitis B, but their dates of onset were in 2003, so they were not counted as cases for the year 2004. The other four cases tested positive for hepatitis B IgM+ but they did not show any signs and symptoms and did not meet the CDC/CSTE surveillance criteria for acute hepatitis B. Therefore, they were unable to be counted as acute cases in year 2004 but they were counted as part of the outbreak investigation. The results of our investigation indicated that the spread of infection was most likely due to inappropriate infection control measures while providing fingersticks (to test blood sugar levels) in the facility. Our findings were summarized in the CDC publication Morbidity and Mortality Weekly Report (http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5409a2.htm) and are fully detailed in the Special Reports of 2004. Emphasizing the importance of good handwashing techniques and standard precautions can prevent nosocomial infection.

Ongoing observations in data collection and analysis will provide a more accurate description of this infection in the future. People with multiple sexual partners and MSM continue to be at risk for hepatitis B; thus, preventive efforts including education and vaccinations should continue to focus on these high-risk populations. In LAC, we provide hepatitis B vaccine to special high-risk group at the STD clinics to in an effort to reduce hepatitis B incidence.

ADDITIONAL RESOURCES

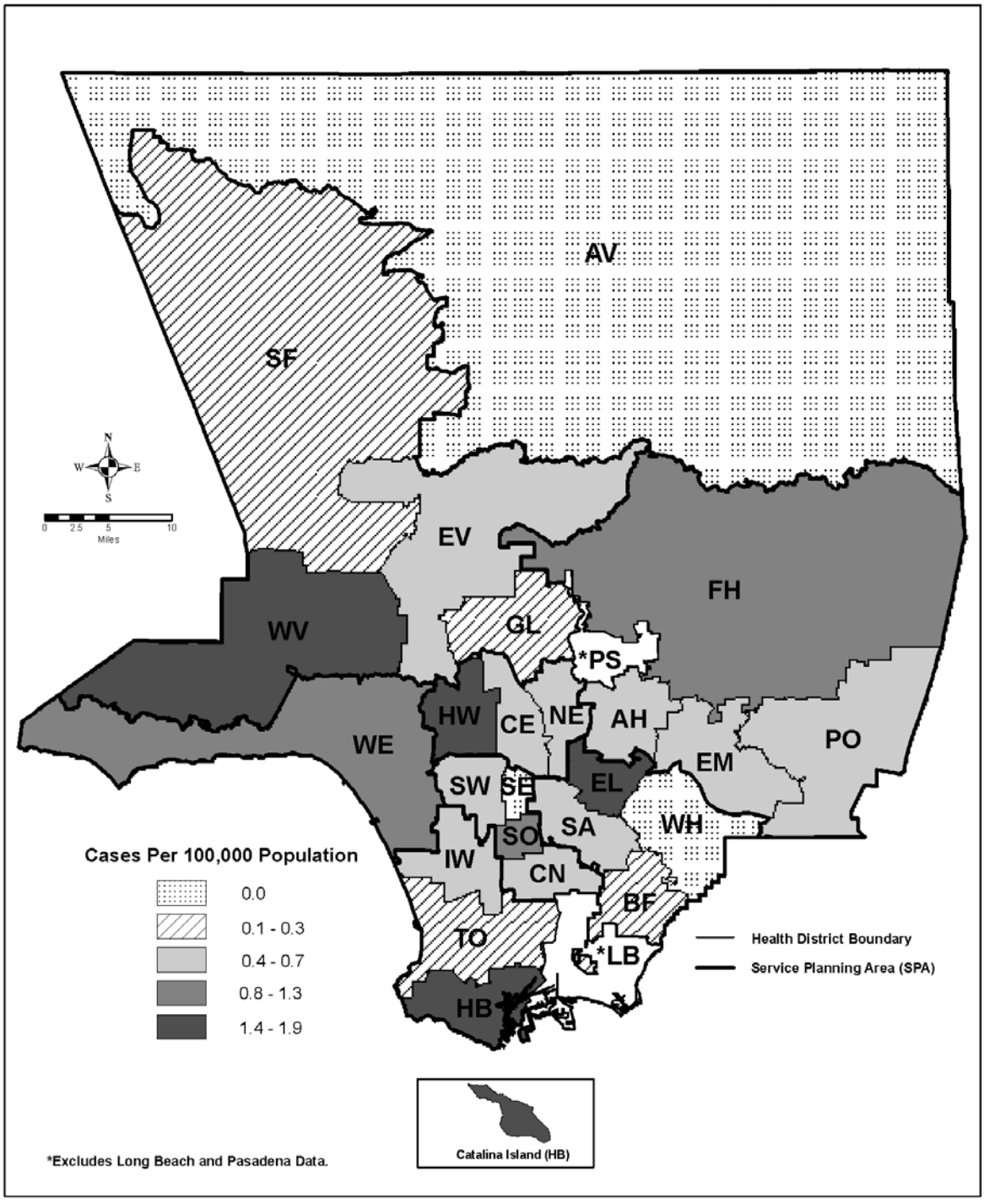
Epidemiology and Prevention of Viral Hepatitis slide set available at:
www.cdc.gov/ncidod/diseases/hepatitis/slideset/hep_b/slide1.htm

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, 2004*



Perinatal hepatitis B has moved to the Special Disease Summaries section (page 161)

HEPATITIS C, ACUTE

CRUDE DATE	
Number of Cases	5
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 predominantly transmitted through contact with contaminated blood and blood products via injection drug use. Sexual and perinatal transmission of HCV appears to occur less frequently. 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-piercing. 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 against hepatitis C.

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. After acute infection, 15%-25% of persons appear to resolve their infection without sequelae as defined by sustained absence of HCV RNA in serum and normalization of ALT levels. Chronic HCV infection develops in most persons (75%-85%) with persistent or fluctuating ALT elevations indicating active liver diseases developing in 60%-70% of chronically infected persons. In the remaining 30%-40% of chronically infected persons, ALT levels are normal. No clinical or epidemiologic features among patients with acute infection have been found to be predictive of either persistent infection or chronic liver disease [1]. Most studies have reported that medical complications occur decades after initial infection including cirrhosis, liver failure, and hepatic cancer.

LAC DHS ACDC uses the CDC/CSTE criteria for acute hepatitis C to standardize surveillance of this infection. The criteria include discrete onset of symptoms and

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

The purpose of standardizing surveillance is to allow ACDC to more accurately monitor trends in hepatitis C, compare local data with state and national data, and improve identification of risk groups.

DISEASE ABSTRACT

- There were five cases of confirmed acute hepatitis C in 2004 which is an increase from 0 confirmed cases in 2003.

COMMENTS

Of the cases reported in 2004, four were male and one was female. The mean age of acute hepatitis C cases was 58 years; the range was 18-81 years. All cases were White. One hundred and thirty-seven people were initially reported to have acute hepatitis C in 2004, but upon further investigation, only five met the acute hepatitis C surveillance criteria. The increase of acute hepatitis C cases in 2004 was probably due to increased reporting of confirmation tests (RIBA, PCR) rather than a change in the epidemiology of acute cases.

There were limitations to the data collected. The data did not provide enough information for monitoring trends in transmission patterns. The majority of cases denied having risk factors for infection. Since some cases have mild signs and symptoms of hepatitis C in their acute stages, most of the time they may be first identified during the chronic stage. Additional improvements on monitoring changes in acute disease incidence and risk factors for infection can be used to assess the effectiveness of hepatitis C prevention and control programs.

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; especially, since there is no effective vaccine or post-exposure prophylaxis. 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. Additional education provided to all of the people who already have hepatitis C is important because alcohol consumption and co-infection with HIV can accelerate the progression of cirrhosis and hepatocellular carcinoma. Patients with chronic hepatitis C should be evaluated for severity of their liver diseases and for possible treatment.

REFERENCES

1. CDC. Recommendation for prevention and control of hepatitis C virus (HCV) infection and HCV related chronic disease. MMWR 1998; 47:1-39.

ADDITIONAL RESOURCES

Further information about hepatitis is available from:

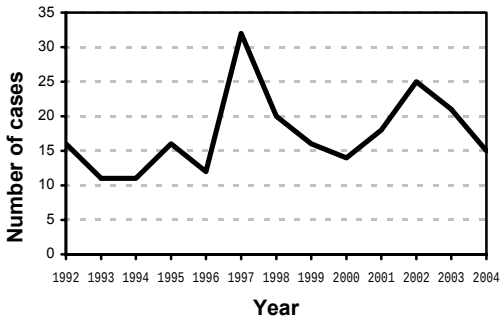
- American Liver Foundation – www.liverfoundation.org
- International Liver Foundation – www.hepfi.org/infomenu.htm
- CDC – www.cdc.gov/ncidod/diseases/hepatitis

LEGIONELLOSIS

CRUDE DATA	
Number of Cases	15
Annual Incidence[a]	
LA County	---[b]
United States	N/A
Age at Diagnosis	
Mean	61
Median	62
Range	32-92 years
Case Fatality	
LA County	20%
United States	N/A

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

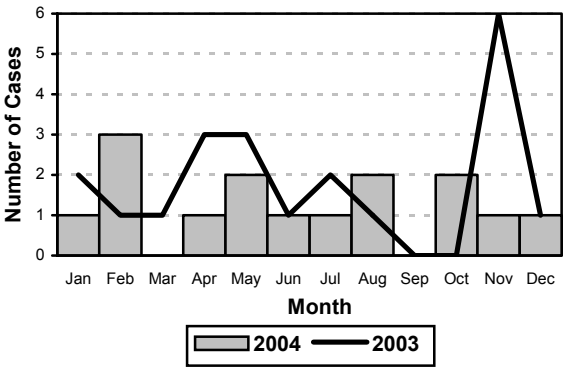
Figure 1
Legionellosis
Cases by Year of Onset
LAC, 1992–2004



DESCRIPTION

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.

Figure 2
Legionellosis
Cases by Month of Onset
LAC, 2003-2004



DISEASE ABSTRACT

- As in previous years, the incidence of Legionellosis in LAC was below national levels.
- One definite and one probable nosocomial case were reported in 2004.
- No cases of Pontiac fever were reported in 2004.
- The case fatality decreased from 29% to 20% in 2003 and 2004, respectively.

STRATIFIED DATA

Trends: Fifteen reported cases met the CDC surveillance case definition for LD in 2004. This is noticeably lower than the peak incidence of 32 cases reported in 1997 (Figure 1).

Seasonality: Seven cases (47%) occurred during the summer and autumn months (June through November) whereas eight (53%) occurred during the winter and spring (Figure 2). No seasonality trends were documented in 2004.

Age: Consistent with the expected higher frequency among older persons, the mean age of reported cases was 61 years, the median age was 62 years, and the range was 32-92 years.

Fatality: In 2004, the case fatality rate of 20% (3/15) was lower than in 2003, 29% (6/21). The mean age of expired cases was 61 years and the median age was 64 years (range: 55-65 years).

Gender: There were seven (47%) male cases and eight (53%) female cases.

Race: The majority of cases (n=6, 40%) occurred in Hispanics. The next most frequently reported racial group was White (n= 5, 33%), followed by Asian (n=2, 13%) and Black (n=2, 13%).

Ethnicity: The majority of cases reported their ethnicity to be non Hispanic (n=9, 60%), 5 (33%) cases reported Hispanic ethnicity, and 1 (7%) case reported unknown ethnicity.

COMMENTS

In 2004, 11 (73%) LD cases were diagnosed by Legionella urinary antigen, three (20%) were diagnosed by direct fluorescent antibody (DFA) staining and one (7%) by sputum culture. As in 2003, the Legionella urinary antigen was the most frequently used method to diagnose LD. However, this diagnostic technique will only screen for *Legionella pneumophilla* serogroup 1.

There was one definite and one probable nosocomial LD case reported at a single LAC medical facility in 2004. An ACDC medical epidemiologist conducted a site visit and chart review of the two LD cases at the medical facility to investigate the nosocomial LD cases. Environmental testing was carried out by the medical facility to determine if LD was detectable in the potable water that the patients' could have been exposed to, however, no *Legionella pneumophilla* was recovered. The medical facility conducted eight weeks of prospective active surveillance to detect other possible cases of nosocomially related LD as well as one year of retrospective laboratory review to determine if additional LD cases could be found. No additional LD cases were found from both prospective and retrospective surveillance methods.

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 pneumophia*, 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:

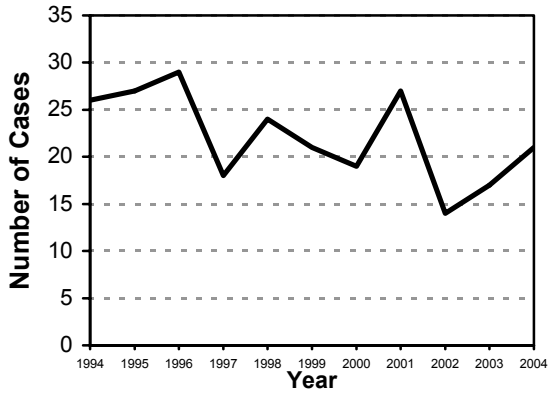
- Lin YS, Stout JE, Yu VL, Vidic RD. Disinfection of water distribution systems for *Legionella*. Semin Respir Infect 1998; 13:147–59.

- 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	21
Annual Incidence [a]	
LA County	0.22
United States	N/A
Age at Diagnosis	
Mean	66
Median	65
Range	23–100 years
Case Fatality	
LA County	10%
United States	N/A

Figure 1
Nonperinatal Listeriosis
Cases by Year of Onset
LAC, 1994–2004



[a] Cases per 100,000 population.

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 2004, 21 nonperinatal listeriosis cases were reported, a 24% increase from the previous year (N=17) that indicates a rising trend of infection in LA County. However, the ten-year trend is still one of decline (Figure 1).
- There were two case fatalities in 2004. Unlike in 2003, these fatalities were more likely due to severe underlying disease (i.e. cancer) and not advanced age as the cases were 23 and 57 years old. Case fatality was 14% (n=2) in 2002 and 24% (n=4) in 2003.
- Listeriosis typically follows a seasonal trend with most cases occurring during the summer months. During the previous five years, the highest incidence of cases occurred during June. Except for having relatively few cases in June, 2004 followed the typical seasonal trend (Figure 2).
- Although two interstate clusters were identified by PulseNet and investigated, there were no confirmed foodborne listeriosis outbreaks during 2004.

STRATIFIED DATA

Trends: Since 2002 (N=14), the number of nonperinatal listeriosis cases has been increasing (Figure 1).

Seasonality: In the previous five years, the average number of reported cases was greatest in the summer, particularly in June. In 2004, the majority of cases occurred during the summer, although relatively fewer occurred in June (Figure 2).

Age: Advanced age is considered a risk factor for nonperinatal listeriosis. In 2004, 52% (n=11) of nonperinatal listeriosis cases were 65-years of age or older—similar to 2003 (53%, n=9) but slightly higher than 2002 (43%, n=6). In 2004, 33% (n=7) of cases were 55 to 64 years of age (Figure 3).

Sex: Similar to previous years, more males contracted nonperinatal listeriosis; the male-to-female incidence ratio was 4:3.

Race/Ethnicity: In 2004, Latinos and Whites had the highest numbers of incident cases of nonperinatal listeriosis (n=9, 43%, and n=8, 38%, respectively). Since 2002, the annual numbers of Latino cases have been increasing. In 2004, three Black cases were reported, as opposed to none in the previous two years (Figure 4).

Location: During 2004, there was no significant clustering of cases by location. However, a geographic map with nonperinatal and perinatal cases showed that about one-third (30%) of these cases occurred in the San Fernando Valley, which was seen also in 2003.

Predisposing Conditions and Medical Risk Factors: As mentioned, 52% of the nonperinatal cases occurring in 2004 were older than 65 years of age. In addition, 48% had diabetes, 38% were on steroid medication, 38% had history of gastrointestinal disease, 38% were using antacids, 33% had cancer, 24% had recent chemotherapy, 24% had kidney disease, and 24% had recent antibiotic use. Sixteen (76%) of nonperinatal cases had two or more medical risk factors. Two cases did not have any known-risk factors for listeriosis (Table 1).

High-risk Foods: Regarding risk foods routinely investigated, 43% of cases reported eating soft cheese, 38% cold cuts or deli meats, 29% other cheese (non-Mexican-style cheese, non-soft

Figure 2
Nonperinatal Listeriosis
Cases by Month of Onset
LAC, 2004

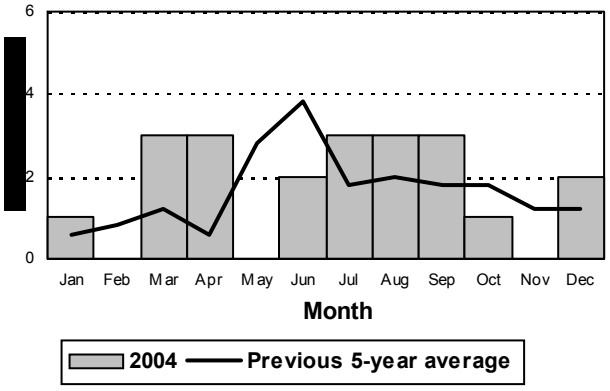


Figure 3
Nonperinatal Listeriosis Incidence
by Age Group
LAC, 2004

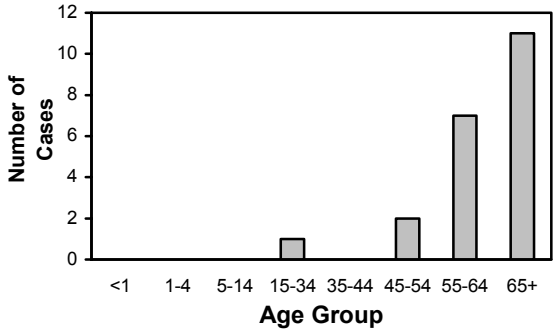
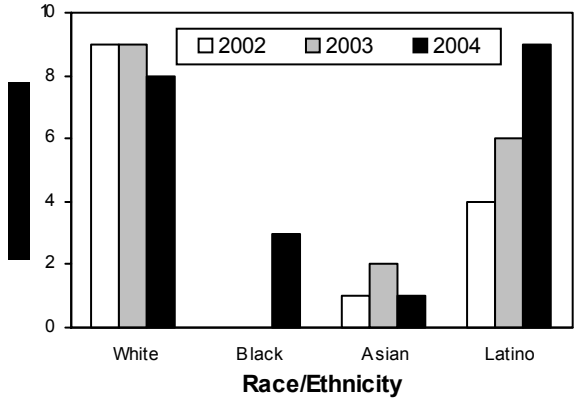


Figure 4
Nonperinatal Listeriosis
Incidence by Race/Ethnicity
LAC, 2002-2004



cheese), 29% raw fruits, 24% raw vegetables, and 14% Mexican-style cheese (Table 2).

Outcome: Two (10%) of the 21 cases in 2004 died. These cases were not of advanced age but were at advanced stages of cancer.

Culture Sites: *L. monocytogenes* was isolated from blood only in 17 (81%) cases, CSF only in two (10%) cases, platelets in one case (5%), and an eye in one case (5%).

PFGE-identified Clusters: Two listeriosis clusters were identified by using pulsed-field gel electrophroesis (PFGE) and participating in PulseNet under CDC. In October 2004, a nonperinatal case and a perinatal case were part of cluster 0412ml-1ca which by January 2005 became a five-person cluster with an additional isolate from food sampling. The states involved were California, Wisconsin, and New Jersey. No epidemiologic links were identified.

In November 2004, three nonperinatal cases with onsets 8/9/03, 9/29/04, and no onset (asymptomatic platelet donor) were part of the four-person cluster 0411nl-1c which included a Colorado case. Although a health alert was issued, no further PFGE-matching cases were reported and no epidemiologic links were identified.

Table 1. Predisposing Factors in Cases of Nonperinatal Listeriosis—LAC, 2004

Medical Conditions	Number	Percent
Age >65 years	12	57
Cancer	7	33
Chemotherapy	5	24
Steroid Use	8	38
Diabetes	10	48
Kidney Disease	5	24
Chronic Alcoholism	3	14
Radiation Therapy	2	10
Autoimmune Disease	3	14
Liver Disease	4	19
Lung Disease	2	10
Prior Antibiotic Use	5	24
Antacid Use	8	38
Asthma	1	5
Gastrointestinal Disease	8	38
HIV+/AIDS	0	0
Other Immunosuppressive Therapy	1	5
Organ Transplant	0	0
Intravenous Drug Use	1	5
No Identified Risk Factors	2	10

Table 2. High-risk Foods among Cases of Nonperinatal Listeriosis—LAC, 2004

Risk foods	Number	Percent
Raw Milk	1	5
Raw Milk Products	0	0
Mexican-style Cheese	3	14
Soft Cheese	9	43
Other Cheese	6	29
Raw Beef	1	5
Raw Pork	0	0
Raw Poultry	1	5
Raw Fish	2	10
Cold Cuts/ Deli Meats	8	38
Raw Egg	0	0
Raw Fruit	6	29
Raw Vegetables	5	24
Yeast Products	1	5

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, 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 all together; however, individuals with severely compromised immune systems and/or several disease risk factors should avoid them. 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.

COMMENTS

2004 marked another increase in annual cases. Although 2002 had the second lowest incidence rate for listeriosis in at least 10 years, the increase, particularly among Latinos, indicates public health education may be necessary to reverse the upward trend. While better reporting might be a contributor to having more cases in 2004, the need for public health action is apparent.

L. monocytogenes is an opportunistic disease targeting people who have compromised immune systems. Healthy immune systems and intestinal tracts are important to prevent clinical illness. This year also highlighted the significance of iron overload and blood transfusions in the pathology of *L. monocytogenes* as one PFGE-identified cluster involved an asymptomatic platelet donor. The investigation of this cluster demonstrated that while iron overload is routinely investigated for listeriosis cases, there is a diagnostic bias as only patients with certain chronic anemias are tested for iron overload. Including history of blood transfusions and blood disorders like anemia in the routine investigation of listeriosis is now being considered.

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 2004.

ADDITIONAL RESOURCES

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

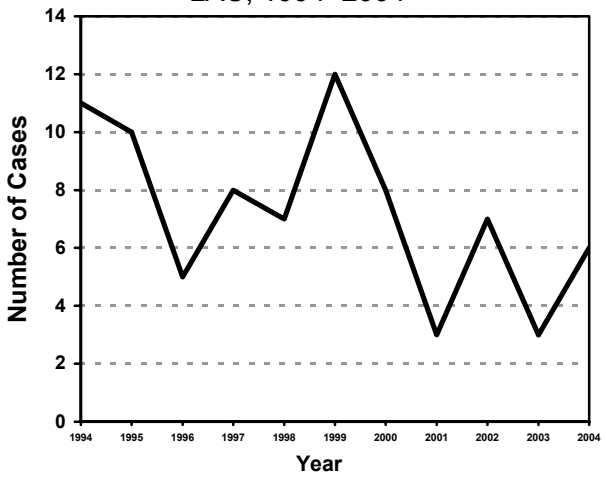
General information and reporting information about this and other foodborne diseases in LAC is available at: www.lapublichealth.org/acd/food.htm

LISTERIOSIS, PERINATAL

CRUDE DATA	
Number of Cases [a]	6
Annual Incidence [b] LA County United States	 ---[c] N/A
Age at Onset Maternal: Mean Median Range Infant Gestational: Mean Median Range	 25 years 33 years 17-39 years 31 weeks 31 weeks 21-38 weeks
Case Fatality LA County United States	 33%[d] N/A

[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.

Figure 1
Perinatal Listeriosis
Cases by Year of Onset
LAC, 1994–2004



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 often 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

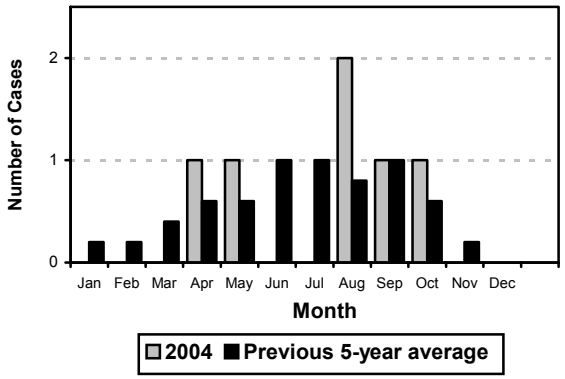
- Perinatal listeriosis increased from three cases in 2003 to six cases in 2004 (Figure 1).
- Regarding infants, two were stillborn at 21 and 31 weeks of gestation, two were born sick at 31 and 38 weeks of gestation, one was born alive and healthy at 36 weeks of gestation, and one continued to term after antibiotic treatment at 27 weeks of gestation.

STRATIFIED DATA

Trends: Since 2001, the annual incidence of perinatal listeriosis has see-sawed, ranging from three to seven cases (Figure 1).

Seasonality: In 2004, the seasonality of perinatal listeriosis did not deviate from the average annual incidence of the previous five years; higher levels of incidence occurred between April and October, particularly in August (Figure 2).

Figure 2
Number of perinatal listeriosis cases
by month of onset
LAC, 1999–2004



Age: During 2004, the average maternal and gestational ages of perinatal cases at disease onset (25 years and 31 weeks, respectively) were lower compared to those in 2003 (33 years and 36 weeks).

Sex: In 2004, the male to female infant ratio was 2:3. In 2003 and 2002, the ratios were 2:1 and 2:4, respectively.

Race/Ethnicity: Similar to 2003, in 2004 67% (n=4) of the cases were Latino and 33% (n=2) were White. In 2002, Latinos comprised 71% of the perinatal cases. 1999 U.S. Census data documented 62.2% and 19.0% of all LAC live births were by Latino and White mothers, respectively.

Location: In 2004, two cases resided in the West / Burke health district (SPA 5) and two resided in the San Fernando health district (SPA 2). The other two cases resided in different health districts but both are located in SPA 7. Of these three SPA's, only SPA 5 saw perinatal listeriosis (n=1, 33%) last year.

Type of Delivery: Three infants (50%) were delivered vaginally, and two (33%) by caesarian section. The type of delivery was unknown for the case which involved the mother who was treated for listeriosis at 27 weeks of gestation and then delivered at full term.

Outcome: There were no maternal fatalities. Two (33%) neonates were stillborn at 21 and 31 weeks of gestation, two (33%) were delivered sick at 31 and 38 weeks of gestation, one (17%) was delivered alive and healthy at 36 weeks of gestation, and one (17%) was delivered healthy at full term after treatment at 27 weeks of gestation.

Culture Sites: Listeriosis was culture confirmed in four mothers and two neonates. There were no cases where both mother and infant had positive cultures for *L. monocytogenes*. Among culture-positive mothers, two (50%) mothers had *L. monocytogenes* isolated from blood only, one (25%) from the placenta, and one (25%) from blood and placenta. Among the two culture-positive infants, one infant had an isolate from blood only, and the other had isolates from the ear and the rectum.

Maternal clinical signs/outcomes: In 2004, all six mothers had fevers and three (50%) had sepsis. Similar to the previous two years, all mothers were symptomatic and no mothers had meningitis.

Onset: In 2004, all infants born were classified as early-onset (0–6 days after birth).

High-risk Foods: Five (83%) of six mothers reported eating at least one potentially high-risk food. Five (83%) mothers ate raw fruit, four (67%) ate Mexican-style cheese, four ate other types of cheese (Monterey Jack, Mozzarella, American, Cheddar), four (67%) ate raw vegetables, three (50%) ate cold cuts or deli meats, two (33%) ate soft cheese, and two (33%) ate yeast products (Table 1).

Risk factors: Only one mother had predisposing medical factors other than pregnancy. She had a history of urinary tract infections and took iron medication which might have helped the *L. monocytogenes* proliferate. The outcome of this case was stillbirth at 31 weeks of gestation.

Three (50%) mothers had traveled outside the United States during pregnancy. One of these emigrated from Mexico and had a stillbirth at 21 weeks of gestation.

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 milk products; soft cheeses (Mexican-style, Brie, Feta, blue-veined, Camembert); undercooked meat, such as beef, pork, poultry, and paté; 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.

Table 1. High-risk Foods among Cases of Perinatal Listeriosis—LAC, 2004

Risk foods	Number	Percent
Raw Fruit	5	83
Mexican-style Cheese	4	67
Other Cheese	4	67
Raw Vegetables	4	67
Cold Cuts/ Deli Meats	3	50
Soft Cheese	2	33
Yeast Products	2	33
Raw Milk	1	17

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 April. Possible preventive methods include education during prenatal checkups, outreach to Hispanic/Latino communities, and food safety notices at food and deli markets.

COMMENTS

Incidence of perinatal listeriosis in LAC is less than ten cases per year for the fifth consecutive year. Prevention efforts should be targeted towards Hispanic and White women, especially with Hispanics being the fastest growing segment of the LAC population. There were no perinatal cases associated with outbreaks in 2004.

All isolates of *L. monocytogenes* are 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 2004, there were no cases of *L. monocytogenes* in LAC associated with a multi-jurisdictional outbreak identified in this manner. However, in October 2004, a perinatal case and nonperinatal case in LAC were part of cluster 0412ml-1ca which by January 2005 became a five-person cluster with isolates from California, Wisconsin, and New Jersey. No epidemiologic links were identified to indicate that the cluster was an outbreak.

ADDITIONAL RESOURCES

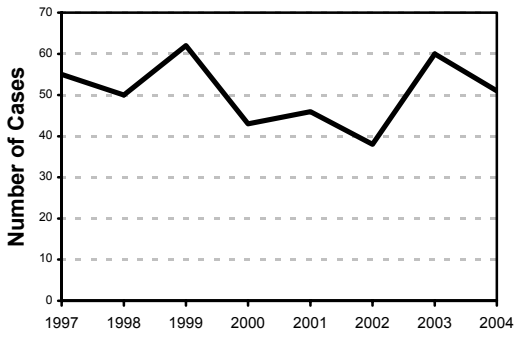
General disease information is available from the CDC at:
www.cdc.gov/ncidod/dbmd/diseaseinfo/listeriosis_g.htm

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

MALARIA

CRUDE DATA	
Number of Cases	51
Age at Onset Mean Median Age Range	 35 34 1–71 years
Case Fatality LA County United States	 0.0% N/A

Figure 1
Malaria
Cases by Year
Los Angeles County, 1997–2004

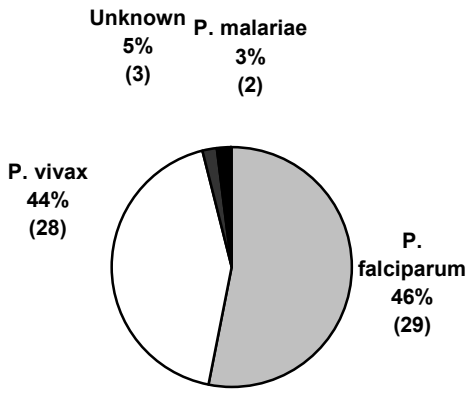


DESCRIPTION

Human malaria is an illness caused by one or more plasmodia that infect humans: *P. vivax*, *P. falciparum, P. malariae,* and *P. ovale*. *P. falciparum* is found primarily in tropical regions and poses the greatest risk of death because it invades red blood cells of all stages and is often drug-resistant.

Malaria is a disease acquired outside the continental US through travel and immigration and is rarley transmitted within the US. Although there is no recent documentation of malaria being transmitted locally, a particular mosquito, *Anopheles hermsi*, exists here and is capable of transmitting the parasite. In 1988-89, the last autochthonous cases occurred in San Diego, CA among thirty migrant workers infected with Plasmodium vivax (P.vivax). Since then, local transmission has not occurred in southern CA due to an adequate number of people infected with the malaria parasite to sustain disease transmission. Additionally, the mosqutio capable of transmitting malaria is very rare.

Figure 2
Malaria Cases by Species
LAC, 2004



DISEASE ABSTRACT

- The number of malaria cases in LAC decreased from 60 to 51 cases in 2003 and 2004, respectively (Figure 1).
- LAC residents comprised 66% (34/51) of the malaria cases. Fourteen percent (7/51) of the reported cases were refugees/immigrants and 6% (3/51) were foreign visitors in LAC. One non-resident case remains unknown for reasoned traveled to the US. Residency status could not be determined in 6 cases.
- Only 20% (7/34) of LAC residents took some form of antimalarial chemoprophylaxis during travel to a malaria-endemic region (Table 2). Of the remaining LAC residents, seventy-one percent (24/34) denied using any prophylaxis, six percent (2/34) could not recall prophylaxis usage, and in one case no information was available.

STRATIFIED DATA

Species Frequency: The infecting malarial species was identified for 48 cases (94%); 26 cases were infected with *P. falciparum*, 21 with *P. vivax*, and 1 with *P. malariae* (Table 1).

Seasonality: Seasonality for malaria was not determined. Malaria is acquired abroad and is independent of LAC weather or seasonal patterns.

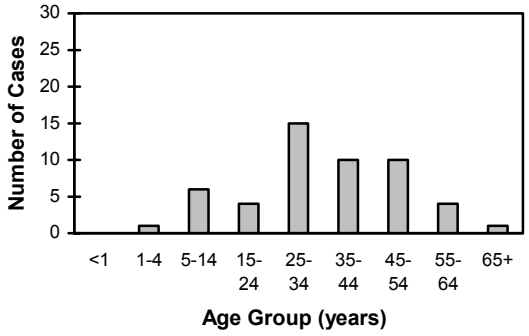
Age: Most cases occurred in individuals aged 25-34, (15 cases or 29%) followed by those between 35 to 44 years (10 cases or 20%). Mean age of infection was 35 years, median age was 34, and the age range was 1-71 years old.

Sex: The rate ratio of male-to-female cases is two to one (2:1).

Race/Ethnicity: Over fifty percent of the reported malaria cases occurred among Blacks which included African-Americans and African nationals (27/51 or 53%), followed by Hispanics (13/51 or 25%), Asian/Pacific Islanders (7/51 or 14%), and Whites which comprised of only 8 percent (4/51) of the total cases.

Fatalities: There were no deaths due to malaria.

Figure 3
Malaria
Cases by Age Group
LAC, 2004



COMMENTS

LAC residency status included individuals who were residents for any length of time. Five of the 34 cases (15%) were LA county residents for less than 12 months. The majority of malaria cases (n=34, 76%) were LAC residents who traveled abroad either for work or pleasure. Traveling for work included individuals that traveled for business or as a student/teacher. Tourism and visiting friends/family were classified as traveling for pleasure. The reason for the overall decrease in malaria cases is most likely due to a decrease in overseas travel and incoming refugees from malaria endemic countries. The number of malaria cases overall is still far below the number of cases seen throughout the late 1970s through 1986 (an average of 133 malaria cases reported annually from 1979-1986).

In LAC, malaria is a disease related to travel and immigration. Among US travelers who returned with malaria infection, Africa remains the most common region visited. Twenty-nine (57%, 29/51) of reported malaria cases were from individuals who were LAC 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, with the exception of year 2003, where Caucasians outnumbered Blacks in malaria cases.

Prior to the 1990s, immigrants/refugees from Central America and Southeast Asia made up the majority of all malaria cases seen in LAC. In contrast in 2004, refugees/immigrants made up only 14% (7/51) of cases; most cases were Hispanic (3) and African (3). The leading countries of acquisition for refugees/immigrants were Guatemala and Nigeria, respectively.

Anti-malarial prophylaxis use was available for all of the 34 LAC residents. Only, seven individuals (21%, 7/34) took prophylaxis (Table 2). However, six of the seven cases taking prophylaxis reported not completing their medication; in one case information was unknown.
Seven cases of the 51 overall malaria cases reported had a previous malaria history twelve months prior to onset and none of these cases reported taking any form of prophylaxis. Twenty-seven of the malaria cases had no previous malaria history. Malaria history could not be determined for 17 cases. *P. vivax* was

the leading species in the cases that had a previous malaria history (4/7) with P. *falciparum* following (3/7). No cases were acquired through blood transfusion.

Table 1. Malaria Cases by Country of Acquisition and Plasmodium Species—LAC, 2004

Country of Acquisition	*P. falciparum*	*P. vivax*	*P. malariae*	*P. ovale*	Unknown	Total
Africa						
- Cameroon	1	0	0	0	0	1
- Ghana	0	0	1	0	0	1
- Kenya	3	1	0	0	0	4
- Liberia	1	0	0	0	0	1
- Nigeria	16	1	0	0	0	17
- South Africa	0	1	0	0	0	1
- Uganda	1	0	0	0	0	1
- Zimbabwe	1	0	0	0	0	1
- West Africa, unspecified	1	0	0	0	0	1
- Africa, unspecified	0	0	0	0	1	1
Total	**24**	**3**	**1**	**0**	**1**	**29**
Latin America						
- Guadalajara	0	1	0	0	0	1
- Guatemala	2	5	0	0	0	7
- Honduras	0	1	0	0	0	1
- Mexico	0	3	0	0	0	3
Total	**2**	**10**	**0**	**0**	**0**	**12**
Asia/Oceania						
- India	0	5	0	0	0	5
- Pakistan	0	1	0	0	0	1
Total	**0**	**6**	**0**	**0**	**0**	**6**
South Pacific						
- Vanuatu	0	1	0	0	0	1
Total	**0**	**1**	**0**	**0**	**0**	**1**
Uknown	0	1	0	0	2	3
Total	**0**	**1**	**0**	**0**	**2**	**3**
Overall Total	**26**	**21**	**1**	**0**	**3**	**51**

Table 2. Malaria Prophylaxis Use Among US Residents, 2004

Reason for Travel	Malaria Cases (N)	Cases That Used Prophylaxis (N)	Prophylaxis Use (%)
Pleasure	25	7	28%
Work	6	0	0%
Other/Unknown	3	--	--
Total	**34**	**7**	**21%**

ADDITIONAL RESOURCES

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

CDC. Malaria Surveillance—United States, 2002. MMWR 2004. SS-1:21-33. Available at: http://www.cdc.gov/mmwr/preview/mmwrhtml/ss5301a2.htm

CDC. Transmission of Plasmodium vivax Malaria—San Diego County, California, 1988 and 1989. MMWR 1990. 39:91-94. Available at:http://www.cdc.gov/mmwr/preview/mmwrhtml/00001559.htm

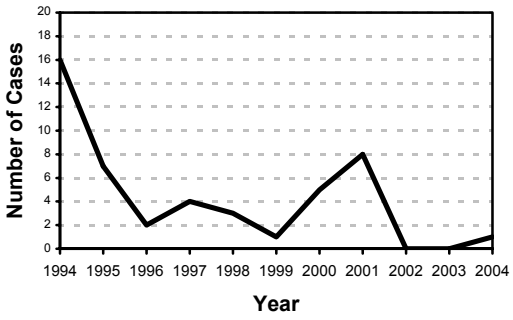
MEASLES

CRUDE DATA	
Number of Cases	1
Annual Incidence[a]	
LA County	---[b]
California	N/A
United States	N/A
Case Fatality	
LA County	0.0%
United States	

[a] Cases per 100,000 population

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

Figure 1
Measles
Reported Cases by Year of Onset
LAC, 1994-2004



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

- From 49 measles reports received at the LAC Immunization Program, there was only one confirmed measles case identified in LAC during 2004.
- During 2004, 6 measles cases were reported in California. Since the current measles cases have been imported cases, an effective measles surveillance system needs to be maintained.

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 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 two MMR doses is recommended for health care workers and persons 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.
- Although the titer of vaccine-induced antibodies is lower than that following natural disease, both serologic and epidemiologic evidence indicate that vaccine-induced immunity appears to be long-term

and probably life-long in most individuals.
- Women should not become pregnant within 4 weeks of vaccination.
- Individuals who are severely immunocompromised for any reason should not be given MMR vaccine.

STRATIFIED DATA

Trends: Over the past 10 years, the number of confirmed measles cases has decreased significantly (Figure 1). Although absolute numbers are low, the number of reported measles cases started increasing in 1999. In 2002 and 2003, no confirmed cases of measles were identified in LAC; marking the only two times this has occurred in more than 30 years. The single case in 2004 was an imported case, whose rash onset occurred within 21 days of traveling outside of the United States.

Sex: Male.

Race/Ethnicity: Asian.

Seasonality: Rash onset in June.

Age: The case was 26 years of age.

Location: The case resides in SPA 8 (South Bay), but the illness was not linked to local transmission. The case acquired measles while traveling outside of the United States and developed clinical symptoms of measles within five days of returning to the United States.

Vaccination Status: No MMR documentation was available. The case denied a history of refusing childhood immunizations but couldn't recall receiving the MMR vaccine.

Laboratory Confirmation: The case was confirmed with a positive IgM antibody titer.

Complications: The case survived but was hospitalized for two days.

COMMENTS

Because LAC is in many ways a "door-way" to the US for travelers and other persons coming from parts of the world where measles continues to circulate, it is important that an effective measles surveillance system be maintained in this local health jurisdiction. With the high measles vaccine coverage levels (exceeds 90% for children 19-35 months of age), indigenous measles cases are expected to be almost non-existent. The importation of measles, however, can result in sporadic measles activity as was noted this year and in 2001 when at least 3 of the 8 cases that year were proven to have a foreign travel or foreign born connection.

The strength of LAC's measles surveillance system is exemplified by the fact that 49 suspect measles cases were reported in 2004. For surveillance to be effective, a case or suspected case must be reported to the health department. In 2004, suspect measles reports came from a variety of sources. Approximately 38.8% (n=19) of the suspect cases were first reported by hospitals/clinics, 28.6% (n=14) were reported by school nurses, 20.4% (n=10) were reported by laboratories, and the remaining 12.2% (n=6) were reported by other sources, including the state health department, residential facilities, the military, and via death certificate review.

It is the policy of the LAC Immunization Program to immediately investigate 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. In the absence of an IgM test, a four-fold rise in measles IgG antibody titers between an acute serum specimen and a convalescent specimen at 2 weeks later usually indicates current or recent measles infection.

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

Additional information about measles is available at:
- National Immunization Program – www.cdc.gov/nip
- Immunization Action Coalition – www.immunize.org
- LAC, Immunization Program – www.lapublichealth.org/ip

MENINGITIS, VIRAL

CRUDE DATA	
Number of Cases	807
Annual Incidence[a]	
LA County	8.5
United States	N/A
Age at Diagnosis	
Mean	27
Median	24
Range	<0–90 years
Case Fatality	1
LA County	<1.0%
United States	N/A

[a] Cases per 100,000 population.

Figure 1
Viral Meningitis
Incidence Rates by Year of Onset
LAC, 1994–2004

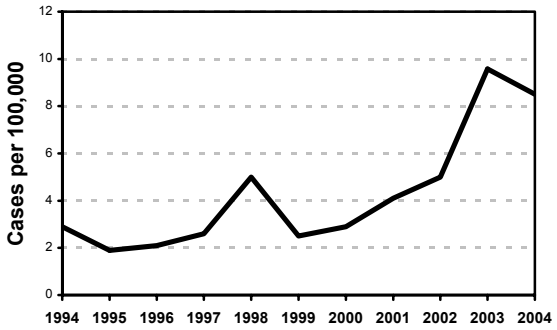
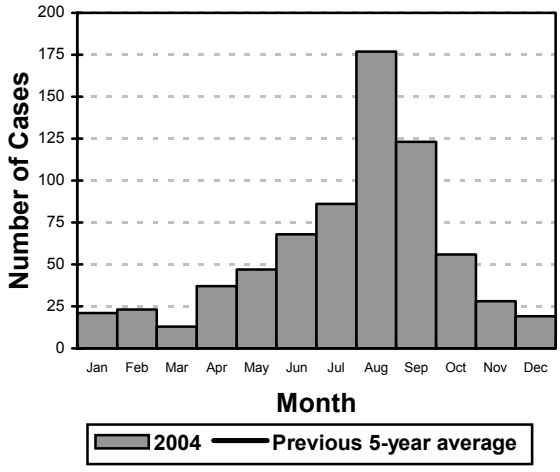


Figure 2
Viral Meningitis
Cases by Month of Onset,
LAC, 2004



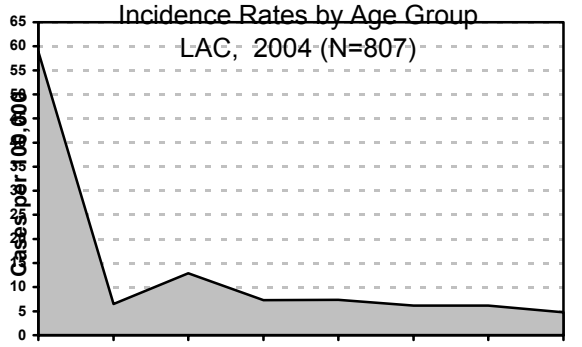
DESCRIPTION

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. Viral meningitis can occur at any age but is most common among the very young. Symptoms are characterized by sudden onset of fever, severe headache, stiff neck, photophobia, drowsiness or confusion, nausea and vomiting and usually last from 7 to 10 days. Enteroviruses, the etiologic agents most commonly associated with viral meningitis, are not vaccine-preventable (except for polioviruses) and account for 85% to 95% of all cases in which a pathogen is identified. Estimates from the Centers for Disease Control and Prevention (CDC) indicate that 10 to 15 million symptomatic enteroviral infections occur annually in the US, which includes 30,000 to 75,000 cases of meningitis. Transmission of enteroviruses may be fecal-oral, respiratory or by another route specific to the etiologic agent. Since the arrival of West Nile Virus (WNV) in Southern California in 2003, this etiology should be considered as an important cause of aseptic meningitis, especially in adults, and the appropriate diagnostic tests should be obtained. Prevention strategies and laboratory testing for WNV infections is detailed in a dedicated chapter. Treatment for enteroviral and WNV-associated viral meningitis is supportive; recovery is usually complete and associated with a low mortality rates. Antiviral agents are for treatment of viral meningitis due to for herpes viruses.

DISEASE ABSTRACT

- In 2004, there were a total of 807 cases of viral meningitis compared to 899, representing a 10% decrease from 2003.
- The annual incidence decreased from 9.6 to 8.5 cases per 100,000 in 2003 and 2004, respectively.
- The summer seasonal case increase continued later into the year compared with the previous 5-year average (Figure 2).
- West Nile virus, an arboviral infection, was an important cause of aseptic meningitis in 2004. Eighty-two (10%) cases were associated with WNV meningitis (See WNV section for details).
- Infants less than 1 year old had the highest age-group specific rate, 58.9 per 100,000, of any age group (Figure 3). In contrast to 2004, in 2003, 15-34 year olds had the highest age specific incidence rates for viral meningitis, 10.8 per 100,000.
- The case fatality rate remained low; only 1 death was reported in 2004.
- There was one outbreak reported in a junior high school involving 4 cases of viral meningitis. The etiology was determined to be enterovirus by PCR analysis of the cerebral spinal fluid. All students recovered without sequelae.

Figure 3
Viral Meningitis
Incidence Rates by Age Group
LAC, 2004 (N=807)



COMMENTS

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 2004, the overall viral meningitis incidence rate of 8.5 cases per 100,000 was less than that reported in 2003, 9.6 per 100,000. Reporting bias may contribute to fluctuations in annual incidence rates. From 2003 to 2004, increased reporting of viral meningitis and testing for underlying WNV infection was encouraged among health care providers and hospital infection control practitioners, which could account for an increased viral meningitis incidence rates during those years.

Information about the causative agents of viral meningitis is rarely included with case reports because viral cultures and nucleic acid based- tests such as PCR analysis of the cerebral spinal fluid is not routinely performed at most medical facilities. When an etiology is determined, enteroviruses, is the most frequently identified agent. Improvements in molecular testing capabilities should lead to faster diagnoses and more appropriate management of viral meningitis such as less use of inappropriate antibiotics and fewer and shorter hospital admissions.

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.

ADDITIONAL RESOURCES

Tunkel AR, Scheld WM. Acute Meningitis. In Mandell, Douglas, and Bennett's Principles and Practices of Infectious Diseases 6th Edition. Elsevier, Churchill Livingstone, 2005, 1083-1085.

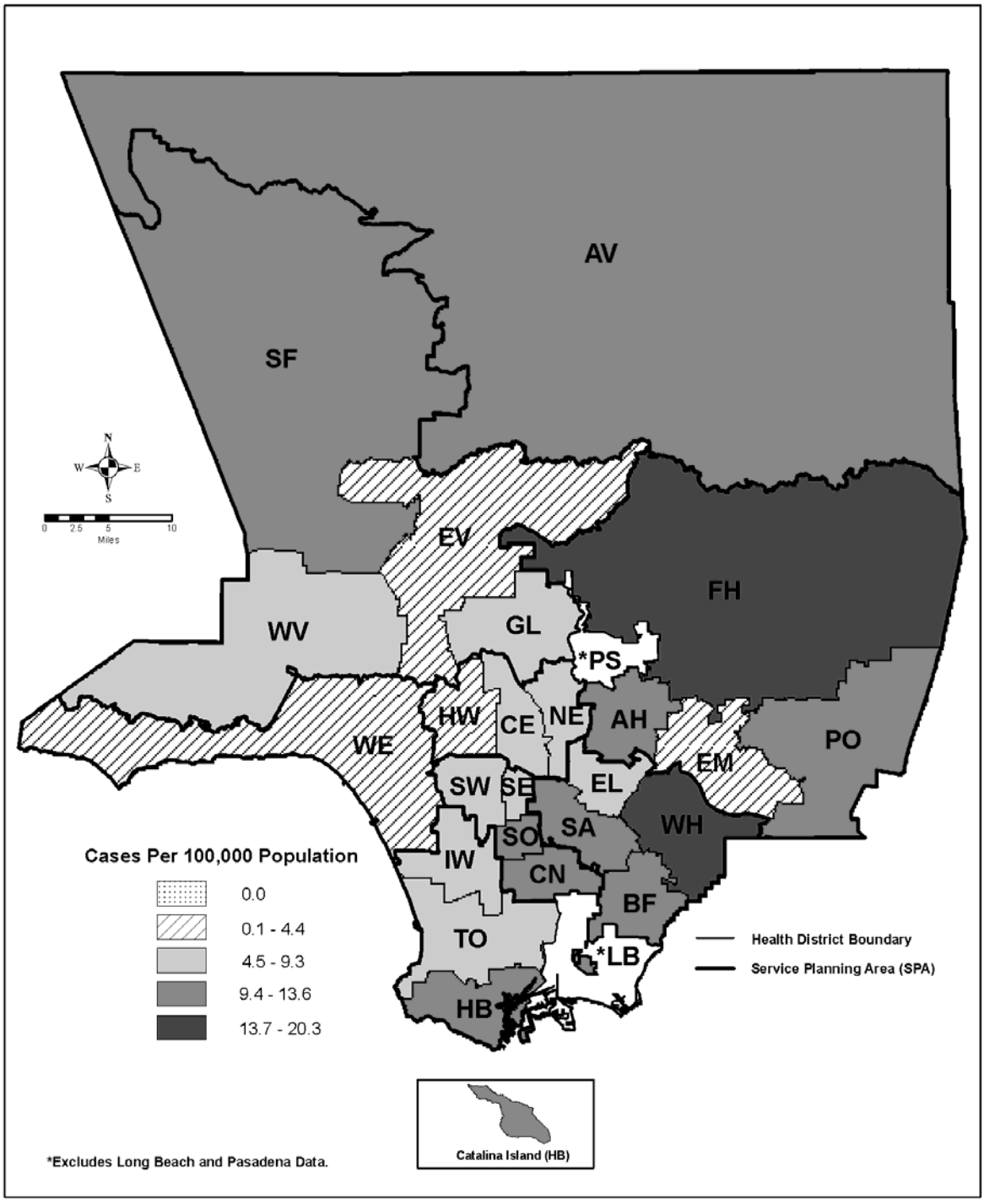
CDC. Respiratory and Enteric Viruses Branch, Viral (Aseptic) Meningitis at:
www.cdc.gov/ncidod/dvrd/virlmen.htm

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

CDC. Outbreaks of Aseptic Meningitis Associated with Echoviruses 9 and 30 and Preliminary Reports on Enterovirus Activity—United States, 2003. MMWR 2003; 32:761-763. Available at: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5232a1.htm

Map 9. Meningitis, Viral
Rates by Health District, Los Angeles County, 2004*



MENINGOCOCCAL DISEASE

CRUDE DATA	
Number of Cases	28
Annual Incidence[a]	
LA County	0.29
California	0.57
United States	0.47
Age at Diagnosis	
Mean	31
Median	29
Range	<0–79 years
Case Fatality	
LA County	11%
United States	N/A

[a] Cases per 100,000 population

Figure 1
Meningococcal Disease
Incidence Rates by Year of Onset
LAC and US, 1994–2004

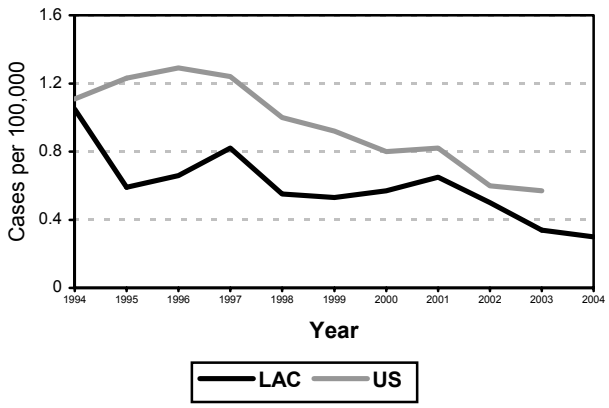
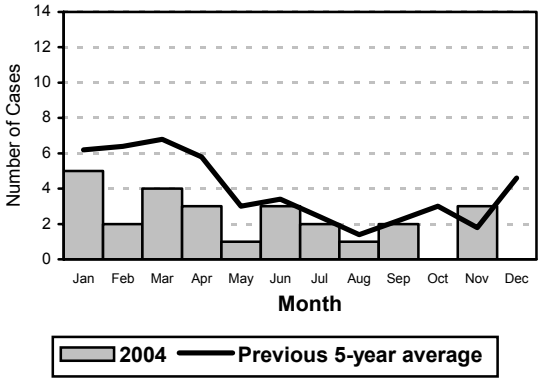


Figure 2
Meningococcal Disease
by Month of Onset
LAC, 2004 (N=28)



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 A, C, Y, and W-135 are vaccine-preventable.

DISEASE ABSTRACT

Reported invasive meningococcal disease cases continued to decline from 2004 to 2003 with 28 and 32 cases reported respectively; there were fewer deaths than in the previous year, 3 and 5 deaths in respective years. Invasive meningococcal disease was diagnosed most frequently in the serogroups B, C, and Y. In 2004*, N. meningitidis* was confirmed by culture in 18 (64%) of 28 cases: 11 (61%) from blood, 3 (17%) from cerebrospinal fluid (CSF), 4 (22%) from both blood and CSF (Figure 5).

STRATIFIED DATA

Trends: Cases were sporadic and continued to decline (Figure 1). Serogroup B isolates decreased from 2003 to 2004 among those submitted for serogroup identification (n=15) and were outnumbered by

serogroups C or Y almost 1:4 (Figure 6).

Seasonality: Cases were characteristically highest during winter and early spring (Figure 2).

Age: The rate among children age 1 - 4 decreased from 2003 (0.4 vs. 1.5 per 100,000). The rate of cases in infants aged <1 year were similar to last year (1.5 vs. 1.5 per 100,000). The rate among adolescents age 15-19 also stayed the same for both years (2.5 vs. 2.5 per 100,000)

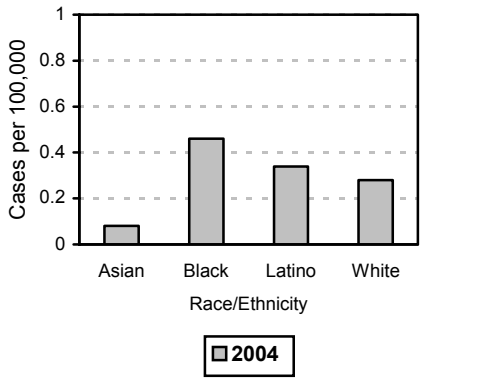
Sex: The male-to-female rate ratio was 1.2:1**.**

Race/Ethnicity: The most invasive meningococcal cases were reported in Hispanics (N= 15 (54%)) followed by Whites (N=8 (29%), Blacks (N= 4 (14%)), and only 1 (4%) in Asians. The number of cases in each of these groups is too low for the rates to be reliable.

Figure 3
Meningococcal Disease
Incidence Rates by Age Group
LAC, 2004

Location: The number of cases was highest were in SPA 3 (n=7) and SPA 2 (n=6), followed by SPA 4 (n=4) and SPA 7 (n=4) respectively.

Figure 4
Meningococcal Disease
Incidence Rates by Race/Ethnicity
LAC, 2004



PREVENTION

Antimicrobial chemoprophylaxis of close contacts of sporadic cases of meningococcal disease remains the primary means for prevention of meningococcal disease. Close contacts include a) household members, b) day care center contacts, and c) anyone directly exposed to the patient's oral secretions (e.g., through kissing, mouth-to-mouth resuscitation, endotracheal intubation, or endotracheal tube management). Because the rate of secondary disease for close contacts is highest during the first few days after onset of disease in the primary patient, antimicrobial chemoprophylaxis should be administered as soon as possible (ideally within 24 hours after the case is identified). Conversely, chemoprophylaxis administered greater than 14 days after onset of illness in the index case-patient is probably of limited or no value. Prophylactic treatment and follow-up of close contacts are routinely being handled by the respective health district in the County.

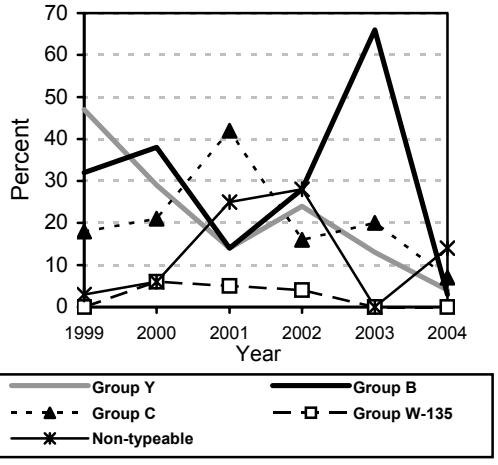
The current polysaccharide-based meningococcal vaccine (MPSV4), *Menomune*, which protects against sergroups A, C, Y, and W-135 and can only be given to persons aged 2 and older, is recommended for persons with terminal complement deficiencies, persons with anatomic or functional asplenia, research and clinical laboratory personnel who are routinely exposed to *N. meningitides* in solutions that may be aerosolized, and travelers or US citizens residing in countries where N. meningitides is hyperendemic or epidemic. The vaccine is also used to control serogroup C meningococcal outbreaks. College freshman who live in dormitories are at higher risk for meningococcal disease and should be educated about the availability and effectiveness of the new quadrivalent meningococcal conjugate, MCV4, in preventing disease that is caused by the covered serogroups.

In 2005, a new quadrivalent meningococcal conjugate (MCV4) vaccine will be introduced. This new vaccine will protect against the same serogroups as MPSV4 but will provide longer lasting immunity and

have different age indications. MCSV4 will be recommended for use in persons aged 11 to 55 years, although the use of MPSV4 is also acceptable. Generally, only a single dose of either vaccine is recommended.

Surveillance for invasive meningococcal disease will be especially critical during the periods pre- and post-introduction of the new quadrivalent conjugate vaccine. In preparation, LAC DHS and the California Department of Health Services (CDHS) are initiating enhanced surveillance for invasive *N. meningitidis* infections. Enhanced surveillance will help: (1) monitor the changing epidemiology of meningococcal disease; (2) assist with identification and management of cases and outbreaks; and (3) assess vaccine effectiveness, (4) ascertain the usefulness of polymerase chain reaction (PCR) in culture-negative cases, particularly in patients treated with antibiotics prior to culture, and (5) help contribute to improvements in the overall diagnosis and management of invasive meningococcal disease.

Figure 5
Meningococcal Disease
by Serogroup
LAC, 1999–2004



COMMENTS

For every culture-confirmed case, laboratories are requested to have the LAC public health lab perform serotyping**.** The LAC Public Health Laboratory received 15 case isolates (54% of all cases) for serogroup identification. Of these, 20% (n=3) were serogroup B; 47% (n=7) were serogroup C; 30% (n=5) were serogroup Y (Figure 5). As in 2003, no serogroup W-135 were identified. Forty-five percent (n= 13) of the isolates did not have serogroup information, but did not differ significantly by race, gender, or age from the identified group. The decline in the number of serogroup B was striking in 2004; twenty percent of the cases in which serogroup identification was completed were serogroup B**,** (compared to 65% in 2003) and thus were not vaccine preventable.

ADDITIONAL RESOURCES

Prevention and Control of Meningococcal Disease Recommendations of the Advisory Committee on Immunization Practices (ACIP) MMWR 2005;54: No.RR-7.

Meningococcal Disease Prevention Plan, Division of Communicable Disease, California Department of Health Services. Available at:
www.dhs.ca.gov/ps/dcdc/disb/pdf/Meningococcal%20Plan%20Final%202003.pdf

Control and Prevention of Meningococcal Disease: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 2000; 46(RR–07):1–10. Available at:
www.cdc.gov/mmwr/preview/mmwrhtml/rr4907a1.htm

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

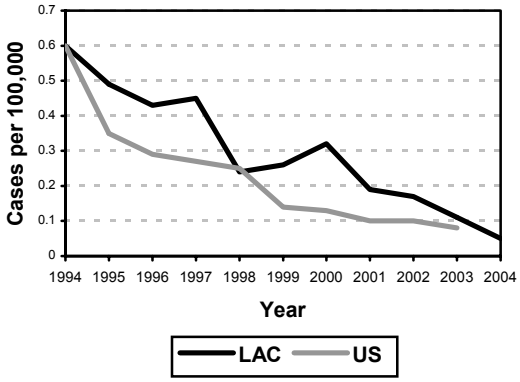
Opportunities for control of meningococcal disease in the United States. Raghunathan PL, Bernhardt SA, Rosenstein NE. Annu Rev Med. 2004; 55:333-53.

MUMPS

CRUDE DATA	
Number of Cases	5
Annual Incidence[a]	
LA County	---[b]
California	0.15
United States	0.09
Age at Diagnosis	
Mean	44 years
Median	43 years
Range	25 - 64 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.

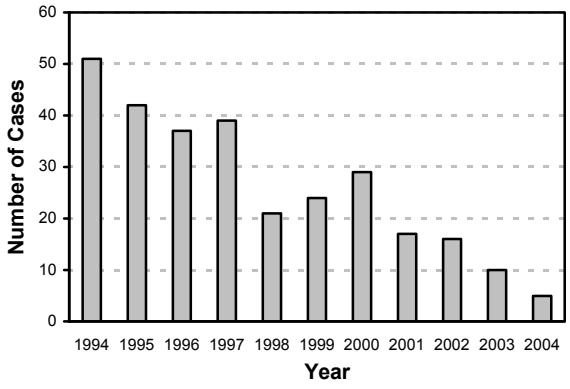
Figure 1
Mumps
Incidence Rates by Year of Onset
LAC and US, 1994-2004



DESCRIPTION

Mumps is a vaccine-preventable disease caused by an RNA paramyxovirus that is transmitted by direct contact with respiratory droplets from infected persons. 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 (i.e., mumps IgM antibody assay). The minimum clinical criteria for mumps is an acute onset of unilateral or bilateral swelling of the parotid or other salivary gland lasting >2 days without other apparent cause. 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, 1994-2004



DISEASE ABSTRACT

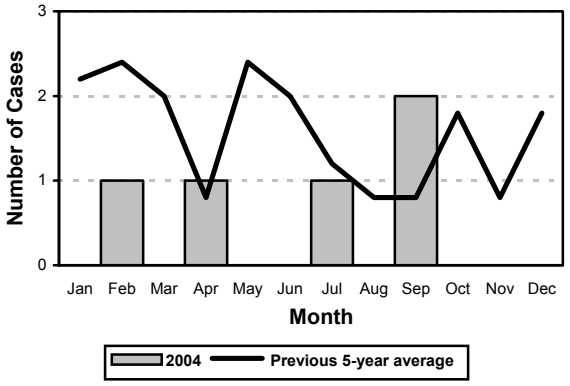
- The incidence of mumps cases in LAC has been steadily declining since 1994 (Figure 1).

- Of 25 mumps reports received at the LAC Immunization Program during 2004, there were only 5 confirmed mumps cases identified in LAC.
- During 2004, there were 55 reported cases in CA, of which 9% were reported in LAC.

IMMUNIZATION RECOMMENDATIONS

- Two doses of mumps-containing vaccine, usually given as Measles-Mumps-Rubella (MMR), are normally recommended 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.
- Generally, persons can be considered immune to mumps if they were born before 1957, have serologic evidence of mumps immunity, have documentation of physician-diagnosed mumps, or have documentation of vaccination with at least one dose of live mumps vaccine on or after their first birthday.
- Women should not become pregnant within 4 weeks of vaccination.
- Individuals who are severely immunocompromised for any reason should not be given MMR vaccine.

Figure 3
Mumps
Cases by Month of Onset
LAC, 2004



STRATIFIED DATA

Trends: Since 1994, the annual number of cases of mumps has decreased by 90% (Figure 2). This decline reflects the effectiveness of the MMR vaccine in reducing the incidence of disease in the general population, however, the continued identification of cases indicates more work that needs to be done to vaccinate remaining individuals and prevent further transmission.

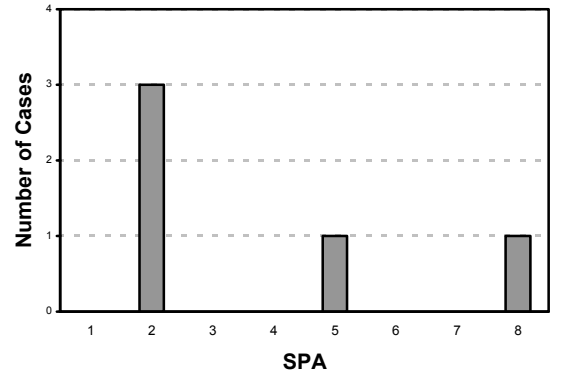
Seasonality: Historically, case reports have peaked during the winter and spring seasons. However, in 2004, the cases were uniformly distributed throughout the year (Figure 3).

Age: Unlike in 2003 when 90% of all reported cases were under the age of 11, all reported cases in 2004 were adults over the age of 24.

Sex: The male-to-female ratio of the cases was 1:1.5.

Race/Ethnicity: More than half of the reported mumps cases occurred among non-Latinos. There were 3 White cases, 1 Hispanic case, and 1 as unspecified race/ethnicity.

Figure 4
Mumps
Cases by Service Planning Area
LAC, 2004



Location: Cases were reported in three of the 8 SPAs (Figure 4). Three of the cases resided in San Fernando Valley (SPA 2). West (SPA 5) and South Bay (SPA 8) reported one case each.

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. Determination of MMR vaccination status and appropriate laboratory testing (Mumps IgM antibody assay) will help ensure that only true mumps cases are reported.

Cluster Identification: None of the cases in 2004 was epidemiologically linked to each other.

Vaccination Status: None of the cases had documented dates for their MMR vaccinations. One case claimed to have never been vaccinated. Four cases had an unknown vaccination status.

Laboratory Confirmation: Eighty percent (n=4) of the cases had supporting laboratory confirmation.

ADDITIONAL RESOURCES

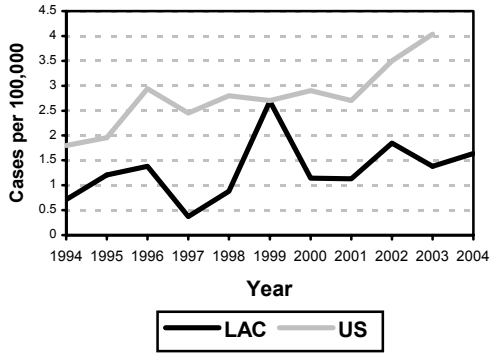
Additional information is available at:
- National Immunization Program – www.cdc.gov/ip
- Immunization Action Coalition – www.immunize.org
- LAC DHS, Immunization Program – www.lapublichealth.org/ip

PERTUSSIS (WHOOPING COUGH)

CRUDE DATA	
Number of Cases	156
Annual Incidence[a]	
LA County	1.64
California	3.13
United States	8.88
Age at Diagnosis	
Mean	8.9 years
Median	4 months
Range	11 days – 70 years
Case Fatality	
LA County	0%
United States	N/A

[a] Cases per 100,000 population.

Figure 1
Pertussis
Incidence Rates by Year of Onset
LAC and US, 1994–2004

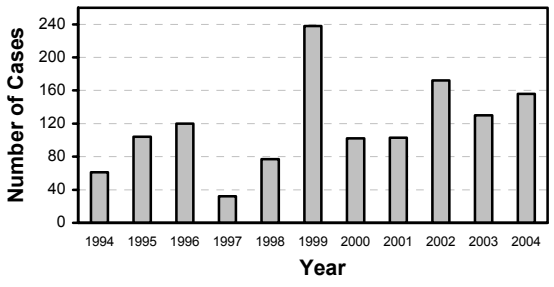


DESCRIPTION

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.

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, 1994–2004



DISEASE ABSTRACT

- Cases are increasing among adolescents and adults, as evidenced by the three-fold increase in the number of 2004 cases in the 15-34 age group over the previous five-year average.
- Preceding their illness, only approximately half of the cases in 2004 indicated contact to a person who had a prolonged cough.
- Of the 2004 cases that could have been fully immunized and protected against pertussis, less than half were not adequately immunized.

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.
- In 2004, there were no licensed pertussis vaccines available for adolescents and adults.

STRATIFIED DATA

Seasonality: Typically, the summer months have the highest pertussis incidence in LAC (Figure 3). However, in 2004, the onset of cases was distributed fairly uniformly throughout the summer and winter months. Approximately 33.3% (n=52) had disease onset during the summer months of July, August, and September and 34.0% (n=53) had disease onset during the winter months of October, November, and December. The 15-34 year age group accounted for 22.6% (n=12) of the cases with disease onset during the winter months, which can partially be attributed to a cluster of 11 cases that attended the same high school.

Age: Similar to previous years, approximately 55.8% (n=87) of reported cases in 2004 were among children less than one year of age. This is consistent with the national trend. However, cases are increasing among adolescents and adults, as evidenced by the 15-34 age group accounting for 18.6% (n=29) of the total reported cases (Figure 4).

Sex: The male-to-female case ratio was approximately 1:1.1.

Race/Ethnicity: After adjusting for the age differential in the cases, rates in 2004 among Asians, Blacks, and American Indians were lower than the previous 5-year averages (Figure 5). Rates among Latinos and Whites were approximately the same, although the LAC population proportion of Whites (30.2%) is much lower than that for Latinos (46.9%).

Location: The number of cases per SPA ranged from 5 to 29. South Bay SPA 8 accounted for the most cases (n=29) while Antelope Valley SPA 1 had the fewest cases (n=5). SPA 4 had 25 cases,

Figure 3
Pertussis
Cases by Month of Onset
LAC, 2004

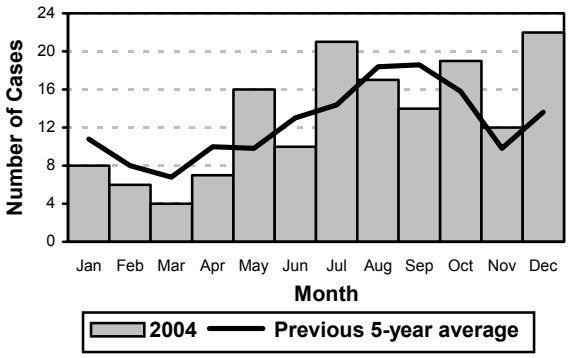


Figure 4
Pertussis
Cases by Age Group
LAC, 2004

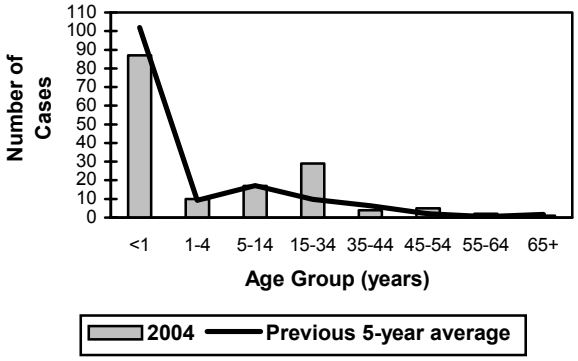
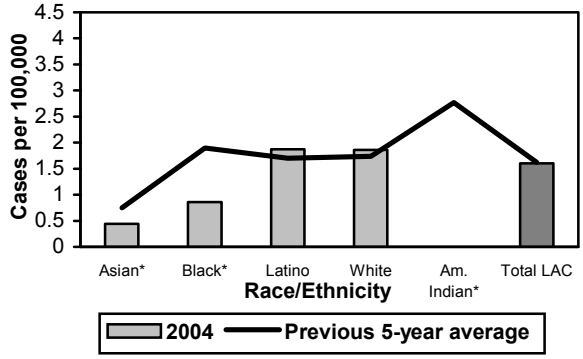


Figure 5
Pertussis
Age-Adjusted Incident Rates by
Race/Ethnicity
LAC, 2004



*Rates unreliable due to small number of observations.

followed by SPA 3 with 24 cases, SPA 6 with 23 cases, SPA 2 with 21 cases, SPA 7 with 18 cases, and SPA 5 with 10 cases. SPA 8 had the highest rate (2.63 cases per 100,000) and West SPA 5 had the lowest rate of 0.15 cases per 100,000. The clustering of cases in specific geographic areas is influenced in part by the active reporting efforts of local hospitals.

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. In 2004, two pharmaceutical companies submitted biologics license applications to the Food and Drug Administration for two tetanus toxoid and reduced diphtheria toxoid and acellular pertussis vaccine adsorbed (Tdap) products, one for persons aged 10-18 years (GlaxoSmithKline) and the other for persons aged 11-64 years (Sanofi Pasteur). Licensures of both vaccines were approved in 2005 and the anticipated introduction dates will be in late 2005.

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. Clinicians need to consider the possibility of pertussis in all patients with a persistent cough illness and order the appropriate laboratory tests. A nasopharyngeal swab or aspirate should be obtained for either *B. pertussis* culture or PCR. Outreach to health care providers will include pertussis health alerts and a pertussis symposium.

Greater media and general public awareness of vaccine-preventable diseases has increased the detection and reporting of pertussis cases. However, timely reporting is critical in preventing secondary cases of pertussis. Identification of a single case of pertussis initiates a standard investigation that uncovers other undiagnosed cases. For example, in late 2004 the investigation of a reported pertussis case led to the discovery of 17 other pertussis cases that attended the same high school as the index case. Many of these cases were previously undiagnosed but met the miniumum clinical criteria for pertussis. Ten of the 17 cases had disease onset in 2004.

Trends: Pertussis incidence normally peaks every 3 to 5 years. Between 1990 and 2000, there was an annual average of 101 cases reported. The highest incidence in 30 years occurred in 1999 (n=238). The County's last peak was in 2002 when 172 pertussis cases were reported. In 2004, 156 cases were reported, which is a 20% increase from the previous year.

Laboratory Confirmation: Half of reported cases (50.6%, n=79) were not laboratory confirmed by either *B. pertussis* culture or PCR.

Vaccination Status: One fifth of cases (20.5%, n=32) were younger than two months of age and were too young to receive pertussis vaccine. About 26.3% (n=41) 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 2004. Thus, 46.8% percent of the cases reported in 2004 could not have had protected immunity with the currently available pediatric vaccine (DTaP).

Approximately 34.6% (n=54) of cases were between 2–6 months of age. Of these, 38.9% (n=21) 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), 19 (67.9%) were fully up to date. The previous 5-year trend has indicated that, on average, only 61.3% of cases 7 months to 15 years of age were adequately immunized.

Complications/Hospitalization: Half of the cases (50.6%, n=79) were hospitalized, with an average hospital stay of 11 days (range 1-37 days). Seventy-four (84.1%) of the hospitalized cases were less than one year of age. Of the 13 cases who developed pneumonia, 12 were infants less than 1 year of age. Of

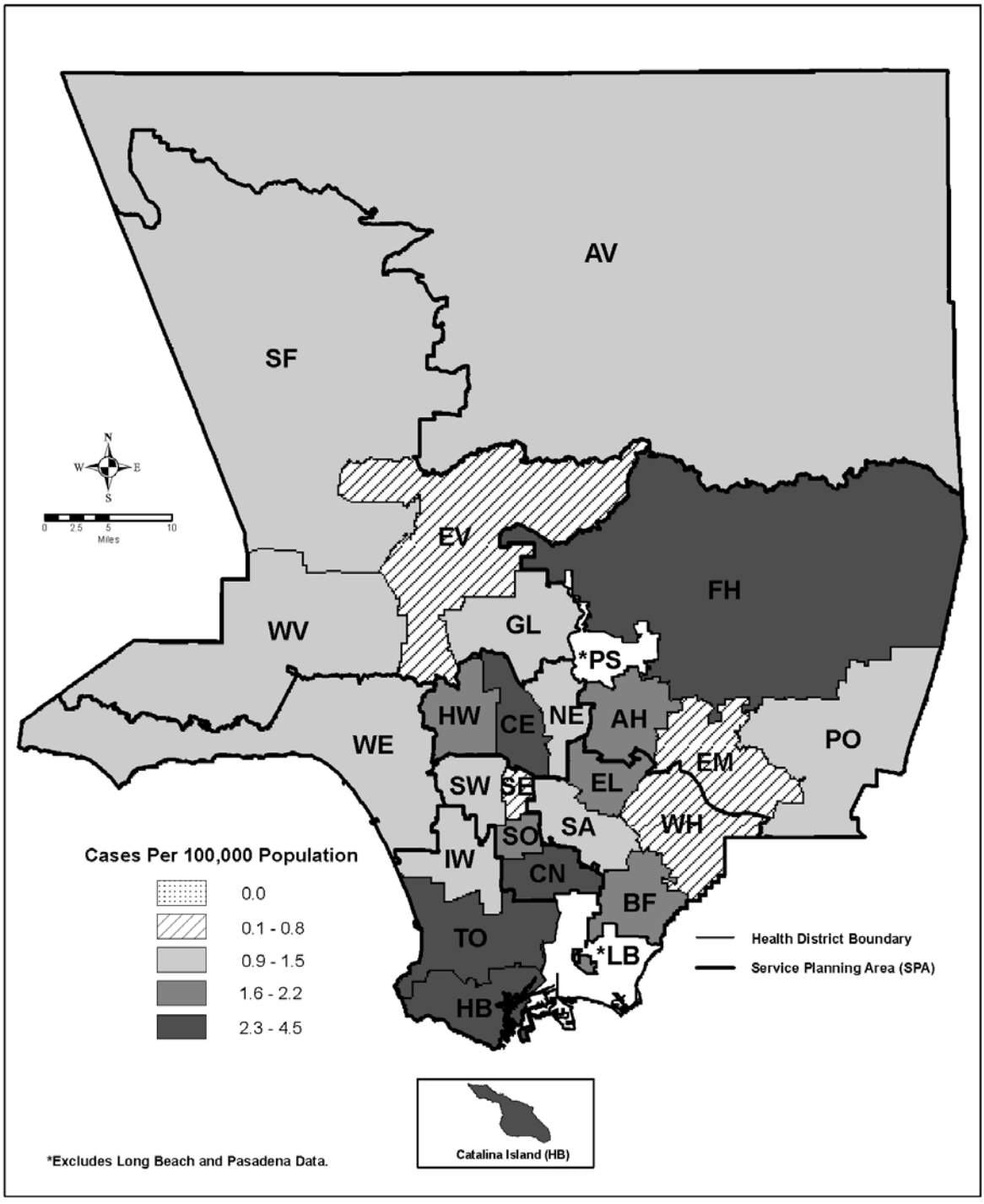
the 5 cases with seizures and 2 cases with encephalopathy, all were infants less than 1 year of age. There were no pertussis-related deaths in 2004.

ADDITIONAL RESOURCES

Additional information is available at:

- National Immunization Program – www.cdc.gov/nip
- Immunization Action Coalition – www.immunize.org
- LAC DHS, Immunization Program – www.lapublichealth.org/ip

Map 10. Pertussis
Rates by Health District, Los Angeles County, 2004*

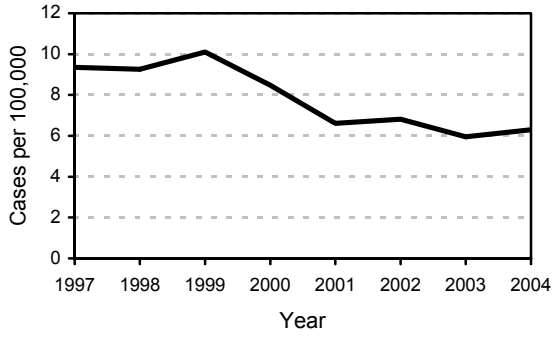


PNEUMOCOCCAL DISEASE, INVASIVE

CRUDE DATA	
Number of Cases	603
Annual Incidence[a]	
LA County	6.3
United States[b]	13.9
Age at Diagnosis	
Mean	53
Median	57
Range	<1–102 years
Case Fatality	
LA County[c]	11.8%
United States [b]	13.5%

[a] Cases per 100,000 population.
[b] National projection of IPD incidence from Active Bacterial Core Surveillance areas data, 2003 [1].
[c] 56% of outcomes known.

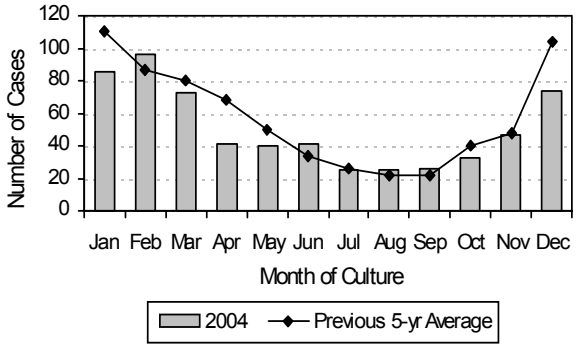
Figure 1
Invasive Pneumococcal Disease
Incidence Rates by Year of Culture
LAC, 1997–2004



DESCRIPTION

Invasive pneumococcal disease (IPD) is a leading cause of illness in young children and causes considerable illness and death in the elderly. The infectious agent, *Streptococcus pneumoniae*, is spread by droplet or direct and indirect contact with respiratory discharge and attacks various parts of the body resulting in pneumonia, bacteremia, and meningitis. *S. pneumoniae* has become increasingly resistant to antibiotics during the last decade. Disease caused by *S. pneumoniae* is vaccine-preventable.

Figure 2
IPD Cases By Month of Culture
LAC, 2004



The LAC DHS has followed IPD as a special surveillance project since late 1995 and added IPD to its list of reportable diseases in October 2002. Cases are defined as LAC residents with a positive isolate for *S. pneumoniae* collected from a normally sterile site (e.g. blood, cerebral spinal fluid,). Antibiotic susceptibility is determined by disk diffusion or dilution diffusion. Minimum inhibitory concentration (MIC) breakpoints utilized by participating laboratories are based on standards developed by the Clinical and Laboratory Standards Institute (formerly the National Committee for Clinical Laboratory Standards). For this report, an isolate of *S. pneumoniae* is considered nonsusceptible to an antibiotic if the results indicate intermediate or high-level resistance.

DISEASE ABSTRACT

- There was an overall increase in the number of IPD cases reported but the seasonal trend for IPD was closely maintained.
- There was an increase in penicillin nonsusceptible infections, particularly among the 1–4 age group.

STRATIFIED ANALYSIS

Trends: IPD occurred at an incidence rate of 6.3 per 100,000 in 2004 (n=603). This is a 7% increase over the incidence rate for 2003 (n=559) (Figure 1).

Seasonality: The seasonal trend in 2004 followed the typical peak for IPD in the winter months, dropping in the spring and summer months (Figure 2).

Sex: The male to female rate ratio was 1.2:1.

Age: The age of IPD cases ranged from 1 month to 102 years old with a mean of 53 years and median of 57 years (crude data). The distribution of incidence by age groups in 2004 remained similar in comparison to 2003 (Figure 3). The highest rate of IPD was in the over 65 age group. An increase in cases in children less than 5 years was seen in early 2004 compared to 2003. However, the numbers dropped to baseline levels by the end of summer (Figure 4). It appears that this age group experienced an early seasonal peak.

Race/Ethnicity: The highest percentage of cases occurred among Whites (35% [n=149]) and Latinos (32% [n=138]) (Figure 5). Latinos are underrepresented in comparison to the county population according to US Census 2000 data. However, the case population becomes comparable to LAC when adjusted for race and age (data not shown).

Disease Severity: During 2004, the hospitalization rate was 89% overall and higher for the over 65 age group (94%) than the less than 5 age group (68%). The case fatality rate was 11.8% (crude data). This rate is the lowest rate recorded since LAC began surveillance for IPD. The majority of deaths occurred among adults 65 years and over (60% [n=24]) and none occurred in children <18 years.

The proportion of culture sites remain the same as previous years, mainly from blood cultures only (Figure 6). Other sites reported include joint/synovial fluid, peritoneal fluid, ascites fluid, and thoracentesis fluid.

Antibiotic Susceptibility: For 2004, there was a rise in the proportion of penicillin nonsusceptible *S. pneumoniae* (PNSP) isolates to 23% (n=136). This is a shift from a decreasing trend occurring since 2000. The percent of isolates nonsusceptible to erythromycin, cefotaxime, and trimethoprim-sulfamethoxazole (TMP-SMZ) has continued to decrease or remain the same (Figure 7). Almost all reported cases (99%) had antibiotic resistance information provided.

The greatest increase in the proportion of cases with PNSP isolates, from 18 to 40%, was observed among those 1–4 years of age. All isolates in children less than 1 year of age were susceptible to penicillin (Figure 8).

Figure 3
Incidence Rates of IPD Cases by Age
LAC, 2001-2004

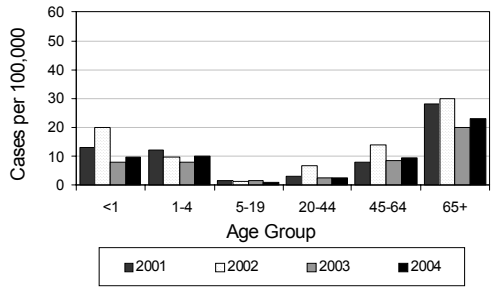


Figure 4
IPD Cases <5 Yrs Old By Month of Culture
LAC, 2003-2004

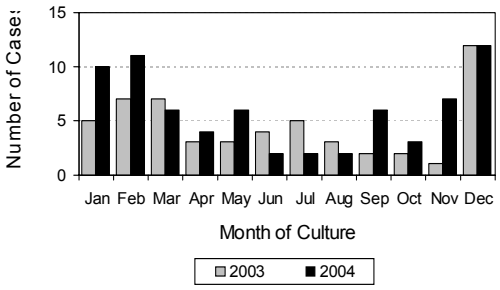
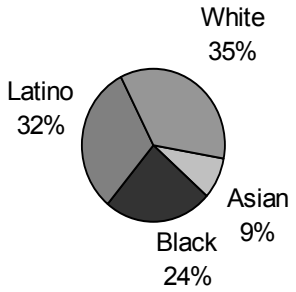


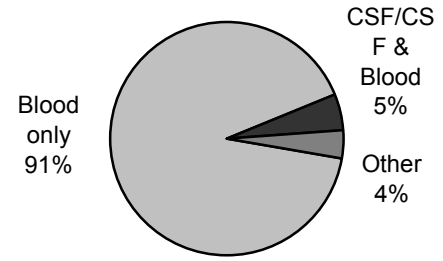
Figure 5
IPD Cases by Race/Ethnicity
LAC, 2004 (N=426)



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 aged 24 through 59 months who are at high risk of invasive pneumococcal infections [2]. The 23-valent pneumococcal polysaccharide vaccine (Pneumovax®23) is 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 24 through 59 months who are at high risk of invasive pneumococcal infections, ACIP recommends use of pneumococcal conjugate vaccine followed at least 2 months later by the 23-valent pneumococcal polysaccharide vaccine. This regimen provides protection against a broader range of serotypes, although supporting data are limited [3].

Figure 6
IPD by Culture Site
LAC, 2004 (N=603)



COMMENTS

A shortage of the pneumococcal conjugate vaccine resulted in a suspension of the fourth dose beginning mid-February 2004 and also the third dose beginning March 2004 [4]. At the same time, LAC saw a rise in IPD cases in the vaccine-preventable age group of children less than two years old. A subsequent investigation found no strong association between the shortage and the increase in cases (see Special Studies Reports 2004). It was also found that the vaccination coverage for the group was very high. The PNSP rate was lower in this age group than for the overall case population and comprises only a small proportion of the high PNSP rate for the 1–4 age group.

Figure 7
IPD Isolates Nonsusceptible to Selected Antimicrobial Agents
LAC, 2002–2004

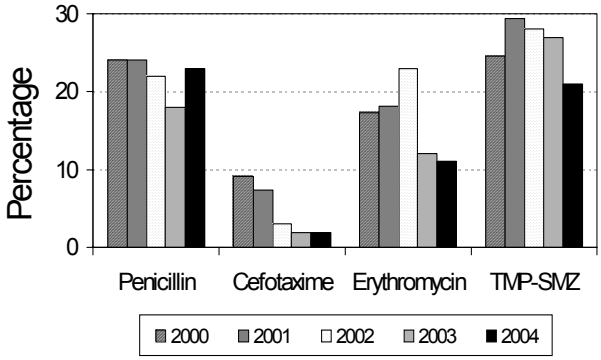
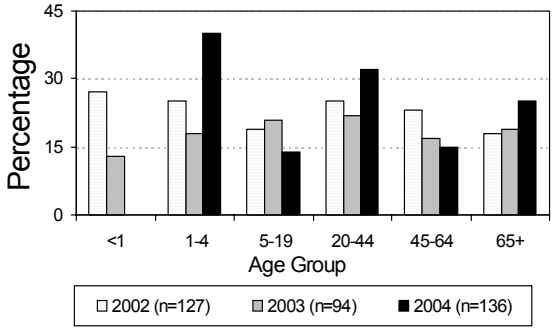


Figure 8
PNSP Isolates by Age
LAC, 2002–2004



Laboratories are the source for many of the IPD case reports to ACDC: 53% of cases were reported by laboratories only. Much of the limitations in the data are due to the minimal access that laboratories have to case information. Outcome status, for example, is known for only slightly over half of the cases. In addition, cases often are reported before the final outcome is known due to the requirement to report positive cultures within seven days. Thus, case fatality rates may be unreliable. Also, only 71% of case reports contained race/ethnicity data. However, the rate of race/ethnicity reporting is a sizeable improvement upon previous years' reporting

rates which ranged from 32–61%.

Another limitation is the relatively small case population, which produces unstable counts when stratified by multiple variables. The proportion of PNSP isolates stratified by age, for example, is not stable for certain age groups such as those <1 and 5-19 years of age. Also, the national annual incidence and case fatality rates estimated by the CDC Active Bacterial Core Surveillance system may not be accurate, as the surveillance system operates in only 10 sites across the country.

S. pneumoniae is one of the most common bacterial causes of community acquired pneumonia and otitis media (ear infections). However, these non-invasive forms of infection are not counted in our surveillance, therefore the data presented in this report is an underestimate of all disease caused by *S. pneumoniae* in LAC.

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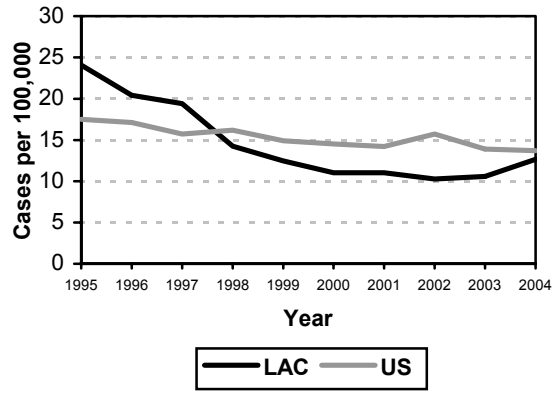
2. CDC. Prevention of pneumococcal disease: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 1997; 46:1–24.
3. CDC. Preventing pneumococcal disease among infants and young children: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 2000; 49:1–35.
4. CDC. Updated recommendations on the use of pneumococcal conjugate vaccine: suspension of recommendation for third and fourth dose. MMWR 2004; 53:177–8.

SALMONELLOSIS

CRUDE DATA	
Number of Cases	1205
Annual Incidence[a]	
LA County	12.64
California	12.07
United States	14.33
Age at Diagnosis	
Mean	27
Median	22
Range	<1-98 years
Case Fatality	
LA County	0.7%
United States	N/A

[a] Cases per 100,000 population.

Figure 1
Salmonellosis
Incidence Rates by Year
LAC and US, 1995–2004



DESCRIPTION

Salmonellosis is caused by a gram negative bacillus, *Salmonella* enterica, of which there are more than 2,500 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 diarrhea, fever, headache, abdominal pain, 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. 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, or those who have had gastrointestinal surgery, 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 LAC 2004 salmonellosis crude rate increased 21.1% compared to 2003 (Figure1). It continues to remain below the national rate and has done so since 1998.
- *Salmonella* serotype Enteritidis was the most common isolate in 2004 and the percent of change was an increase of 38.1% due to the increase in the total number of isolates (Table 1).
- *S.* Typhimurium was the second most common serotype in 2004 accounting for 13.4% of all isolates but decreased 6.9% from 2003. It had been the most common in 2003 but there were no outbreaks of Typhimurium in 2004.

- SPA 8 had the highest incidence (15.2 per 100,000) of salmonellosis during 2004. Sixty-one of the 168 cases in SPA 8 were from three outbreaks.

STRATIFIED DATA

Trends: The incidence of reported salmonellosis cases for LAC in 2004 was 12.64 cases per 100,000 population. This is higher than the 2003 incidence of 10.58 cases per 100,000 population but is less than the national 2004 incidence of 13.71 per 100,000 population. In 2004, ACDC 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 11.33 per 100,000 population.

Salmonella Serotypes: This year *S.* Enteritidis was the number one serotype, making up 16.7% of total isolates serotyped. There was a 37.4% increase in *S.* Enteritidis cases in 2004 bringing it back into the most frequent serotype as it had been the previous eight years before 2003. Based on the rate of decrease in the five previous years, it was expected the number of *S.* Enteritidis cases would have been 109. Instead there were 203 cases, 86% more than expected. *S.* Typhimurium made up 13.4% of all the *Salmonella* isolates for 2004 (Table 1). The incomplete serotype I 4,5,12:i:- increased 1500% due to an outbreak at a mental health facility. *S.* Infantis increased 211.1% due to an outbreak with 11 confirmed cases (Table 1 & Table 2). *S.* Heidelberg was the third most frequent serotype and increased 112.8% due to three separate outbreaks in 2004 (Table 1 & Table 2).

Table 1. Most Frequent *Salmonella* Serotypes—LAC, 2003–2004

Serotype	2003 (N=947)*		2004 (N=1213)*		%Change
	No.	Percent	No.	Percent	
Enteritidis	147	15.4	202	16.7	+37.4
Typhimurium**	174	18.4	162	13.4	-6.9
Heidelberg	47	5.0	99	8.2	+110.6
Newport	80	8.5	62	5.1	-22.5
Montevideo	70	7.4	33	2.7	-52.9
I 4,5,12:i:-	2	0.2	32	2.6	+1500.0
Infantis	9	0.95	28	2.3	+211.1
Thompson	13	1.4	25	2.1	+92.3
Paratyphi B Tartrate positive	18	1.9	24	2.0	+33.3
Oranienburg	25	2.6	17	1.4	-32.0

* Includes only serotyped isolates. (eight cases for 2004 had two different serotypes of *Salmonella*)
** Includes *S.* Typhimurium var. Copenhagen and degraded form.

Seasonality: In 2004, the peak in incidence occurred during July and September, similar to the previous 5-year average, due in part to outbreaks. There is a drop in August for 2004. A drop in cases seen in the last quarter of 2004 is consistent with past years (Figure 2).

Age: As shown in Figure 3, the highest age group rates of infection occurred among infants aged less than 1 year (68.6 per 100,000 population) followed by children aged 1–4 years (31.3 per 100,000 population). This is typical for salmonellosis.

Hospitalized: In 2004, 21.3% of cases were hospitalized for more than 24 hours, 2.6% fewer cases than in 2003 (23.9%).

Sex: The male-to-female rate ratio was 1: 1.14

Figure 2
Salmonellosis
Cases by Month of Onset
LAC, 2004

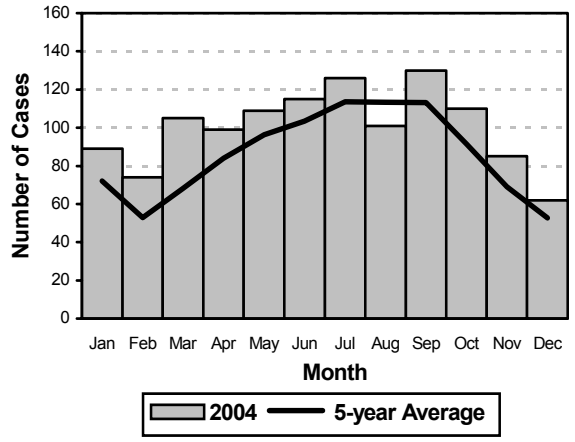
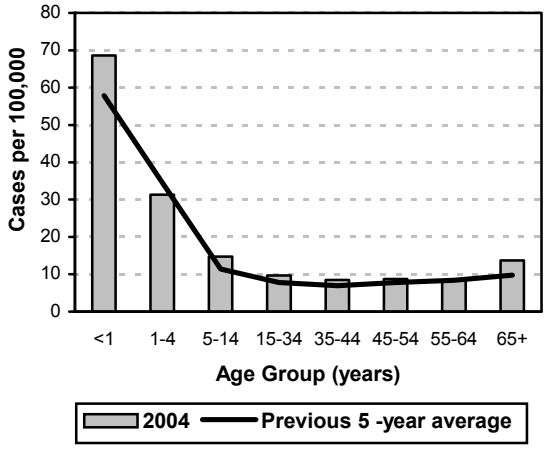


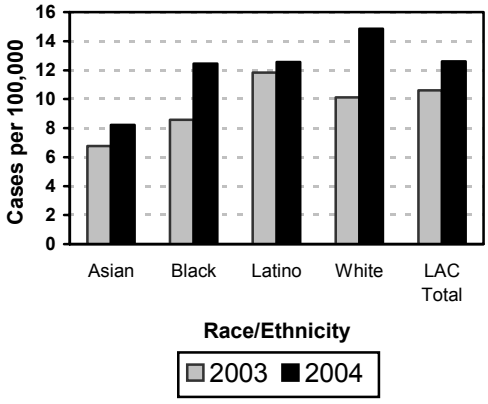
Figure 3
Salmonellosis
Incidence Rates by Age Group
LAC, 2004



Race/Ethnicity: The highest age-adjusted rate was in White (14.85 per 100,000 population), followed by Latinos (12.56 per 100,000 population) then Blacks (12.46 per 100,000 population) and Asians (8.23 per 100,000 population). All populations have increased and overall rates have increase by 21.1 percent from 2003 (Figure 4).

Location: Foothill Health District had an increase from 20.4 to 24.5 per 100,000 population and the highest incidence rate, followed by Harbor Health District (18.3 per 100,000 population). Two other districts that followed closely were Southeast (16.0 per 100,000 population) and San Fernando (15.9 per 100,000 population). Of the SPAs, SPA 8 (15.2 per 100,000 population) had the largest incidence rate, while SPA 1 had the lowest rate (9.3 per 100,000, Figure 5).

Figure 4
Salmonellosis
Age-Adjusted Rates by Race/Ethnicity
LAC, 2003–2004



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, or produce, 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 produce and animal-derived foods.

Health education targeted at specific high-risk groups is necessary; for example, 23.1% of the 2004 salmonellosis cases were in the infant through four year age group. This age group has consistently been the highest risk group for L.A. County since 1982. When cases occur, education by District Public Health Nurses to reduce salmonellosis is focused toward parents, in preschool age children and day care facilities. Emphasis is on the following:

- Washing hands for parents or teachers and preschoolers.
- Proper preparation of foods and formula for this age group.
- Proper handling and cooking of uncooked meat, poultry and fish.
- Keeping kitchen and utensils clean and preventing cross contamination.
- Avoiding reptile pets in the home.
- Avoiding reptile pets in a preschool or child care center.

Figure 5
Salmonellosis
Incidence Rates by
Service Planning Area
LAC, 2004

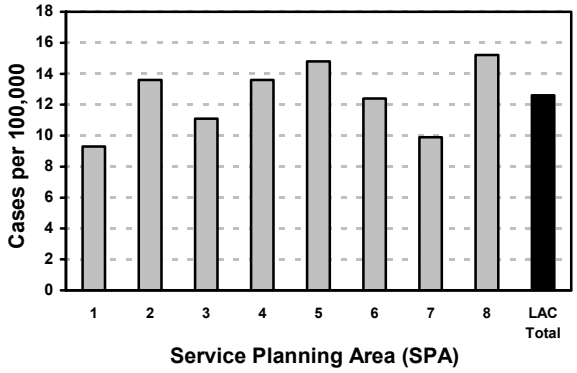


Table 2. Salmonellosis Outbreaks in LAC, 2004

Onset Month	Outbreak Setting	Total # Ill	Culture Positive	Serotype	Suspect Vehicle	Suspect Source
January	Adult Day Care	9	9	*S.* Heidelberg	Unknown Food Vehicle	Unknown Food Source
February	Restaurant	78	23	*S.* Heidelberg	Turkey Dishes	Under-cooked Turkey
April	Mental Health Facility	33	13	*S.* I 4,5,12:i:-	Unknown Food Vehicle	Unknown Food Source
May	Daycare	7	6	*S.* Newport	Unknown Food Vehicle	Unknown Food Source
June	Church Pot Luck	22	9	*S.* Thompson	Unknown Food Vehicle	Cross contamination
June	Multi-County	26	9	*S.* Newport	Unknown Food Vehicle	Unknown Food Source
July	Private residence	26	11	*S.*Anatum	Spaghetti	Pasta sauce, Ground beef
July	Private residence	11	2	*S.* Infantis	Pork Torta	Pork Culture + *S.* Infantis
July-August*	North Eastern States	1	1	*S.* Agbeni	Produce	Specific Type Unknown
August*	Arizona Candle Convention	4	1	*S.* Oranienburg	Unknown Food Vehicle	Unknown Food Source
September	Staff Potluck @ Medical Clinic	11	6	*S.* Heidelberg	Fried & curried Chicken	Chicken & Curry Sauce
September	Juvenile Court Camp	3	3	*S.* Enteritidis	Unknown Food Vehicle	Unknown Food Source
TOTAL		**231**	**90**			

* Multi-State or Multi-County outbreak; number of cases listed represents LAC cases only.

COMMENTS

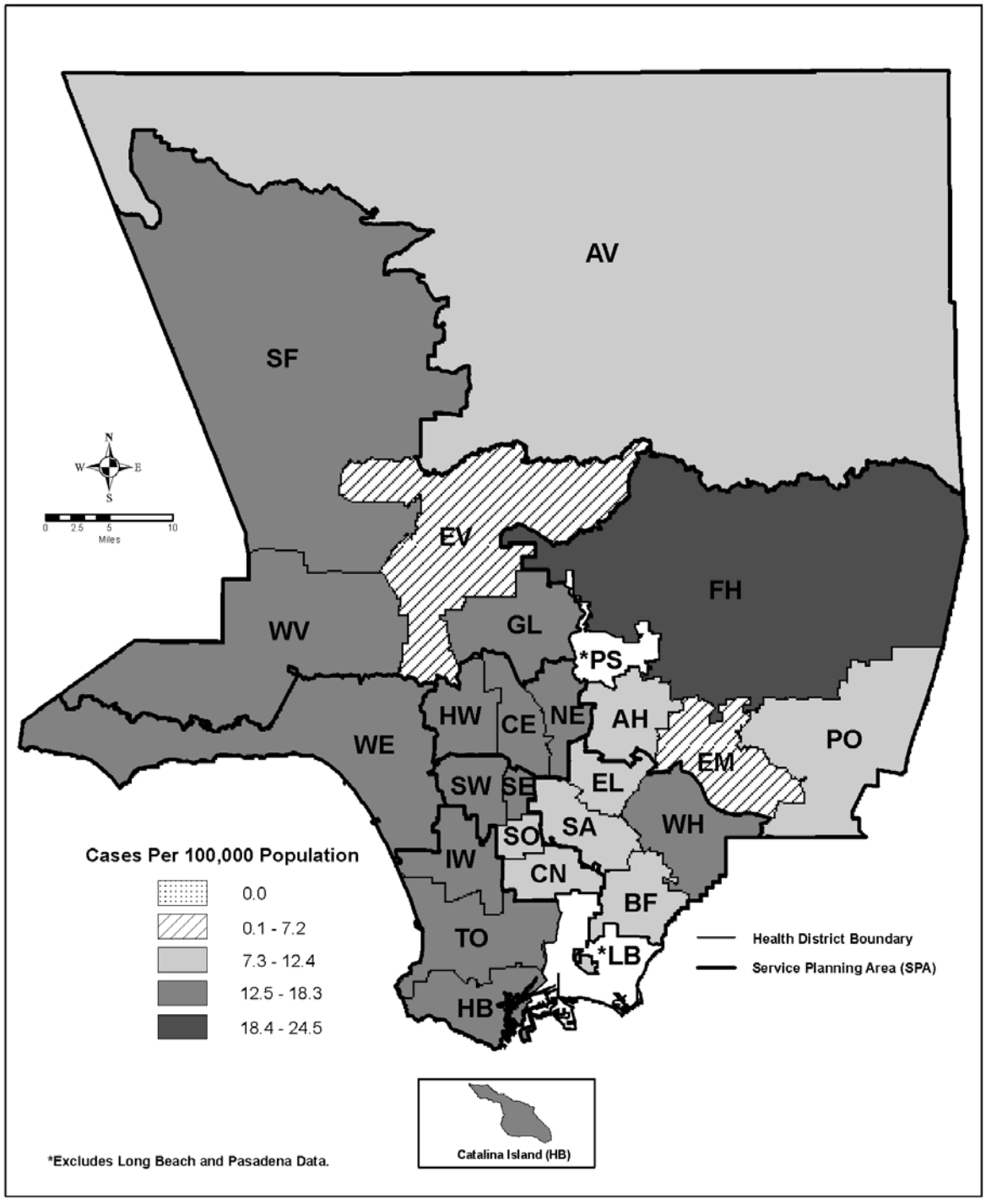
After a peak in 1994, starting in 1995 through 2000, a steady decline occurred in the LAC rate of salmonellosis. This decline continued, dipping below the national average in 1998 (Figure 1). Specific reasons for the declining rate have not been studied scientifically, but several factors may have

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. Since 2000 rates of salmonellosis appear to plateau (Figure 1).

There were 12 salmonellosis outbreaks during 2004. Three outbreaks were serotype Heidelberg and two were serotype Newport, and one outbreak each of serotypes Thompson, Anatum, Infantis, Agbeni, Oranienburg, Enteritidis and the incomplete serotype I 4,5,12:i:-. All outbreak related cases (both confirmed and presumptive) make up 19.2% of total cases reported in 2004. *Salmonella* Enteritidis was the number one etiologic agent identified in outbreaks in LAC from 1994-2001 but in 2002 and 2003; it did not cause any outbreaks. This year Enteritidis, the predominant serotype for 2004, was found to be the cause for one outbreak with three cases at a juvenile camp. Two of the twelve salmonellosis outbreak investigations cited restaurant prepared food as a source. Other suspected sources were produce, undercooked turkey and beef, and chicken with curry sauce (Table 2). The use of PFGE and comparison of PFGE patterns with other laboratories through PulseNet, the national molecular subtyping network for foodborne disease, continues to help identify, potentially related clusters within LAC and two LAC outbreaks were connected to PFGE patterns in Multi-state outbreaks. One outbreak was shown to be connected to a Multi-county outbreak for the State of California (Table 2). There was one outbreak with a proven source. It was at a private residence and the pork dish was culture positive for Infantis as were all of the 26 confirmed cases.

Salmonellosis was reported as a contributing cause of death in eight people, all of whom had underlying health problems such as multiple myeloma, immune defiency, malignant brain tumor, abdominal aneurysms, diabetes, and cardiovascular disease. The eight adults' ages ranged from 24-74 years.

Map 11. Salmonellosis
Rates by Health District, Los Angeles County, 2004*

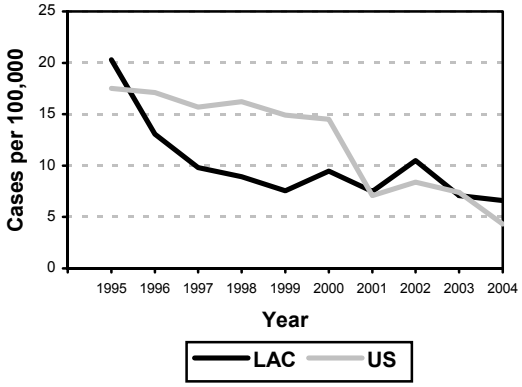


SHIGELLOSIS

CRUDE DATA	
Number of Cases	625
Annual Incidence[a]	
LA County	6.60
California	5.00
United States	4.81
Age at Diagnosis	
Mean	22
Median	12
Range	<1– 85 years
Case Fatality	
LA County	<1%
United States	N/A

[a] Cases per 100,000 population.

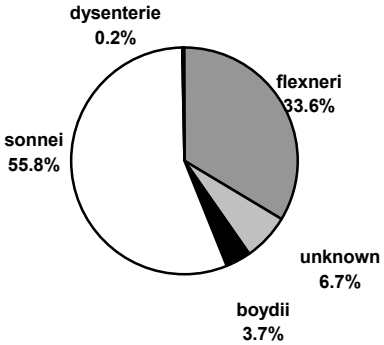
Figure 1
Shigellosis
Incidence Rates by Year of Onset
LAC and US, 1995–2004



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). Incubation period is 1-3 days. 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, 2004
(N=625)



DISEASE ABSTRACT

- There was a seven percent decrease in reported cases in 2004.
- Six shigellosis associated outbreaks were investigated in 2004.

STRATIFIED DATA

Trends: There was a seven percent decrease in the number of cases during 2004. The rate has been decreasing since reaching a peak of 10.5 in 2002 (Figure 1). The increase of sporadic cases in districts with multifamily dwellings seen in late 2002 was not seen in 2003 or 2004.

Serotypes: There has been a significant increase in the proportion of *S. flexneri* (n=210) when compared with other serotypes (p< 0.01). *S. sonnei* remains the dominant serotype (N=349). Other serotypes identified during 2004 include: *S. boydii* (N=23) and *S. dysenterie* (N=1) (Figure 2). Forty-three percent (N=10) of *S.boydii* cases traveled. The single reported case of *S. dysenterie* did not travel during the incubation period.

Seasonality: In 2004, incidence again peaked in August (Figure 3). The reason for January's consistently higher number of cases may be due to travel during winter school break. Ten percent of case-related travel took place in late December. Forty-three percent of travel took place from July through September.

Age: Children aged 1–4 (24.5 per 100,000) and 5–14 (12.2 per 100,000) years again had the highest rates; however, these rates were lower than the previous five-year average (Figure 4).

Race/Ethnicity: During 2004, Latinos aged 1–4 years again had the highest age-adjusted rate (Figure 5). For the second year, Latino infants and children aged 5-14 had higher age adjusted rates compared to other race ethnicities. Overcrowding and the higher overall rate in Latinos may be possible causes.

Sex: The male-to-female rate ratio was 1.2:1; there was no change from 2003.

Location: The rates for SPA 4 (11.8 per 100,000) and SPA 6 (10 per 100,000) were again significantly higher than the county average (6.6 per 100,000). One outbreak occurred in SPA 4. The majority of MSM cases (52%) were again seen in SPA 4.

Severity of Illness: Thirteen percent of reported shigellosis cases were hospitalized for at least two days. There was one shigellosis-associated death reported late in 2004. This was a three year old boy with no previous known medical problems.

Risk Factors: Exposure to a case inside or outside the household (25% N=158) and exposure during travel (20% N=124) were the most commonly reported potential sources of infection. The majority of travel associated illness (60% N=74) involved visiting Mexico. Seven percent of cases were in MSM.

Figure 3
Shigellosis
Cases by Month of Onset
LAC, 2004

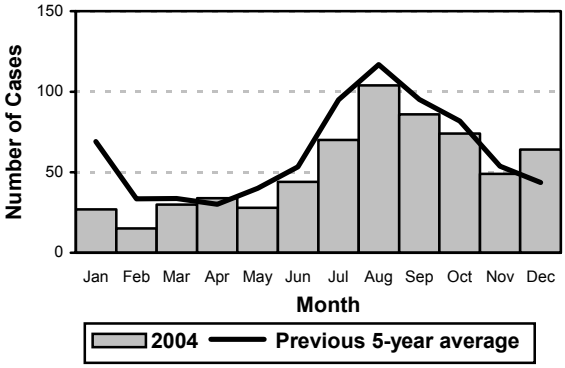


Figure 4
Shigellosis
Incidence Rates by Age Group
LAC, 2004

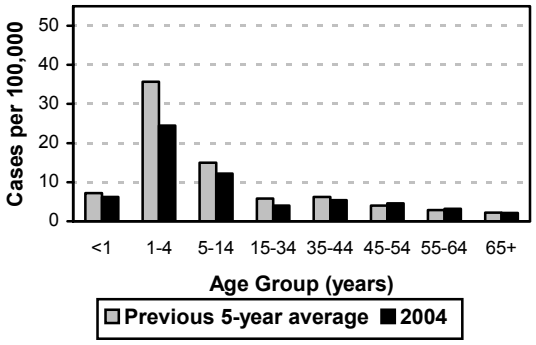
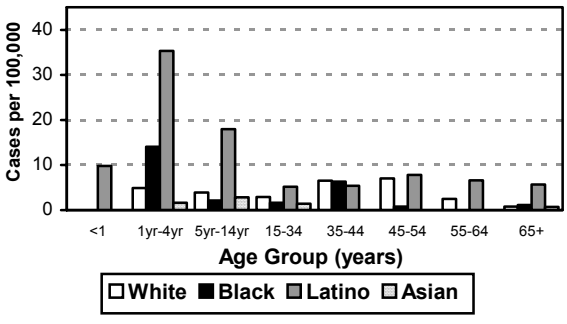


Figure 5
Shigellosis Incidence Rates
by Age Group and Race
LAC, 2004 (N=625)



PREVENTION

Careful handwashing is vital in preventing this disease. Young children or anyone with questionable hygiene should be monitored to promote compliance. 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, daycare and healthcare workers) are routinely removed from work or the situation until they have culture negative stool specimens tested in the Public Health Laboratory.

COMMENTS

There were six shigellosis-associated outbreaks investigated in 2004; however, only five could be laboratory confirmed. Two were community outbreaks involving cases among extended family members and friends and two outbreaks involved home day care operations. Another outbreak involved restaurant workers; there was no evidence of transmission to consumers. All of these outbreaks appear to be from person-to-person transmission. The last outbreak was a joint investigation done by LAC and Orange County. The implicated food was tacos possibly contaminated with *S. sonnei*. This outbreak could not be confirmed as a shigellosis outbreak, however, as only a single Orange County case had positive laboratory results. Thirty-two cases were identified, with thirty living in Orange County or other jurisdictions.

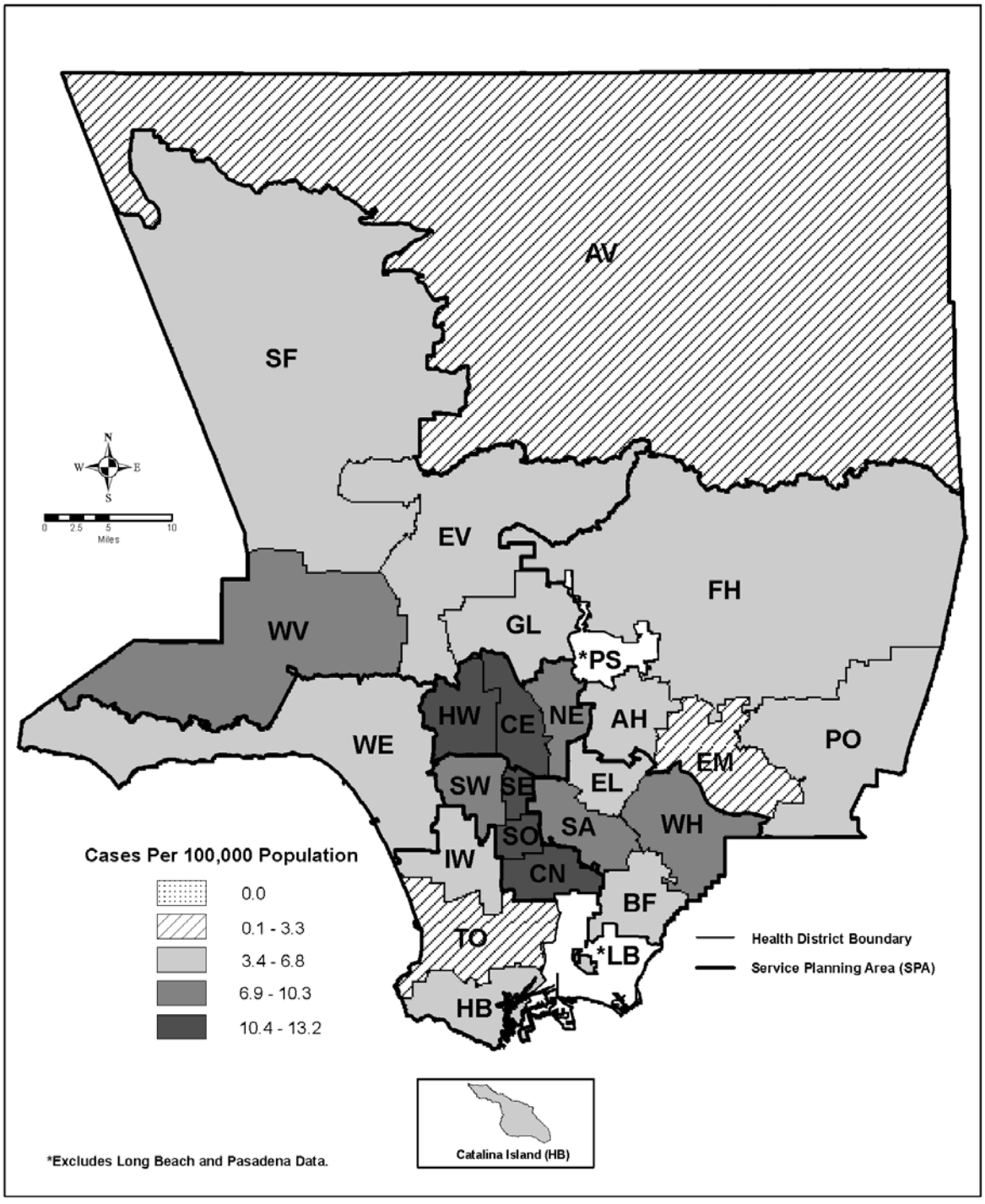
Certain sexual practices—especially those in which there is direct contact with fecal material—are a potential source of infection. There were 42 shigellosis cases reported in MSM. No links could be established among these cases. *S. flexneri* (86%) was again the predominant serotype in this risk group; in 2002 the predominant serotype was *S. sonnei* (56%).

ADDITIONAL RESOURCES

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

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

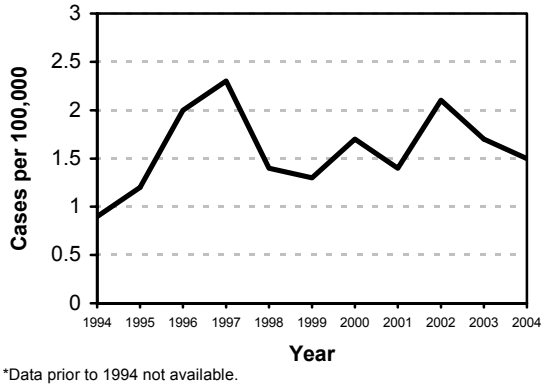
Map 12. Shigellosis
Rates by Health District, Los Angeles County, 2004*



INVASIVE GROUP A STREPTOCOCCUS (IGAS)

CRUDE DATA	
Number of Cases	146
Annual Incidence[a]	
LA County	1.5
United States [b]	3.9
Age at Diagnosis	
Mean	50
Median	51.5
Range	1-98 years
Case Fatality	
LA County[c]	26%
United States [b]	16%

Figure 1
IGAS
Incidence Rates by Year of Onset
LAC, 1994- 2004



*Data prior to 1994 not available.

[a] Cases per 100,000 population.
[b] National projection of IGAS incidence from Active Bacterial Core Surveillance areas data, 2003 [1].
[c] 75% of outcomes known.

DESCRIPTION

Invasive Group A Streptococcal (IGAS) disease is caused by the group A beta-hemolytic *Streptococcus pyogenes* bacterium. Transmission is by direct or, rarely, indirect contact. Illness manifests as various overlapping clinical syndromes including bacteremia without focus, sepsis, cutaneous wound or deep soft-tissue infection, septic arthritis, and pneumonia. It is the most common cause of necrotizing fasciitis, commonly known as "flesh eating bacteria." IGAS occurs in all age groups but more frequently among the very old. Infection can result in severe illness, including death.

For surveillance purposes in LAC, IGAS is defined as isolation of *S. pyogenes* from a normally sterile body site (e.g., blood, cerebrospinal fluid, synovial fluid, or from tissue collected during surgical procedures), or also a non-sterile site if associated with streptococcal toxic shock syndrome (STSS) or necrotizing fasciitis (NF). IGAS cases are characterized as STSS if the diagnosis fulfills the CDC or Council of State and Territorial Epidemiologists (CSTE) case definitions for this syndrome; and as NF if the diagnosis was made by the treating physician.

DISEASE ABSTRACT

- STSS clinical presentation and case fatality rate has substantially increased compared to previous years, most likely due to enhanced surveillance.
- No clusters or outbreaks were reported.

STRATIFIED DATA

Trends: The incidence rate of reported IGAS was 1.5 per 100,000 in 2004 (n=146). This is a 12% decline in incidence as compared to 2003 (1.7 per 100,000, n=157) (Figure 1).

Figure 2
IGAS Cases by Month of Onset
LAC, 2004

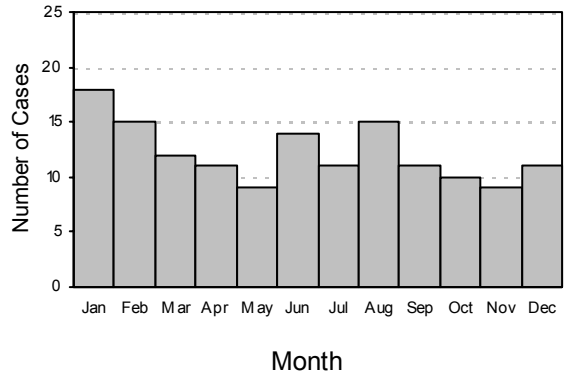


Figure 3
IGAS Incidence Rates by Age Group
LAC, 2001-2004

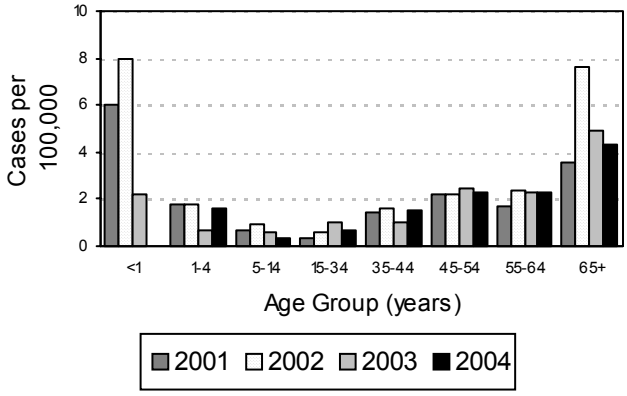


Figure 4
IGAS Rates by Service Planning Area
LAC, 2004

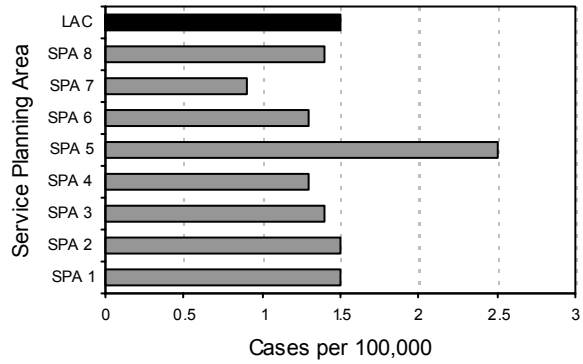


Table 1. Frequency and Percentage of IGAS Clinical Syndromes, LAC, 2004

Syndrome	Number	Percent*
Bacteremia (without focus)	48	37
Cellulitis	43	33
STSS	17	13
Necrotizing Fasciitis	16	12
Non-Surgical Wound Infection	16	12
Pneumonia	15	12
Septic Arthritis	5	4
Other	42	32

*Overlapping syndromes will total over 100%.

Seasonality: No seasonal trend was apparent. Aside from January, the number of cases remained relatively stable at a range of 9 to 15 per month (Figure 2).

Age: The age of cases ranged from 1 to 98 years with a mean 50 and median of 51.5 (crude data). The highest rate of cases occurred in the over 65 age group (4.3 per 100,000). No cases occurred in the <1 age group in 2004. There has been a striking decrease in incidence rates in this age group since at least 2001 (Figure 3).

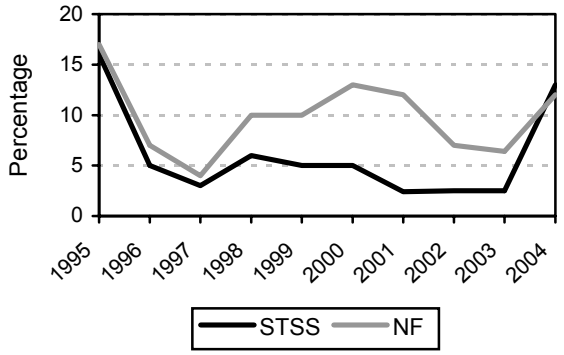
Gender: Cases were evenly distributed between genders. The male to female rate ratio was 1.1:1. However, females comprised 66% of deaths due to IGAS infection (n=19).

Race/Ethnicity: Race/ethnicity was known for 91% of cases. Of these, 44% were White, 38% were Latino, 6% were Black, 8% were Asian, and 5% were other. The race/ethnicity distribution has remained similar since 2001.

Location: The crude incidence rate was highest in SPA 5 (2.5 cases per 100,000) compared to LAC overall (1.5 cases per 100,000) (Figure 4). However, the small number of cases reported in each SPA, except for SPAs 2 and 3, produces unstable incidence rates.

Clinical Syndromes: The most common syndromes presented were bacteremia and cellulitis (Table 1).

Figure 5
IGAS Clinical Presentation of STSS and NF
LAC, 1995-2004



Other syndromes included osteomyelitis, endometritis, and meningitis. There is a substantial increase in STSS, from a range of 2.4–6% in the past 7 years to 13% in 2004 (Figure 5). The case fatality rate has also risen from less than 10% since 2001 to 26%. This may be due to the rise in STSS as 42% of the reported deaths belonged to cases that presented with STSS (case fatality rate of STSS is 73% with two outcomes unknown).

The 17 cases of STSS ranged from 2–83 years in age; the mean was 49 and the median was 47. A majority of cases were female (65%). The most frequently reported risk factors for these cases are history of blunt trauma (n=4, 24%) and diabetes (n=3, 18%).

Risk Factors: Information about risk factors was collected for 74% of cases. Of these cases, roughly one-third reported no risk factors for IGAS (n=35), a third reported a single risk factor (n=39), while another third reported multiple risk factors (n=34). The most common reported risk factor is diabetes (n=25, 23%), followed by malignancy (n=16, 15%) and chronic heart disease (n=15, 14%).

COMMENTS

Although IGAS disease is not a mandated reportable disease in California, LACDHS has required laboratories, hospitals, and healthcare providers to report IGAS disease since 1993. Surveillance has been predominately passive and information pertaining to patient demographics, clinical presentation, intervention, and outcome has often been incomplete. Complete IGAS reporting requires active case follow-up, particularly for STSS and NF as these syndromes require the most intense follow-up.

In 2002 a new IGAS form including a specific section for STSS reporting was developed and distributed to Infection Control Practitioners. Increased information about IGAS and its various clinical syndromes has been systematically collected since that time with increasing success. As an artifact of these changes, however, IGAS trends may have changed dramatically. The upswing in both case fatality and STSS, for example, may be attributed to the improved availability of clinical presentation data which was 89% of cases in 2004, compared with 58% in 2002 and 71% in 2003. There may also be a reporting bias towards IGAS cases with severe presentation and outcomes.

No outbreaks or clusters have been reported, though single cases meeting the case definition of "nosocomial" occurred in six different facilities. However, there has been no evidence of nosocomial spread.

S. pyogenes more commonly causes non-invasive disease that present as strep throat and skin infections. However, these diseases are not counted in our surveillance of invasive disease, therefore, the data presented in this report is an underestimate of all disease caused by *S. pyogenes* in LAC.

ADDITIONAL RESOURCES

For more information about IGAS visit:

- CDC – www.cdc.gov/ncidod/dbmd/diseaseinfo/groupastreptococcal_g.htm
- National Institute of Health – www.niaid.nih.gov/factsheets/strep.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 Patients: 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.
- American Academy of Pediatrics. Committee on Infectious Diseases. Severe invasive group A streptococcal infections: a subject review. *Pediatrics.* 1998;101:136-40.
- 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.

REFERENCES

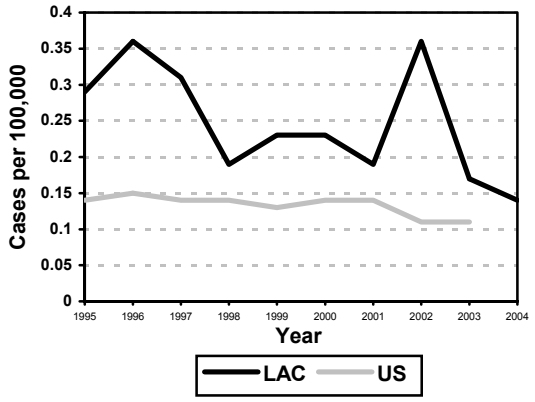
1. Active Bacterial Core Surveillance Reports from 1997 to 2003 from the Centers for Disease Control and Prevention's Division of Bacterial and Mycotic Diseases. Report available at: www.cdc.gov/ncidod/dbmd/abcs/survreports.htm. Accessed 5/10/2005.

TYPHOID FEVER, ACUTE

CRUDE DATA	
Number of Cases	13
Annual Incidence[a]	
LA County	--- [b]
California	0.20
United States	0.11
Age at Diagnosis	
Mean	35.3
Median	35
Range	1-67
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
Acute Typhoid Fever
Incidence Rates by Year of Onset
LAC* and US, 1995–2004



* Rates based on less 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*. Vaccine is available to those at high risk or travelers.

DISEASE ABSTRACT

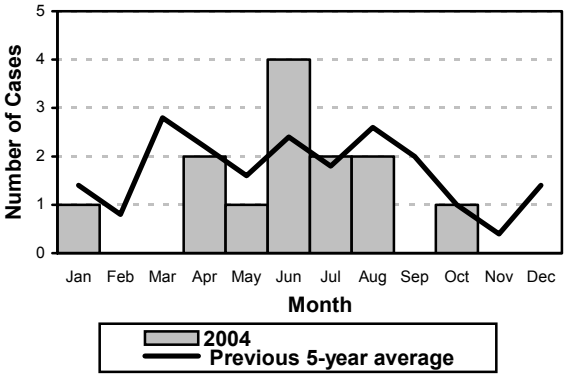
- Travel was again the most common risk factor identified in LAC; 85% of cases reported visits to typhoid endemic countries.
- Adults represented 77% of all cases in 2004.

STRATIFIED DATA

Trends: There has been a two year decrease since a peak in 2002. There were 19% fewer cases in 2004. Thirteen is the fewest number of cases reported in LAC in over twenty years.

Seasonality: Most cases again occurred in spring and summer (Figure 2), however, no cases seemed to coincide with the winter holidays as in previous

Figure 2
Acute Typhoid Fever
Cases by Month of Onset
LAC, 2004



years. In 2004 cases peaked in June, while in previous years, March had consistently had more cases (as indicated by the five year average).

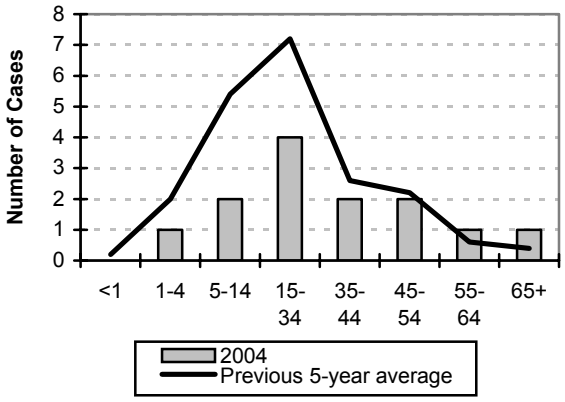
Age: In 2004, 77% of acute cases were in adults and this is consistent with the five year average. In the previous two years, children aged 5–14 years represented a high percentage of cases.

Sex: The male-to-female ratio was 1:1.6. There has been a female preponderance since 2002.

Race/Ethnicity: No one group was overrepresented in 2004. In the three previous years, typhoid fever cases were seen primarily in Latinos. Black cases are rare (Figure 4).

Location: Each SPA had at least one case. SPA 4 had five cases (38 %). SPA 5 had two cases (15 %).

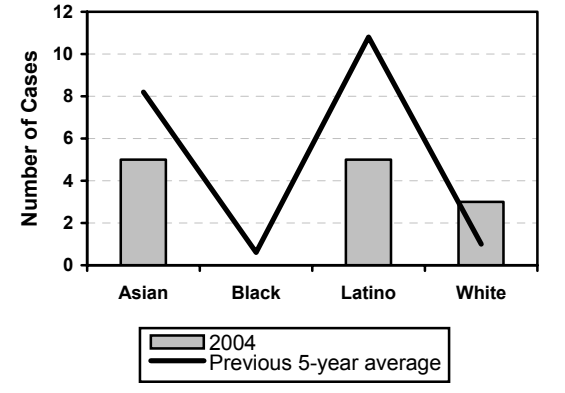
Figure 3
Acute Typhoid Fever
by Age Group
LAC, 2004



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 any previously undiagnosed carriers or cases.

Figure 4
Acute Typhoid Fever
by Race/Ethnicity
LAC, 2004



COMMENTS

The majority of cases (N=11, 85%) traveled to endemic areas outside the US; Mexico, Central and South America, Samoa, Bangladesh, Nepal and Indonesia, were reported travel destinations. One adult case denied travel, however, this history was not reliable. One case, a child, was infected by a previously undiagnosed carrier in the household.

ADDITIONAL RESOURCES

General information about typhoid fever available from CDC at:
www.cdc.gov/ncidod/dbmd/diseaseinfo/typhoidfever_g.htm

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

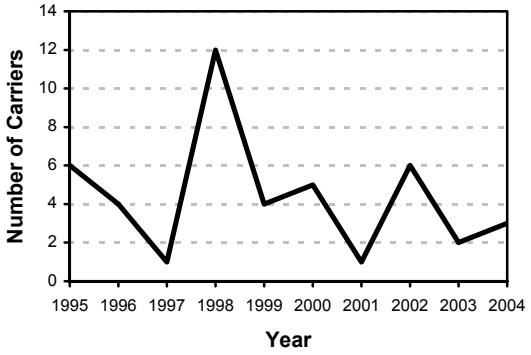
General information and reporting information about this and other diseases in LAC is available at:
www.lapublichealth.org/acd/food.htm

TYPHOID FEVER, CARRIER

CRUDE DATA	
Number of New Carriers	3
Total Number of Carriers	12
Annual Incidence[a]	
LA County	N/A[b]
United States	N/A
Age at Diagnosis	
Mean	53 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
Typhoid Fever Carriers
by Year of Detection
LAC, 1995–2004



DESCRIPTION

The chronic typhoid carrier state can occur following symptomatic or subclinical infections of *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 middle aged women.

DISEASE ABSTRACT

- There were three new carriers identified in 2004.
- During 2004, no carriers were closed to follow-up and a total of twelve carriers were under case management in LAC.

COMMENTS

All new carriers were foreign born; two were male. One previously unknown carrier was found while testing household contacts to a new acute typhoid case. The other two 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. Per state code, carriers are to remain under the supervision of the local health officer until cleared. Conditions for release from supervision are also mandated by state code. All cultures done for the purpose of release must be done by an approved public health laboratory.

ADDITIONAL RESOURCES

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

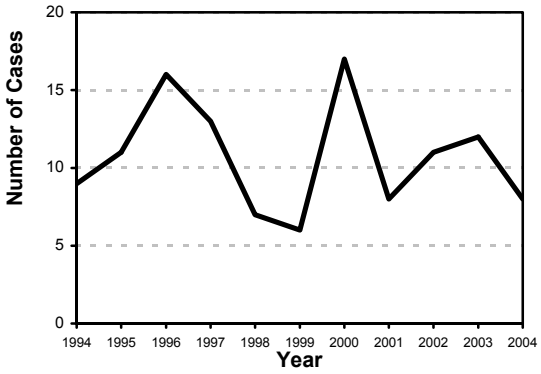
General information and reporting information about this and other diseases in LAC is available at:
www.lapublichealth.org/acd/food.htm

TYPHUS FEVER

CRUDE DATA	
Number of Cases	8
Annual Incidence[a]	
LA County	---[b]
United States	N/A
Age at Diagnosis	
Mean	36
Median	32
Range	19–60 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.

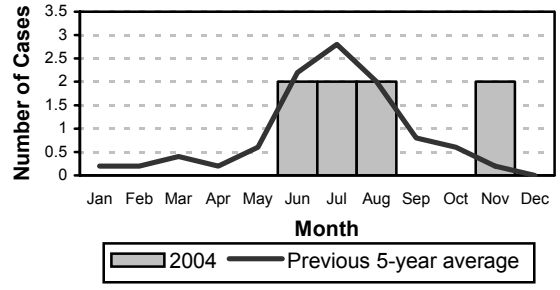
Figure 1
Murine Typhus
Cases by Year of Onset
LAC, 1994–2004



DESCRIPTION

Typhus fever (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 opossums 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 infection is not vaccine preventable, but can be treated with antibiotics.

Figure 2
Murine Typhus
Cases by Month of Onset
Los Angeles County, 2004



DISEASE ABSTRACT

- The majority of cases occurred in the summer. In 2004, six cases (75%) occurred during June, July, and August.
- Six cases were hospitalized (75%) and no fatalities occurred.
- There were 4 female cases and 4 male cases.
- Six cases were White and 2 cases were Hispanic.

STRATIFIED DATA

Location: Of the 8 cases, 2 were residents of Alhambra, 3 from Northeast, and one case from Central, Foothill and Southeast health districts, respectively. Typhus is endemic in the foothills of central LAC and rats, opossum, and cats from these areas have tested positive for typhus group *Rickettsia* antibodies. Cases were reported from the cities of Los Angeles, Pasadena, South Pasadena, and Temple City. The reasons for this localized endemic area 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. Typhus infection 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. In addition, 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 LAC: association with seropositive domestic cats and opossums. Am J Trop Med Hyg 1993;48:269–73.

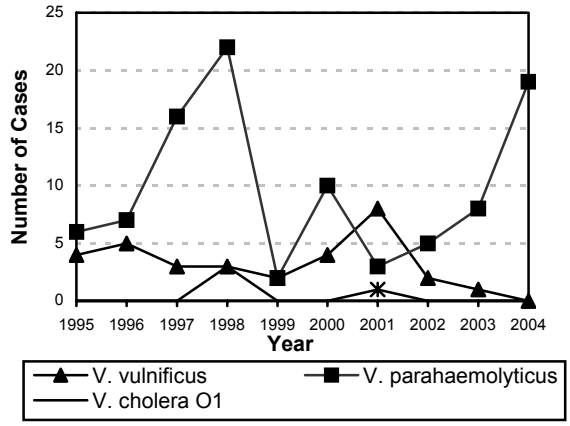
Williams SG, Sacci JB Jr, Schriefer ME, et al. Typhus and typhuslike rickettsiae associated with opossums and their fleas in Los Angeles County, California. J Clin Microbiol 1992;30:1758–62.

VIBRIOSIS

CRUDE DATA	
Number of Cases	26
Annual Incidence[a]	
LA County	0.27
United States	N/A
Age at Diagnosis	
Mean	48
Median	44
Range	1–79 years
Case Fatality	
LA County	0%
United States	varies by species

[a] Cases per 100,000 population.

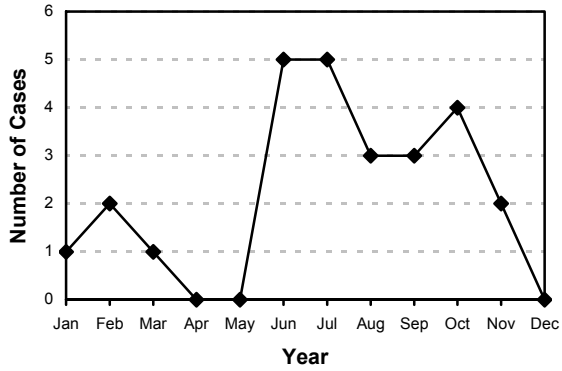
Figure 1
Selected Vibrio Species
Cases by Year of Onset
LAC, 1995–2004



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 bacteria via a 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.

Figure 2
Vibriosis
Cases by Month of Onset
LAC, 2004



DISEASE ABSTRACT

- Twenty-six cases of Vibrio infections were reported in 2004, an increase of 100% from the previous year (N=13).
- No fatal cases of vibriosis were reported in 2004.
- No cases of *V. vulnificus* or *V. cholerae* 01 were reported.

STRATIFIED DATA

Trends: Over the last 10 years, case reports of Vibrio infections peaked in 1998 with 36 cases (7 cases were part of an outbreak). Reported cases of *V. vulnificus* decreased to zero in 2004, a substantial

decline compared the 10-year peak of eight cases occurring during in 2001 (Figure 1). *V. cholerae* 01 cases also decreased to zero after a peak of 3 cases in 1998 and 1 in 2001.
Seasonality: Among reported vibriosis cases with distinct onset dates, the majority (77%, n=20) occurred between June and October (Figure 2). Vibrio infections typically increase during the warmer summer months.

Age: Vibrio cases were all adults except for a child one year old (Table 1).

Sex: Over two-thirds of the cases were male (69%, n=18, Table 1), whereas last year 93% were male.

Race/Ethnicity: Reported cases were most often Latino (52% n=12, Table 1) similar to 50% from last year.

Severity: For vibriosis cases with data of distinct onsets and resolution dates (n=12), duration of illness averaged 4.5 days (range 2-8). Four vibrio cases required hospitalization for their infection.

Table 1. Vibrio Cases by Species, Race, Age and Sex—LAC, 2004

Species	No. of cases	Race (no. of cases)	Mean Age, years (range)	Sex Ratio M:F
V. parahaemolyticus	19	Asian (1), Latino (11), White (6), Unknown (1)	49 (24-79)	2.8:1
V. cholerae non-O1	3	Black (1), Latino (1), White (1)	48 (1-75)	0:3
V. alginolyticus	3	Black (1), Unknown (2)	42 (26-44)	3:0
V. fluvialis	1	White (1)	57	1:0

Species-specific Risk Factors:

- Vibrio parahaemolyticus
Nineteen cases of *V. parahaemolyticus* were reported during 2004, an increase from the previous year's total (n=8). All nineteen were identified through stool culture**;** 3 required hospitalization. Risk factor information indicated that 7 ate raw seafood, 2 had cooked seafood, 2 had international travel with seafood consumption, 1 had ocean exposure and 7 not interviewed due to incorrect addresses and phone numbers.

***- Vibrio cholerae* non-01**
Three cases of *V. cholerae* non-01 were reported in 2004. Two cases were related to travel in other countries; one ate seafood in the Philippines and one was a baby recently adopted from Haiti. The third case had no identifiable exposure; no travel, seafood or ocean exposure.

- Vibrio alginolyticus
All three of *V. alginolyticus* infections were wound associated; one in an ear and two in toes. One case had ocean exposure and two were unable to be located and interviewed.

COMMENTS

The increase in cases of *V. parahaemolyticus* coincides with an overall increase in the state of California. The reason for the increase is unknown, but could be related to warm ocean water temperatures during the year. In LAC, risk of vibriosis infection can be prevented or reduced by avoiding raw fish and shellfish. 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. For the first time in the past ten years, the number of *V. vulnificus* cases decreased to zero in 2004 from a 10-year peak of 8 in 2001. This decrease is most likely due to an oyster ban that took effect in 2003 banning Gulf Coast Oysters harvested between April 1st and October 31st. The oysters grown in the Gulf Coast waters during warm months pose a higher risk for *V. vulnificus* infection. 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

2004

COMMUNITY-ACQUIRED DISEASE OUTBREAKS

ABSTRACT

- In 2004, 170 community-acquired disease outbreaks accounted for 1907 cases of illness (Figure 1).
- Schools were the most common setting of community-acquired outbreaks (58%).

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 Community Health Services with ACDC providing consultation as needed. The outbreaks reported in this section do not include outbreaks associated with food (see Foodborne Outbreaks section) or facilities where medical care is provided (see Healthcare Associated Outbreaks section).

Most reported community-acquired outbreaks in LAC were due to varicella, followed by ectoparasites (scabies and pediculosis) comprising 35% and 21% of all community-acquired outbreaks respectively. Third most common was gastroenteritis (GE) outbreaks of various causes, accounting for 16% of all outbreaks. Collectively these disease categories accounted for 72% of all community-acquired outbreaks (Figure 2, Table 1).

The outbreaks with the most cases tended to be due to 11 norovirus outbreaks reported in 2004, with a mean size of 26 cases per outbreak — most likely reflecting how easily this agent can be transmitted from person-to-person. (Table 1)

The most common settings for illness transmission were schools (elementary schools, middle schools, and high schools) accounting for 58% of all outbreaks. Settings with young children in daycare or pre-school accounted for an additional 25%. Group and retirement home settings were the third most common site of the community-acquired outbreaks reported in 2004 with 13% (Figure 3). Even with the increase in overall frequency of outbreaks in 2004, the percentage breakdown by setting remained similar to past years.

Figure 1
Community Acquired Outbreaks
Number of Persons Affected
LAC, 1998–2004

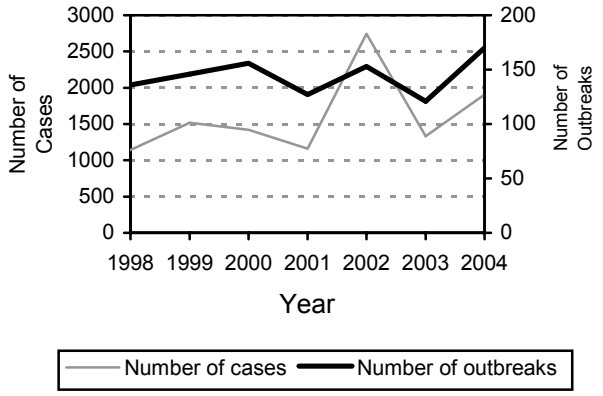
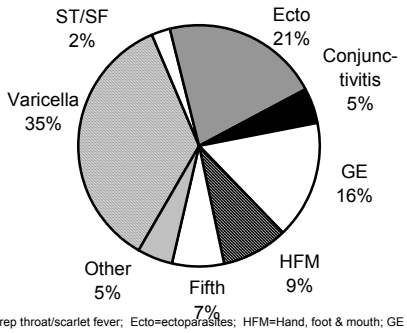
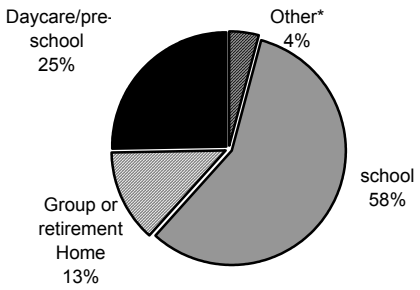


Figure 2
Community-Acquired Outbreaks by Type of Disease*
LAC, 2004 (N=170)



ST/SF=strep throat/scarlet fever; Ecto=ectoparasites; HFM=Hand, foot & mouth; GE - Gastroentestinal; other- ringworm , unknown rash, Hepatitis B, viral meningitis, and staph.

Figure 3
Community Outbreaks by Setting
LAC, 2004 (N=170)



*Other includes households (2), juve camp (3) , and worksite (2)

Table 1. Community-Acquired Outbreaks by Disease — LAC, 2004

Disease	No. of outbreaks	No. of cases	Cases per outbreak (average)	Cases per outbreak (range)
Varicella	60	698	12	4–44
Scarlet fever/strep throat	4	32	8	3–12
Scabies	11	63	6	2–23
Hand, foot & mouth disease	15	102	7	2–13
Pediculosis	25	289	12	3–25
GE illness - Norovirus	11	284	26	8–82
GE illness - Shigella	3	18	10	4–10
GE illness - Salmonella	2	9	15	2–7
GE illness - Giardia	1	3	3	3
GE illness - Unknown	10	156	16	9–35
Fifth disease	12	116	10	2–27
Conjunctivitis	8	81	10	2–32
Other*	8	56	7	3–14
Total	**170**	**1,907**	**11**	**2–82**

* Includes: ringworm (3), unknown rash illness (2), Hepatitis B (1), viral meningitis (1) and staph (1).

Table 2. Community-Acquired Outbreaks by Disease and Setting — LAC, 2004

Disease	Group Home[a]	School[b]	Preschool or Daycare	Other[c]	TOTAL
Varicella	1	57	2	0	**60**
Scarlet fever/strep throat	0	3	1	0	**4**
Scabies	10	0	0	1	**11**
Hand, foot & mouth disease	0	2	13	0	**15**
Pediculosis	1	20	4	0	**25**
GE illness - Norovirus	8	0	2	1	**11**
GE illness - Shigella	0	0	1	2	**3**
GE illness - Salmonella	0	0	1	1	**2**
GE illness - Giardia	0	0	1	0	**1**
GE illness - Unknown	0	1	7	2	**10**
Fifth disease (Parvovirus)	0	10	2	0	**12**
Conjunctivitis	0	4	4	0	**8**
Other	2	1	5	0	**8**
Total	**22**	**98**	**43**	**7**	**170**

[a] Includes centers for retirement, rehabilitation and the developmentally disabled.
[b] Includes elementary, middle and high schools. No high schools reported outbreaks in 2003.
[c] Includes jails, workplaces, universities/colleges, camp and private homes.

COMMENTS

The number of reported outbreaks in 2004 increased to a seven year high; a 40% increase from 2003 – the lowest mark in the same 7 year time frame. Diseases which contributed to 2004 increase from the previous year were varicella (increasing from 28 to 60 outbreaks), Hand foot and mouth disease (increasing from 8 to 15 outbreaks), and Fifth (Parvovirus) disease (up from 4 to 12 outbreaks). Varicella

remained the most common cause of community-acquired outbreaks in LAC since 1999. (see Varicella Project special report section) In 2004, twenty varicella outbreaks were identified in the Antelope Valley Health District alone (within SPA 1), where a varicella active surveillance project is in place.

Outbreaks were reported from all 8 SPAs (Figure 4). SPA 3 which comprises the San Gabriel Valley clearly had the most outbreaks for 2004.

The chart of community-acquired outbreaks by onset month (Figure 5) shows a bimodal distribution. Months with outbreak peaks tend to be a few months into the traditional school year and a few months after Christmas break. These peaks are predominately caused by varicella and pediculosis. Gastroenteritis outbreaks occurred more evenly throughout 2004.

Community-acquired outbreaks tended to occur in settings associated with two age-specific groups. The clear majority of outbreaks were in school and pre-school settings among children. Varicella, strep throat/scarlet fever and pediculosis (head lice) are most common in this young group. Illnesses in this age group account for the increase in outbreaks from 94 in 2003 to 141 in 2004. The second age group affected by outbreaks is in the older population associated with group-home settings (n=22). In this age category, scabies and norovirus are the most common etiologic agents (Table 2).

Figure 4
Community Outbreaks by SPA
LAC, 2004 (N=170)

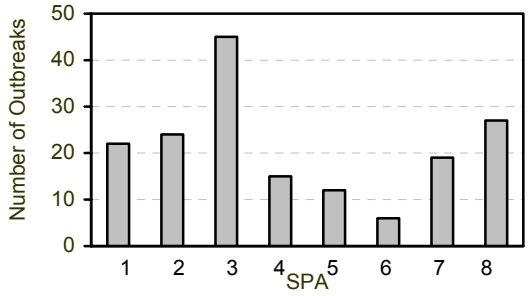
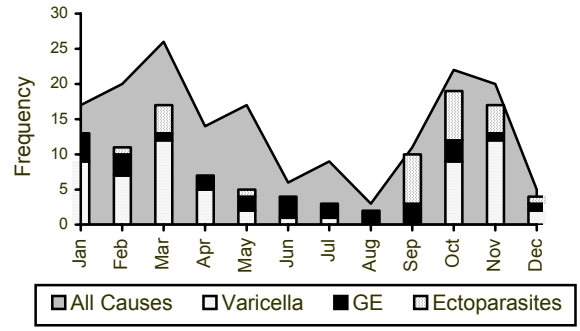


Figure 5
Community Outbreaks by Selected Diseases and Onset Month
LAC, 2004 (N=170)



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 2004, 91% of FBIRs led to an on-site investigation of the facility—this is often sufficient public health action to prevent additional foodborne illnesses.

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, or ill individuals who attended a large event with the potential for others to become ill.

DISEASE ABSTRACT

- In 2004, the number of outbreaks investigated was more than the previous two years. The overall number of cases of individual illness was also higher than the previous four years (Figure 1).
- A food item was implicated in 48% of the foodborne outbreaks (Figure 5).
- Probable contributing factors were determined for 48% of the outbreaks investigated (Figure 8).

Figure 1
Foodborne Outbreaks
Number of Persons Affected
LAC, 2000–2004

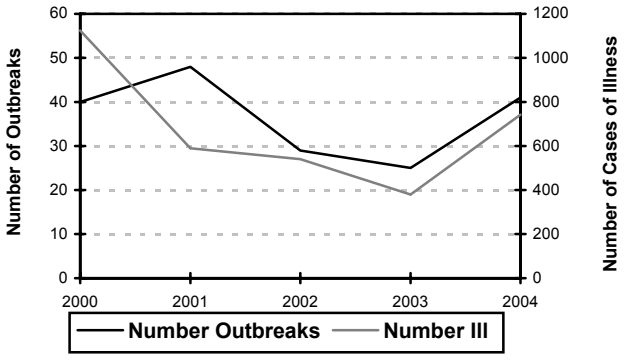


Figure 2
Foodborne Outbreaks
by Etiologic Agent Category
LAC, 2000–2004

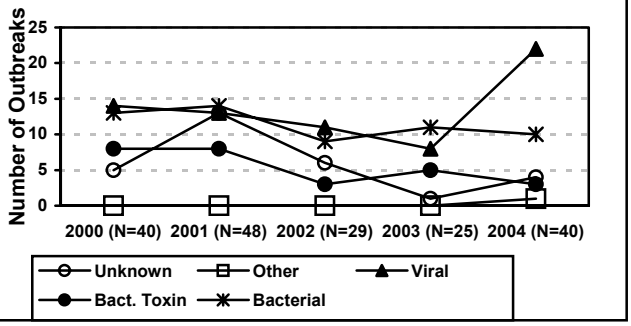
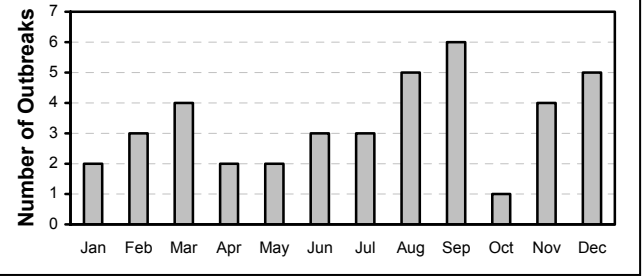


Figure 3
Foodborne Outbreaks
by Month of Onset
LAC, 2004 (N=40)

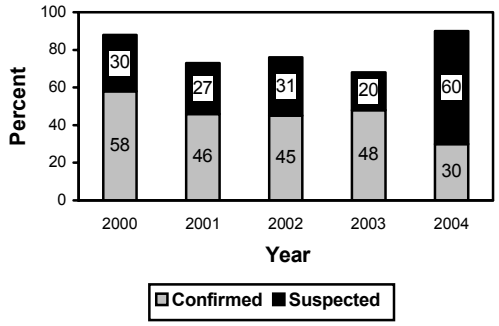


1 CDC. Surveillance for foodborne disease outbreaks—United States, 1988–1992. MMWR 1996; 45(SS-5):58. Available at: www.cdc.gov/mmwr/preview/mmwrhtml/00044241.htm

DATA

Overview: Of the 1774 FBIRs in 2004 from consumers eating food from establishments located in LAC, F&M investigated 475 (29%), and referred 1134 (68%) to district inspectors or another agency for follow-up. Some of the FBIRs (n=57, 3%) were multiple reports filed for the same establishment. ACDC investigates foodborne outbreaks with the greatest public health importance. In 2004, ACDC investigated 40 foodborne outbreaks representing 742 cases of foodborne illness (Table 1, Figure 1). These outbreaks were caused by a variety of pathogens (Figure 2). The mean number of cases per foodborne outbreak was 19 (range 2–78 cases). There were no waterborne outbreaks reported in 2004. There were no foodborne outbreaks in health facilities.

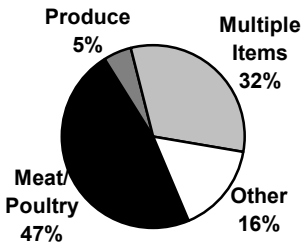
Figure 4
Foodborne Outbreaks
% with Suspected/Confirmed Etiologic Agent
LAC, 2000–2004



Seasonality: In 2004 there were peaks of foodborne outbreaks in August, September, and December (Figure 3).

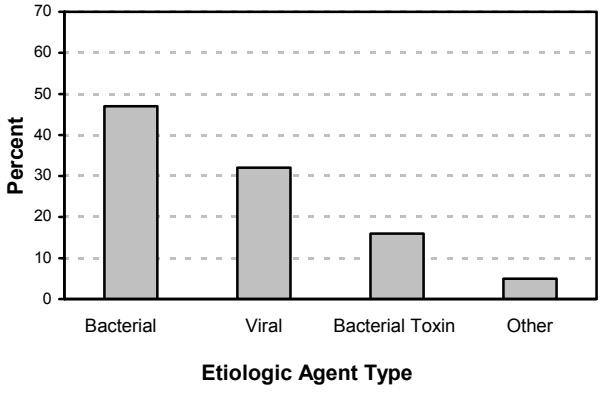
Agent: Typical foodborne pathogens can be categorized according to common characteristics of illness. The categories used in this report include five types of pathogens (Figure 2). Bacterial agents that cause infection include *Salmonella, Campylobacter* and *E.coli*. Bacteria that produce toxins include *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. The last category was unknown.

Figure 5
Foodborne Outbreaks
with Implicated Food Vehicles
LAC, 2004 (N=19)



A specific pathogen was laboratory confirmed in 30% and epidemiologically suspected in 60% of foodborne outbreaks investigated in 2004 (Figure 4). Two outbreaks, both bacterial, were identified by routine disease surveillance (Table 2). Laboratory testing was conducted in 16 of the 40 foodborne outbreaks (40%). Reasons for no laboratory testing include lack of cooperation (n=12) delayed notification (n=9), and cases out of town/unavailable (n=3).

Figure 6
Percent of Foodborne Outbreaks With Food
Vehicles Implicated, by Etiologic Agent
LAC, 2004 (N=19)



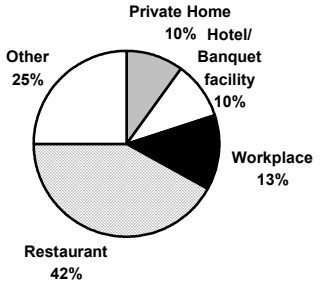
Implicated Food Vehicles: In 48% of foodborne outbreak investigations, a food vehicle was epidemiologically implicated. Implicated food vehicles are categorized in Figure 5. The largest proportion of outbreaks in which a food vehicle was identified was caused by the meat/poultry category (47%), followed by the multiple items category (32%) and the other category (16% each). Among outbreaks in which a possible food vehicle was

identified, 16% were bacterial toxin outbreaks, 47% were bacterial outbreaks, and 32% were viral outbreaks (Figure 6).

Outbreak Location: The most common locations for reported foodborne outbreaks were restaurants (42%), followed by locations in the other category (25%, Figure 7). These locations include places of worship, schools, and parks. Outbreak-associated food was most often prepared by a restaurant (60%) or from a caterer (23%).

The geographic distribution of the outbreaks by SPA is summarized in Table 3. SPA 2 had the most foodborne outbreaks (n=9); SPAs 1 and 6 had the least (n=1). There were several multi-district and multi-county outbreaks, but there were no outbreaks that involved multiple states.

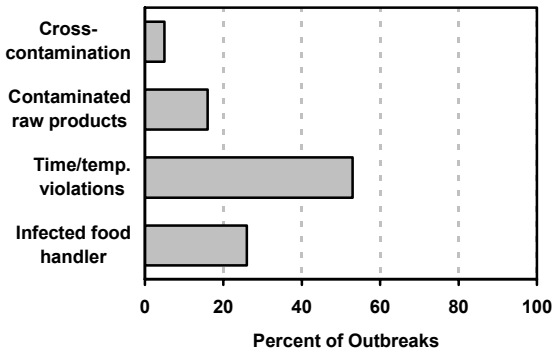
Figure 7
Foodborne Outbreaks
by Place Food Eaten
LAC, 2004 (N=40)



Contributing Factors: In 19 of 40 outbreak investigations, probable contributing factors of the outbreak were found on F&M inspection (Figure 8). The most frequent factors identified were improper holding time/temperature (53%) and infected food handler (26%).

Viral GE Summary: Many of the foodborne outbreaks investigated in 2004 were categorized as viral GE (n=22, 55%). Laboratory testing was completed on four of these viral GE outbreaks, with three testing positive for NV. Viral GE was suspected in the remaining 18 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 2004 was 19 cases. About 27% of the viral GE outbreaks had an undetermined implicated food vehicle, and were possibly due to multiple contaminated food items or person-to-person transmission. Restaurants were the most common food source for the 2004 viral GE outbreaks (50%). In 73% of the viral GE outbreaks, contributing factors were undetermined.

Figure 8
Foodborne Outbreaks with Known
Probable Contributing Factors (N=19)
LAC, 2004



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 comparison of results of pulsed-field gel electrophoresis (PFGE) of pathogens. The PFGE are monitored for strains of various etiologic agents. When similar resulting patterns are detected, an investigation may be initiated. In addition, PFGE results can link solitary case occurring locally to a larger, previously identified outbreak occurring on a wider geographical scale (i.e., multistate *E. Coli* O157:H7 outbreak). LAC was involved in the investigation of 2 of these multi-jurisdictional foodborne outbreaks in 2004.

Persons with 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, 2004 (N=40)

Agent	Strain/Type	Confirmed/ Suspected	Cases*	Jurisdictions
Bacterial toxin	C. *perfringens*	Lab Confirmed	9	Torrance
E. *coli* - (ETEC)	O169: Hnm	Lab Confirmed	56	Hollywood
NV		Lab Confirmed	42	Alhambra
NV		Lab Confirmed	39	West Valley
NV		Lab Confirmed	30	Southwest
Salmonella	heidelberg	Lab Confirmed	11	West Valley
Salmonella	heidelberg	Lab Confirmed	9	San Fernando
Salmonella	newport	Lab Confirmed	9	Multi-county
Salmonella	infantis	Lab Confirmed	9	Central
Salmonella	heidelberg	Lab Confirmed	78	Torrance
Salmonella	anatum	Lab Confirmed	26	Multi-district
Salmonella	thompson	Lab Confirmed	22	Central
Bacterial toxin	S. *aureus*	Suspected	4	Bellflower
Bacterial toxin	C. *perfringens* or B. *cereus*	Suspected	13	Bellflower
Campylobacter	jejuni	Suspected**	5	West
NV		Suspected	26	Alhambra
NV		Suspected	2	Inglewood
NV		Suspected	5	West Valley
NV		Suspected	20	Glendale
NV		Suspected	8	Central
NV		Suspected	13	Harbor
NV		Suspected	14	Pomona
NV		Suspected	7	Pomona
NV		Suspected	9	Torrance
NV		Suspected	18	Harbor
NV		Suspected	8	West
NV		Suspected	27	Multi-county
NV		Suspected	60	Glendale
NV		Suspected	19	Northeast
NV		Suspected	15	West
NV		Suspected	10	Glendale
NV		Suspected	4	East Valley
NV		Suspected	18	Northeast
NV		Suspected	29	Foothill
Shigella		Suspected**	30	Multi-county
Toxin	Scombroid fish poisoning	Suspected	3	Glendale
Unknown-GI			9	Alhambra
Unknown-GI			8	Bellflower
Unknown-GI			12	Antelope Valley
Unknown-GI			6	Northeast

* Includes only LAC residents.
** Only one case was lab confirmed.

Table 2. LAC Foodborne Outbreaks Laboratory Summary: Outbreaks by Suspect/Confirmed Etiologic Agent, 2004

	Bacterial	Bacterial Toxin	Norovirus	Unknown/Other	Total
Number of outbreaks investigated	10	3	19	8	**40**
Number of outbreaks tested	10	1	5	0	**16**
Number of outbreaks with agent confirmed	8	1	3	--	**12**
Number of outbreaks identified by routine surveillance	2	--	--	--	**2**

Table 3. Frequency of Foodborne Outbreaks by Location, 2004

SPA	Frequency	Percent
1	1	3
2	9	23
3	6	15
4	7	17
5	3	7
6	1	3
7	3	7
8	6	15
Multi-district	2	5
Multi-county	2	5
Multi-state	0	0
Total	**40**	**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 the 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 ASSOCIATED OUTBREAKS

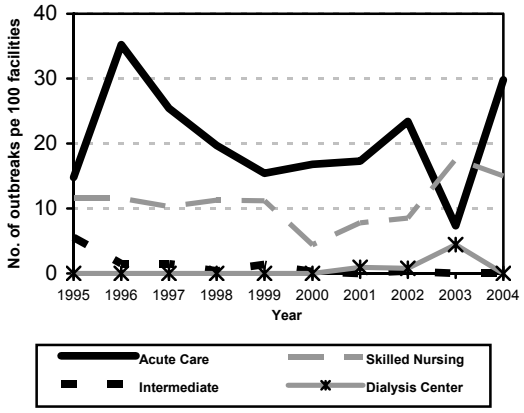
DEFINITION

Healthcare associated 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.

ABSTRACT

- The rate of acute hospital outbreaks increased from 2003 (Figure 1).
- In 2004, acute care hospital outbreaks contributed most to the increase in healthcare facility outbreaks, and increased 288% from 2003 (Table 1).

Figure 1
Healthcare Associated Outbreaks
LAC, 1995–2004



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, 2000–2004

	YEAR				
Type of Facility	**2000**	**2001**	**2002**	**2003**	**2004**
Acute Care Hospitals	20	19	26	8	31
Provider Offices	0	0	2	0	0
Dialysis Facilities	0	1	1	9	0
Intermediate Care/Psych	1	0	1	0	0
Skilled Nursing Facilities	19	35	37	75	63
TOTAL	**40**	**55**	**67**	**92**	**94**

Acute Care Hospitals: There were 31 outbreaks reported in acute care hospitals in 2004 (Table 1)—an increase of 288% from 2003. Over half occurred in intensive care units. (Table 2). MRSA caused 9 of 12 (75%) of NICU outbreaks; *Acinetobacter baumannii* caused 3 of 4 (75%) of ICU outbreaks. The unknown outbreak locations all involved scabies where unit information is not always collected and often involves multiple staff members. Over half the outbreaks were bacterial, with the remainder of viral or ectoparasitic etiology (Table 3). Six hospitals reported more than one outbreak. MRSA represented a large portion of the outbreaks (39%) and caused 12 outbreaks in 2004 compared to 10 outbreaks total in the previous 4 years (2000 to 2003). In 2004, the etiologic agents contributing the largest number of cases in acute care outbreaks were norovirus (n=83), scabies (n=61) and MRSA (n=60).

Table 2. Acute Care Outbreaks by Hospital Unit—LAC, 2004	
Outbreak Location	**No. of Outbreaks**
Neonatal Intensive Care	11
Adult Intensive Care	4
Sub-Acute Unit (within hosp)	4
Newborn Nursery	2
Trauma Care Unit	1
Psychiatric Unit	1
Multiple Units	1
Newborn Outpatient	1
Unknown	6
Total	**31**

Table 3. Acute Care Hospital Outbreaks by Disease/Condition—LAC, 2004		
Disease/Condition/ Etiologic Agent	**No. of Outbreaks**	**No. of Cases**
Norovirus	4	83
Scabies	7	61
MRSA	12	60
Acinetobacter baumannii	3	48
Other	5	23
TOTAL	**31**	**275**

Skilled Nursing Facilities: In 2004, 63 outbreaks were reported in SNF. Gastroenteritis and scabies were the most common causes (Table 4), accounting for 83% of the total outbreaks in SNFs and 79% of the total cases.

Table 4. Skilled Nursing Facility (SNF) Outbreaks by Disease/Condition LAC, 2004		
Disease/Condition	**No. of Outbreaks**	**No. of Cases**
Gastroenteritis • unspecified (n=13) • norovirus (n=5)	18	384
Scabies • typical (n=33) • atypical (n=1)	34	358
Illness, unspecified	7	170
Respiratory illness • influenza (n=0) • unspecified (n=1)	1	7
Headlice	1	4
Fungal Infection	1	4
Rash	1	9
Total	**63**	**936**

COMMENTS

Outbreaks in healthcare facilities are investigated by LAC DHS, skilled nursing facilities by the district public health nurse, and acute care hospitals by ACDC in collaboration with the infection control professional of the affected hospital. 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.

The investigation and publication of outbreaks provide a valuable resource and should be used for educational purposes as well as for preparing for further outbreak investigations.[1] Of note, LAC is seeing an increase in MRSA in the NICU population, nine outbreaks in 2004. In two of these outbreaks, the index case was believed to have acquired MRSA from the mothers' breast milk. Further information about the NICU outbreaks and the two outbreak reports of possible breast milk transmission of MRSA can be found in the Special Reports section. Also reported is a *Burkholderia cepacia* outbreak associated with sublingual CO2 probes. Our investigation helped identify this cluster of cases as part of a nationwide outbreak resulting in a recall of the contaminated product.

Starting in late 2003, to improve communicable disease reporting and enhance communication between ACDC and acute care facilities in LAC, the Hospital Outreach Unit (HOU) was created. Many acute care hospital outbreaks in 2004 were initially reported directly to the HOU from the strengthened relationships with the infection control professionals. We anticipate outbreak reporting to increase as a direct result of this novel program. (See Special Reports.)

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), 2003; MMWR 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, 1999; Infection Control and Hospital Epidemiology 20(4); 247–78. Available at: www.cdc.gov/ncidod/hip/SSI/SSI.pdf

1 Gastmeier P, Stamm-Balderjahn S, Hansen S, et al. How Outbreaks Can Contribute to Prevention of Nosocomial Infection: Analysis of 1022 Outbreaks. Infect. Control. 2005;26(4):357-361.

SPECIAL DISEASE SUMMARIES

2004

BOTULISM SUMMARY
LOS ANGELES COUNTY, 2004

A total of eleven patients were reported with suspected botulism in 2004. Most reported cases were male (n=9), most were Hispanic (n=8) and ages ranged from 27 to 55 years (mean 45.2). Ten reported suspect cases were injection drug users (IDU). Suspect cases were reported throughout the year with March having the most reported suspect cases (n=4). Antitoxin was provided to most suspect cases (n=9) based on their risk factors and presenting signs and symptoms. The LAC Public Health Laboratory (PHL) performed analyses on ten suspect cases. After investigation, the following dispositions were made. Three cases were confirmed as wound botulism, five were diagnosed clinically as cases of wound botulism and three cases were diagnosed with other central nervous system diseases. This report excludes cases of infant botulism, which is monitored by the State Department of Health Services.

ACDC provided consultation on at least four other botulism suspects (data not shown). Two were dismissed initially as inconsistent with botulism and no further workup was done. Two were Long Beach residents whose evaluations were referred to the Long Beach Department of Health and Human Services for follow-up. Of the two Long Beach cases, one was found to have Guillain-Barré syndrome and the other (an adult injection drug user) was confirmed to have wound botulism by the PHL.

CASE REPORTS

Confirmed Wound Botulism (n=3): The three confirmed cases were male heroin IDUs with infected wounds. All three had botulinum toxin demonstrated in serum by the mouse bioassay; two were due to type A toxin and the third could not be sub-typed due to insufficient specimen content. One case was also positive for *C. botulinum* in his wound.

Suspected Wound Botulism (n=5): These cases were diagnosed clinically with wound botulism but all tests – i.e. serum and/or wound aspirate – were negative for botulinum toxin or *C. botulinum* organisms. All five cases were male IDUs ranging in age from 27-55, and were treated with botulinum antitoxin. Since these cases are not laboratory confirmed, they do not meet the surveillance case definition and are not counted in official statistics.

Other Central Nervous System Disease (n=3): Three patients reported with possible botulism were eventually found to have another neurological disorder. The first case was a 49-year old female who was an IDU with endocarditis caused by group A Streptococcus; the patient suffered an embolic stroke and unspecified polyneuropathy. The second case was a 38-year old female who had no risks for wound botulism; her final diagnosis was Guillain-Barré syndrome. The third case was a 49-year old male with a history of injection drug use who was diagnosed with myasthenia gravis.

COMMENTS

Since botulinum toxin testing with the mouse bio-assay is available only in the PHL, most initial reports are made by hospital laboratorians seeking permission to submit specimens for testing. ACDC then contacts the treating physician for further details.

Frequently the patient suffers with mild symptoms for several days before seeking medical treatment—in 2004 the average delay from symptom onset to hospital admission was 2 days (range 0-5). In addition, there was another delay from hospital admission to consultation with ACDC, averaging 3.5 days (range 0-12). Often in such situations other diagnoses have been ruled out and only botulism remains in the differential, prompting the request for testing. It is also possible for wound botulism to develop in a patient previously hospitalized for other reasons, such as detoxification or withdrawl; that was not the case with any of the suspected cases occurring in 2004—all had neurological complaints and findings on admission.

Botulism is one of seven biological agents classified as "Category A" for bioterrorism preparedness, requiring the highest priority for reporting. Heightened concern over bioterrorism should lead to increased consultations with Public Health for possible botulism cases. Immediate reporting of suspected botulism cases will achieve two important goals. First, the rate of confirmation should increase as specimens are obtained sooner when toxin levels are higher and cultures are obtained prior to antibiotic administration. Second, should botulism toxin ever be used as a terrorist's tool, rapid case reporting will permit faster recognition of the problem and increase the likelihood of determining the source.

Table 1. Suspected Botulism Cases, LAC DHS, 2004

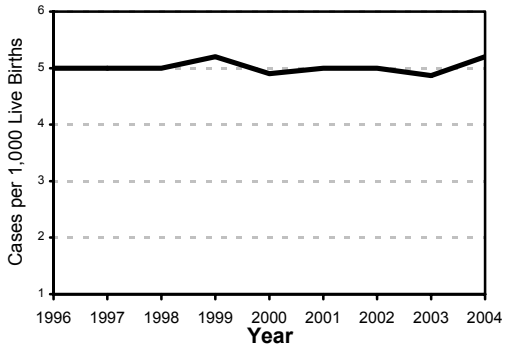
Age/ Sex	Race/ Ethnicity	Month of onset	Injection drug user	Serum test*	Stool test¶	Other test&	Anti-toxin	Diagnosis
54 M	White Hispanic	February	Yes	Pos Type A	--	Gastric aspirate – Neg Wound aspirate – Neg	Yes	Wound botulism, type A
37 M	White Hispanic	March	Yes	Pos Type unk.	Neg	Gastric aspirate – Neg	Yes	Wound botulism, type unk.
27 M	White Hispanic	March	Yes	Neg	--	Wound aspirate – Neg	Yes	Wound botulism, clinical
52 M	White non-Hispanic	March	Yes	Neg	--	--	Yes	Wound botulism, clinical
49 F	White Hispanic	March	Yes	Neg	Neg	--	No	Polyneuropathy, embolic stroke
54 M	Black non-Hispanic	April	Yes	Neg	--	Wound aspirate – *C. perfringens*	Yes	Wound botulism, clinical
34 M	White Hispanic	June	Yes	Pos Type A	Neg	Gastric aspirate – Neg Wound aspirate – Pos	Yes	Wound botulism, type A
48 M	White Hispanic	July	Yes	Neg	--	--	Yes	Wound botulism, clinical
38 F	Asian non-Hispanic	October	No	Neg	--	--	Yes	GBS
55 M	White Hispanic	November	Yes	Neg	--	--	Yes	Wound botulism, clinical
49 M	White Hispanic	November	Yes	--	--	--	No	MG

Pos – test was performed and result was positive
Neg – test was performed and result was negative
GBS – Guillain-Barré syndrome
MG – Myasthenia gravis
* Botulinum toxin screen by mouse bio-assay
¶ Botulinum toxin screen by mouse bio-assay; culture for clostridia
& Botulinum toxin screen by mouse bio-assay (wound aspirate, gastric aspirate) or culture for clostridia (wound aspirate or biopsy)

HEPATITIS B, PERINATAL

CRUDE DATA	
Number of Infants Born to HBsAg Positive Mothers	745
Incidence of Exposure[a]	
LA County	5.3
United States	N/A
Age at Diagnosis	
Mean	N/A
Median	N/A
Range	N/A
Case Fatality	
LA County	0.0%
United States	N/A

Figure 1
Perinatal Hepatitis B
Incidence Rates of Infants Born to
HBV-Positive Mothers by Year
LAC, 1996–2004



[a] Number of Infants born to HBsAg-positive mothers per 1,000 live births.

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. Post-vaccination serologic testing is recommended 3–9 months after completing immunoprophylaxis to verify vaccine success or failure. The Immunization Program's Perinatal Hepatitis B Prevention Program (PHBPP) conducts case management of chronic HBsAg-positive pregnant women, their newborns, and household contacts.

DISEASE ABSTRACT

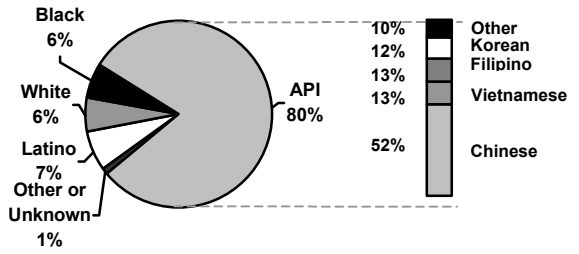
- The majority of HBsAg-positive women giving birth were born in areas of the world with high or intermediate levels of endemic hepatitis B disease (e.g., Asia, Africa, several Southern European and Central and South American counties).
- Of infants born to HBsAg-positive mothers, 98% were immunized within 24 hours of birth.
- Among those whose pediatric health care providers responded to a survey after the completion of the full vaccination series, 95% of infants were protected against HBV, 3% were still susceptible, and 2% were infected with HBV.
- The incidence of exposure of infants born to HBsAg-positive mothers increased by 8% from 4.9 per 1,000 infants born in 2003 to 5.3 births per 1,000 infants born in 2004.

STRATIFIED DATA

Trends: In 2004, 745 infants (including 14 sets of twins and 2 sets of triplets) were born to 727 HBsAg-positive women. The incidence exposure of infants born to HBsAg-positive mothers increased 8% from 2003 (Figure 1).

Race/Ethnicity: The majority of the cases were among Asian/Pacific Islanders (API). Five hundred seventy-eight (80%) of the women were API, 53 (7%) were Latino, 45 (6%) were Black, 42 (6%) were White, and 9 (1%) were classified as other or unknown ethnic group (Figure 2). Of API women, half were Chinese (n=302, 52%). The remaining API women included: Vietnamese (n=76, 13%), Filipino (n=74, 13%), Korean (n=69, 12%), and others from various API countries (e.g., Cambodia, Thailand, Samoa, Tonga, Japan, Laos, Burma, Indonesia; and India n=57, 10%).

Figure 2
Perinatal Hepatitis B
by Maternal Race/Ethnicity
LAC, 2004 (N=727)



Age: The age-range of mothers was 16–48 years of age with a median age of 31 years.

Location: The majority of the HBsAg-positive mothers (n=337, 46%) resided in SPA 3, which has a large Asian/Pacific Islander constituency. An additional 14% resided in SPA 4 (n=98), followed by SPA 2 (n=91, 13%), SPA 8 (n=73, 10%), SPA 7 (n=47, 6%), SPA 6 (n=36, 5%), SPA 5 (n=32, 4%), and SPA 1 (n=13, 2%).

Countries of Origin: The majority (n=656, 90%) of the HBsAg-positive women giving birth were born outside of the US. Of these women, 621 (95%) 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, South Pacific Islands, several Central and South American countries, and Eastern European countries.

CASES COMPLETED FOR FOLLOW-UP IN 2004

In 2004, follow-up was completed for 753 women, their 766 newborns, and 1,432 household contacts. One hundred-twelve mothers were excluded (85 mothers miscarried, terminated or had fetal demise, 16 transferred/moved out of LAC or were unable to be located before delivery and 11 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 2004 were reported in 2002 and 2003.

Case management protocol includes:

1. educating pregnant HBsAg-positive women about HBV disease and transmission,
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 766 eligible infants (including 13 sets of twins), nearly all received the hepatitis B vaccine #1 (98%) and HBIG (97%) within 24 hours of birth. The majority of infants (n=717, 94%) received HBIG and a complete three-dose series of hepatitis B vaccine (Table 1).

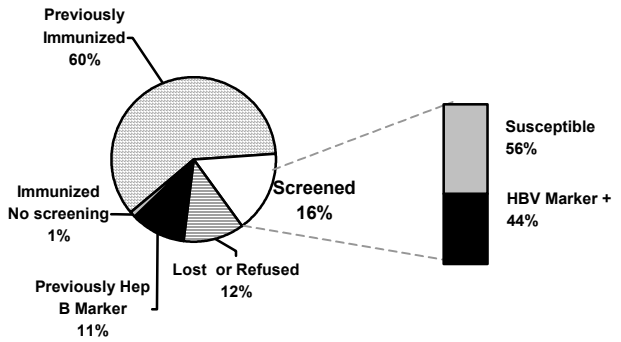
Table 1. Summary of Infant Hepatitis B Immunoprophylaxis, LAC—2004 (N=766)

Hepatitis B Immunoprophylaxis	# of Infants	Percent*
Received hepatitis B vaccine #1 ≤12 hours after birth	744	97%
Received hepatitis B vaccine #1 ≤24 hours after birth	750	98%
Received HBIG ≤12 hours after birth	736	96%
Received HBIG ≤24 hours after birth	746	97%
Completed HBIG/3-dose hepatitis B vaccine series	717	94%

* Percent of infants receiving hepatitis B immunoprophylaxis out of a total 766 infants born to 753 HBsAg+ mothers who completed follow-up in 2004. 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 1,432 household and sexual contacts identified, 862 (60%) had already been vaccinated against hepatitis B, and 161 (11%) were known to have serologic evidence of hepatitis B infection. Of the remaining 409 (29%) contacts, 232 (16%) were screened for serologic evidence of hepatitis B infection or immunity, while 168 (12%) refused screening or vaccination, were lost to follow-up, or moved; 1% were vaccinated without screening. Of the 232 (16%) household contacts that were serologically screened, 102 (44%) had positive markers for hepatitis B and therefore did not need vaccine. Over half of the screened household contacts (n=130, 56%) were seronegative, and therefore, susceptible to hepatitis B infection (Figure 3). At the time of completion of case management for the HBsAg-positive mothers, 107 (82%) 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 2004
LAC (N=1,432)



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 efficacy of the Hep B vaccine. Letters requesting post-vaccination serology results were mailed to pediatric health care providers of infants tracked by the PHBPP. Of the 766 infants, post-vaccination serology results of 295 infants (39%) were received. Of these, 280 (95%) had antibodies to hepatitis B surface antigen indicating protection against HBV, 5 (2%) were HBsAg-positive and infected, and 10 (3%) were negative for both markers and revaccination was recommended.

ADDITIONAL RESOURCES

Additional information is available from the CDC:

- 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 Hepatitis organizations include:

- Immunization Action Coalition – www.immunize.org
- Hepatitis B Foundation – www.hepb.org

LOS ANGELES COUNTY INFLUENZA SUMMARY 2004–2005: PROBLEMATIC VACCINE SHORTAGES TEMPERED BY MILD FLU SEASON

OVERVIEW

The topic of influenza generated significant media attention and public anxiety during the fall of 2004. While a routine season was initially expected, this dramatically changed in early October when a major manufacturer of influenza vaccine, Chiron, was forced to halt production due to contamination at their factory. The result, in effect, cut the supply of influenza vaccine to the nation in half. The impact of Chiron's closure was not uniform—some medical centers in the United States that did not order their vaccine from Chiron had received some or even all of their vaccine supply for the season; however, many who relied on Chiron were left with none. To protect the health of those most at risk for complications due to influenza infection, the CDC quickly enacted eligibility restrictions for vaccination (see Table 1). These restrictions were also supported and further enforced by California State mandate. The CDC obtained the remaining shipments of influenza vaccine that had not yet been distributed. Vaccine was redirected to local health departments, which were then responsible for ensuring proper distribution and vaccination of the priority groups. In LAC, the Department of Health Services Emergency Command Center was convened to manage this situation and to establish and implement emergency vaccination clinics (see below).

Table 1. Influenza Vaccine Eligibility Priority Groups—2004*

- Anyone 65 years of age and over
- Infants 6-23 months of age
- Anyone with chronic health problems (e.g., lung disease, diabetes, immunocompromised)
- All pregnant women
- Healthcare workers who provide direct patient care
- People who care for babies younger than 6 months of age

* These eligibility restrictions were enacted October 2004, and expanded to include anyone 55 years of age and older in December 2004. All restrictions on vaccine eligibility were lifted in February 2005.

While the impact of Chiron's closure and the subsequent vaccine shortage was potentially catastrophic, ultimately, the 2004–05 season proved to be quite mild and the extent of influenza illness was minimal both locally and nationwide. In addition, the public interest and demand for vaccination subsided in early 2005—by December, restrictions for vaccination were partially lifted, and by February 2005, all restrictions for vaccination were eliminated.1

EMERGENCY INFLUENZA VACCINE DISTRIBUTION ACTIVITIES

In response to the influenza vaccine shortage, and to ensure that vaccine reached priority groups most in need of vaccination, in October 2004 the CDC redirected vaccine to local health departments for vaccination activities. The Los Angeles Department of Health Services (LACDHS) received an initial allocation of approximately 60,000 doses of vaccine; through this mechanism 20,000 doses were immediately distributed to local long-term care facilities in order to supplement local vaccine that had already been provided to these agencies. An Emergency Command Center was implemented by LACDHS Public Health in order to monitor the vaccine shortage and develop plans for vaccinating members of the other priority groups approved by CDC for vaccination. Special clinics were planned and implemented on the second and third Saturdays of November to allow for vaccination of large numbers of

1 Influenza vaccine delays and shortages are not a new phenomenon—in fact, similar circumstances occurred most recently in the fall of 2000. For a full description of the 2000–01 season and for more information about influenza in LAC, see www.lapublichealth.org/acd/flu.htm.

persons in as short a period of time as possible across all regions of the our county. Approximately 34,491 persons received flu vaccine during these special clinics. A significant amount of the remaining vaccine was distributed at the local LACDHS public health clinics for use during their normal and expanded clinic hours.

In addition, LACDHS received a second allocation of vaccine through CDC's Phase II redistribution program during November 2004. This vaccine, totaling more than 80,000 doses, was offered to health care providers, including all major hospitals in LAC, in an effort to expand the number of high-risk persons that could be vaccinated against influenza. Specialty clinics and subspecialty clinics that provided care to high-risk persons were special targets for receipt of this vaccine.

As more vaccine became available to CDC, CDC set it aside on a regional basis for ordering by private physicians through local vaccine distributors. LACDHS Public Health facilitated this process by creating a web-based procedure to allow local physicians to order vaccine from these regional CDC/distributor partnerships. This web site, which was operational from the last week of November 2004 through January 31, 2005, received and transmitted request for 157,470 doses of vaccine from private LAC health care providers.

SEASON OVERVIEW

Despite the shortages and delay in vaccination, influenza incidence was fairly mild during 2004–05 both locally and nationwide. Across the United States, influenza peaked slightly later than usual, in late February 2005, and occurred at low levels overall—especially as compared to the previous season (Figure 1).

Events in LAC were similar; overall levels of influenza were low, did not peak until mid-February and lingered until late April. However, in LAC, fewer type A viral strains were identified (Table 2). During 2004–05, the majority (74%) of isolates reported by our sentinel physicians were type B. In contrast, only 24% of the reported isolates from California and only 21% of isolates nationwide were type B. Since type A viral strains often produce more intense symptoms than type B strains, it is likely that the influenza season in LAC was milder than both across California and the nation.

Figure 1.

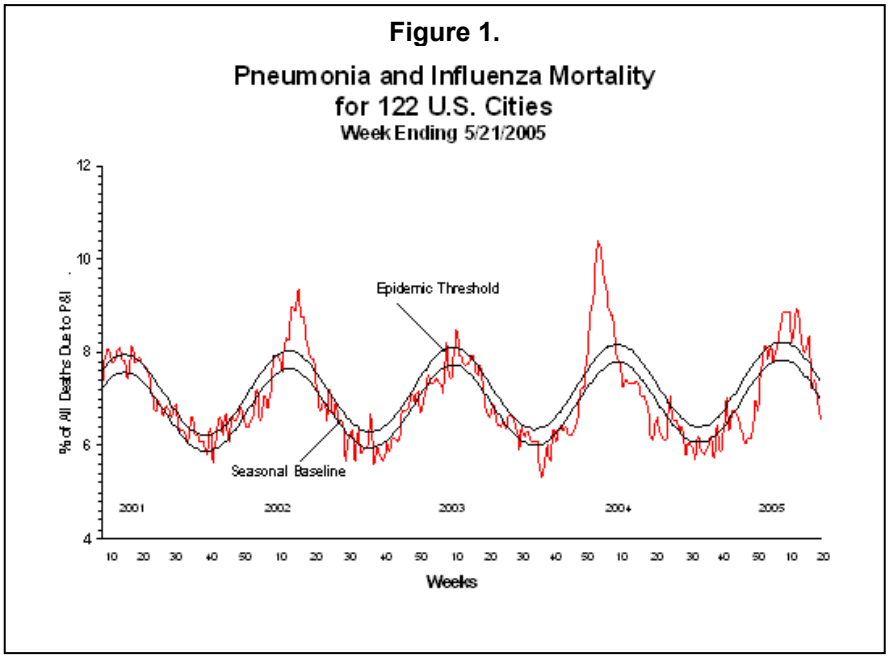


Table 2. Los Angeles County Influenza Isolate Summary

	Season					
	04-05	03-04	02-03	01-02	00-01	00-99
Total number of isolates reported	91	235	89	92	114	142
Number of type B isolates	67	0	20	45	67	0
Percent of type B isolates	74%	0%	22%	49%	59%	0%

While the season was mild in LAC, two novel type A (H3N2) viral strains could have potentially caused much more morbidity and mortality—as evidenced by the low proportion of type A virus identified during 2004–05, LAC escaped major impact from both. The first novel viral strain (A/Wellington/1/2004) emerged in New Zealand in the summer of 2004—too late to be included in the 2004–05 vaccine. While this viral strain caused substantial illness across Europe, it failed to impact the United States including LAC. In early 2005, another novel type A (H3N2) strain was identified in Northern California (A/California/7/2004). Again, this strain failed to cause substantial illness in LAC. The 2005–06 vaccine composition includes the California strain. The Wellington strain will not be included since it is believed that a past and prevalent viral strain (A/Fujian/411/2002) affords immunity to that strain.

CONCLUSION

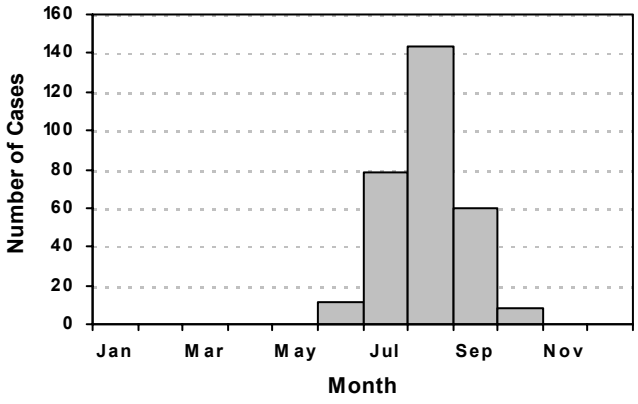
Despite the vaccine shortage, subsequent eligibility restrictions and vaccine redistribution, the 2004–05 influenza seasons was especially mild. Similar events occurred during the 2000–01 season, which was also a comparatively mild season. As this demonstrates, vaccine shortages and delays alone do not determine the severity of an influenza season—other factors are perhaps more important such as which viral strains in circulation. During both the 2004–05 and 2000–01 seasons the prevalent viral strains were identical to what circulated during their previous seasons—and during those preceding seasons there were very high levels of influenza. As such during the following seasons, there was likely sufficient natural immunity in the community to ward off illness even without immunization. A second factor that likely accounted for both mild seasons was the relatively low levels of type A versus type B strains in circulation. As shown on Table 2, LAC's most severe recent seasons (2003–04 and 1999–2000) were type A seasons. In contrast, the remaining seasons were notably mild and predominantly type B.

WEST NILE VIRUS

CRUDE DATA	
Number of Cases	309
Incidence LAC[a]	
LA County	3.2
California	0.81
United States	0.39
Age at Diagnosis	
Mean	54
Median	54
Range	<5–94 years
Case Fatality	14
LA County	4.5%
California	3.6%
United States	3.9%

[a] Cases per 100,000 population and based on 2004 population estimates.

Figure 1
West Nile Virus Disease
Cases by Month of Onset
LAC, 2004 (N=309)



DESCRIPTION

LIFE CYCLE AND EPIDEMIOLOGY

West Nile virus (WNV) is a single-stranded RNA virus placed within the family Flaviviridae, genus Flavivirus. Within the genus Flavivirus, WNV has been serologically classified within the Japanese encephalitis (JE) virus antigenic complex, which includes the human pathogens JE, Murray Valley encephalitis, Saint Louis encephalitis (SLE), and Kunjin viruses.

WNV is indigenous to Africa, Asia, Europe, Middle East, and Australia, and was introduced to North America in 1999, where it was first detected in New York City. The likely origin of the introduced strain was the Middle East, but the mode of introduction remains unknown. From 1999 through 2004, human and non-human WNV surveillance data has documented that WNV has extended its range through most of continental United States to include 47 states and the District of Columbia, Canada, and Mexico. In 2004, 2539 confirmed human WNV cases were reported nationally to the Centers for Disease Control and Prevention (CDC). California (CA) reported the greatest number of any state, 779 cases; Los Angeles County (LAC) reported 309 human cases.

The life cycle of the virus involves the transmission of the virus from a bird reservoir to humans via *Culex,* or Anopheles mosquitoes. Birds, especially, corvids such as the *North American crow*, are the optimal hosts for harboring and replicating the virus. Mosquitoes become infected when they feed on infected birds**,** which may circulate high level of viremia for several days. Infectious mosquitoes carry virus particles in their salivary glands and infect susceptible bird species during blood-meal feeding. Bird reservoirs will sustain an infectious viremia for 1 to 4 days. Additional less frequent routes of transmission that have been documented include transplantation of WNV-infected organs, blood transfusions, transplacental (mother-to-child), occupational exposures, and through breast milk.

CLINICAL INFECTION AND DIAGNOSIS

Most persons who become infected with West Nile virus (WNV) will not develop clinical illness or symptoms. The incubation period for WNV infection can range from 2 to 14 days, although longer incubation periods have been documented in immunosuppressed persons**.** Approximately one in 150 people will develop severe illness, WNV neuro-invasive disease (NID), and about 20% of persons infected with WNV will develop WNV fever (WNF) with symptoms that can include fever, headache, rash, muscle weakness, fatigue, nausea and vomiting, and occasionally lymph node swelling. WNV NID includes: encephalitis, meningitis, and acute flaccid paralysis (AFP). WNV-associated encephalitis, the most severe form of NID, is commonly associated with the following symptoms: fever, altered mental status, headache, seizures, and usually necessitates high levels of specialized medical care. Focal neurologic deficits, including limb paralysis, cranial nerve palsies, Parkonsonian-like tremors, and movement disorders have also been observed. WNV-associated meningitis usually involves fever, headache, and stiff neck. WNV-associated poliomyelitis or acute flaccid paralysis (AFP) syndrome, is the least common among NID. AFP, initially described as atypical Guillian Barre Syndrome in New York City in 1999, was well documented in 2002 during the outbreak in Louisiana. Clinically this syndrome is characterized by the acute onset of asymmetric limb weakness or paralysis in the absence of sensory loss. The paralysis can occur in the absence of fever, headache, or other common symptoms associated with WNV infection. AFP is associated with significant short- and long-term illness and death.

WNV infection is suspected in a person based on clinical symptoms and patient history. Serologic laboratory testing is required to confirm a diagnosis. Diagnosis of acute infection requires the detection of IgM antibody. Serum IgM is usually positive within 5 to 14 days of illness in over 90% of cases and CSF IgM is positive within 7 days of onset. The most commonly performed serologic test is the IgM antibody-capture assay, the enzyme-linked immunosorbent assay (MAC-ELISA). Los Angeles County Public Health laboratory utilizes both IgM and IgG antibody-immunofluorescent Assay (IFA) as well as IgM enzyme immunoassays (EIA). The plaque-reduction neutralization test (PRNT), a cell culture based assay, is a confirmatory test performed at the CA Department of Health Services (DHS) Viral and Rickettsial Disease Laboratory (VRDL). PRNT can distinguish between arthropod-borne flaviviruses such as SLE and WNV. It can also be used to help distinguish false-positive results in an IgM antibody-capture enzyme-linked immunosorbent assay or other assays. In addition to PRNT and serologic testing, nucleotide based testing such as PCR is utilized for blood screening and for surveillance of WNV-infected mosquitoes and dead birds.

HISTORY OF WNV IN LOS ANGELES COUNTY

In 2002, a single human case of WNV-associated meningitis was confirmed. The young woman recovered uneventfully and denied history of travel outside of LAC, blood transfusions, or a history of organ transplantation. However, in 2002, there was no environmental evidence documenting the presence of WNV within LAC such as WNV-infected dead birds, mosquito pools or sentinel chickens with WNV sero-conversion. The first environmental evidence that WNV had arrived to LAC occurred in the summer of 2003 with the presence of WNV-infected dead birds, mosquito pools, and sero-positive sentinel chickens. In 2003, one human case of WNF, with symptom onset in mid-October, was laboratory confirmed, and was most likely infected by local WNV-infected mosquitoes. In June 2004, the LAC public health department documented the first of many human cases.

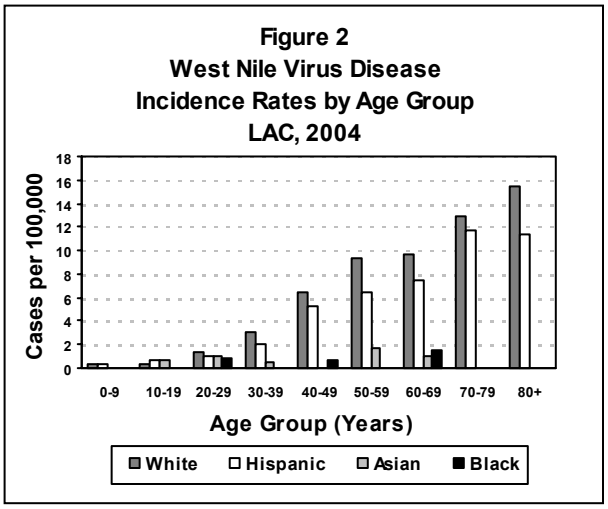
DISEASE ABSTRACT

- The overall incidence of reported WNV infections including asymptomatic blood donors in 2004 was 3.2 cases per 100,000 population (Figure 1).
- WNF was the most common WNV-associated clinical condition, 149 cases or 48.2 % of reported cases in 2004.
- There were 14 case fatalities, including 10 with encephalitis, 2 with meningitis, and 2 WNF cases. The mean age was 76.4 years (range 60-94).
- NID and deaths were each associated with older age.
- The lowest incidence of WNV infection was found in children; there was a dramatic increase in WNV

incidence after age 40 years (Figure 2).
- Non-Hispanic Whites had the highest proportion of symptomatic infections (57%) followed by Hispanics (39%).
- Significantly more male cases (65%, n=200) were reported than female (35%, n=109) in 2004.
- Most WNV infections occurred in persons residing in suburban valleys, areas close to the San Gabriel River and hillside communities.

STRATIFIED DATA

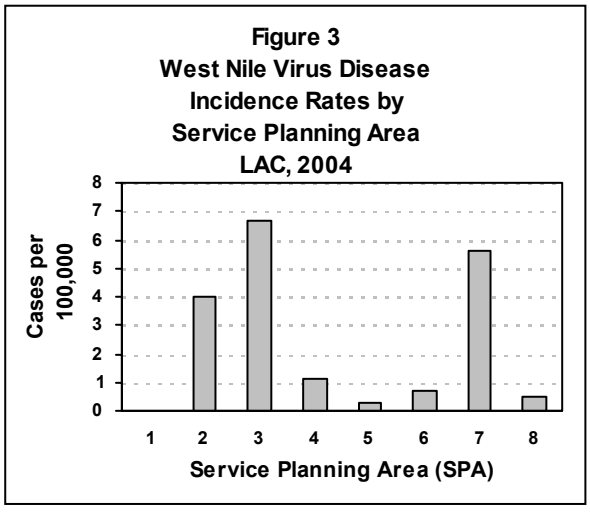
Seasonality: Cases were reported from late spring (first week of June) through fall (second week of October). The peak onset of cases was the 2nd week in August (week 33) when 41 cases were recorded (Figure 1).



Age: The median age for all reported WNV cases including asymptomatic blood donors was 54 years old (range: 5–94 years). Of the 149 WNF cases, the median age was 51 years (range: 6–91). The median age for the 82 meningitis cases was 53 years (range: 5–90). The median age for the 47 encephalitis cases was 70 years old (range: 28–94). The median age for the 7 reported AFP was 45 years (range: 34–78). The median age for the 14 fatal cases was 77.0 years (range: 60–94). The incidence of WNV infection increased steadily with age in Whites and Hispanics (Figure 2). The lowest incidence rates occurred in children under 10, 0.3 cases per 100,000, whereas the greatest incidence occurred in those > 80 years (11.6 cases per 100,000).

Sex: Males were almost twice as likely to present with WNV infection compared to females. The overall LAC WNV incidence rate was 4.2 cases per 100,000 male population versus 2.3 cases per 100,000 female population.

Race/Ethnicity: Whites had the both the greatest proportion of reported cases and overall highest incidence rates of infection, 57% of cases (n=170, 5.9 per 100,000), followed by Hispanics, 39% of cases (n= 117, 2.6 per 100,000). When incidence rates were reviewed by age group and race/ethnicity, whites had the highest incidence of infection in individuals age 30 and above, whereas, Hispanics had the highest incidence in age groups under age 20 years (Figure 2). Only 3% of reported cases occurred among Asian Pacific Islanders (n=8, 0.6 per 100,000) and 1% among Blacks (n=3, 0.3 per 100,000).



Location: The number of reported WNV cases was highest in SPA 3 (n=114, 6.7 per 100,000), SPA 2 (n=84, 4.0 per 100,000), and SPA 7 (n=77, 5.6 per 100,000) (Figure 3).

PREVENTION

Prevention and control of WNV and other arboviral diseases is most effectively accomplished through integrated vector management programs. These programs include surveillance for WNV activity in mosquito vectors, birds, horses, other animals, and humans, and implementation of appropriate mosquito control measures to reduce mosquito populations when necessary. Additionally, when virus activity is detected in an area, residents are alerted and advised to increase measures to reduce contact with

mosquitoes. Currently, there is no human vaccine available against WNV but several vaccines are under development. Important preventive measures against WNV include the following:

- Applying insect repellant to exposed skin. A higher percentage of DEET in a repellent will provide longer protection. DEET concentrations higher than 50% do not increase the length of protection.
- When possible, wear long-sleeved shirts and long pants when outdoors for long periods of time.
- Staying indoors at dawn, dusk, and in the early evening, which are peak mosquito biting times.
- Help reduce the number of mosquitoes in areas outdoors by draining sources of standing water. This will reduce the number of places mosquitoes can lay their eggs and breed.

A wide variety of insect repellent products are available. CDC recommends the use of products containing active ingredients which have been registered with the U.S. Environmental Protection Agency (EPA) for use as repellents applied to skin and clothing. EPA registration of repellent active ingredients indicates the materials have been reviewed and approved for efficacy and human safety when applied according to the instructions on the label. Of the active ingredients registered with the EPA, two have demonstrated a higher degree of efficacy in the peer-reviewed, scientific literature. Products containing these active ingredients typically provide longer-lasting protection than others:

- DEET (N,N-diethyl-m-toluamide)
- Picaridin (KBR 3023)

Picaridin is an EPA approved mosquito repellant that will be commercially available in 2005.

In 2002, WNV transmission was documented from all components of blood products including platelets, packed red blood cells, and plasma. Subsequently in 2003, all blood donors were screened for WNV infection utilizing PCR testing. Millions of units of blood were screened for WNV utilizing PCR based technology, testing donor mini-pools. Over 1000 donor units were held from distribution in 2003, and only 6 clinical WNV cases were documented to be associated with WNV infected transfusion. In 2004, WNV screening intensified and individual donors were screened in order to detect an even lower level of donor viremia than what could be detected from mini-pool screening.

COMMENTS

In 2004, 309 human WNV cases were confirmed in LAC among hundreds of tested patients. WNV is now considered endemic (enzootic) to LAC and Southern California. Sustained surveillance will be required in the coming years, including surveillance among humans, dead birds, mosquito pools, and sentinel chickens. These activities guide public health officials in providing targeted health education to communities at particularly high risk. In response to the 2004 WNV outbreak, LAC DHS specifically added WNV infection to its list of reportable diseases by authority of the Health Officer under California Code of Regulations, Title 17, Sections 2503 and 2505. Physicians and laboratories are required to report all positive laboratory findings of WNV to the Department of Health Services within one (1) working day.

Medical providers play a key role in providing WNV health education to their patients at high risk. A county-wide phone survey in September 2004 revealed that community knowledge of WNV as a potential health risk in LAC was high, 93%, and most people knew that WNV was transmitted by the bite of a mosquito, 97%. But the survey also showed the public's self-reported change in their behaviors to protect themselves against WNV was at about 50% of persons surveyed. Only 20% of respondents reported using repellent prior to 2004. Promotion of preventive measures can help to minimize the risk of being exposed to WNV is a critical part of the public health message.

VECTOR CONTROL

There are five local mosquito and vector control districts within LAC that provide mosquito abatement services to all areas of the county. They carry out mosquito and sentinel chicken surveillance, provide public information, and are critical to mosquito-borne disease control. They include:

- Greater Los Angeles County Vector Control District (GLACVCD)
- San Gabriel Valley Mosquito and Vector Control District (SGVVCD)
- Los Angeles County West Vector Control District (LACWVCD)

- Antelope Valley Mosquito and Vector Control District (AVMVCD)
- Compton Creek Mosquito Abatement District

These five local mosquito and vector control districts work closely with the ACDC to investigate confirmed and presumptive human cases of locally acquired vector-borne disease to determine the source and conditions of transmission.

GLACVCD is the largest vector control district in LAC serving 4.5 million residents in a 1,330 square mile area covering cities from San Fernando Valley, Los Angeles River, the proximate cities of Maywood, Bell, Huntington Park and portions of LAC. The West Vector Control District covers approximately 600 square miles, contains 23 cities and unincorporated territories of the County of Los Angeles, and provides services for 2,866,000 people. The District includes the cities of Agoura Hills, Beverly Hills, Calabasas, Culver City, El Segundo, Hawthorne, Hermosa Beach, Hidden Hills, Inglewood, Lawndale, Lomita, the westerly portion of LAC, Malibu, Manhattan Beach, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, Santa Monica, Torrance, West Hollywood, Westlake Village, and unincorporated territory of the County of Los Angeles. The San Gabriel Valley Mosquito and Vector Control District covers many parts of the San Gabriel Valley, including cities of Alhambra to West Covina. This district had the most cases of WNV in 2004. The Antelope Valley Mosquito and Vector Control District offers programs that provide information and education for the Antelope Valley general public, schools and community organizations; propagated through brochures, pamphlets, seminars, speeches and presentations. The District encompasses an area of approximately 230 square miles and serves residents within District boundaries in Palmdale, Lancaster and Quartz Hill.

Since mosquitoes serve as vectors for disease transmission, WNV-positive mosquito pools are another critical environmental indicator; as such, mosquito pools are routinely tested for the presence of WNV. In 2004, 378 mosquito pools tested positive in LAC, nearly one-third of the identified positive mosquito pools in California (1,136 pools). The last positive mosquito pool in LAC was identified on October 21, 2004 from Harbor City.

In an effort to help protect the public health from the threat of WNV disease, the LAC DHS funded a one year agreement with local mosquito and vector control districts to provide mosquito abatement services to all areas of the county not currently within the jurisdiction of a control district. At least 186,000 persons reside in such regions. On July 2004, city managers in La Cañada-Flintridge, South Pasadena, and Baldwin Park—cities without mosquito control programs—were notified that the County would provide temporary mosquito abatement services by contracting with the San Gabriel Valley Mosquito and Vector Control District for fiscal year 2004-2005. Because portions of the cities of Palmdale and Lancaster as well as unincorporated Antelope Valley and Santa Clarita Valley regions are also without abatement services, we entered into a similar one-year agreement with the Antelope Valley Mosquito and Vector Control District to provided abatement and surveillance service, pending a permanent solution. The challenge of the coming months will be to follow-up with these cities to ensure that they have plans to continue funding of local mosquito abatement services when the county contracts expire in July 2005.

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ADDITIONAL RESOURCES

- Centers for Disease Control and Prevention: www.cdc.gov/ncidod/dvbid/westnile/index.htm
- California Department of Health Services: www.westnile.ca.gov/.
- Acute Communicable Disease Control Program, Los Angeles County Public Health: www.lapublichealth.org/acd/index.htm/
- Vector Management Environmental Health, Los Angeles County Public Health: www.lapublichealth.org/eh/index.htm/
- For additional information on EPA-registered repellants: www.epa.gov/pesticides/factsheets/insectrp.htm

Mosquito and Vector Control District Websites:

- Greater Los Angeles County Vector Control District: www.glacvcd.org/
- West Los Angeles Vector Control District: www.lawestvector.org/
- San Gabriel Valley Mosquito and Vector Control District: www.sgvmosquito.org/
- Antelope Valley Mosquito and Vector Control District: www.avmosquito.org/
- Mosquito and Vector Control Association of California: www.mvcac.org/

Acute Communicable Disease Control
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2004

LOS ANGELES COUNTY
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PUBLIC HEALTH
2004

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ACUTE COMMUNICABLE DISEASE CONTROL
2004 ANNUAL MORBIDITY REPORT

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- Meningococcal Disease ..... Ferlie Villacorte, MSN, MPH, CNS
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Acute Communicable Disease Control
Publications and Presentations
2004

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