ACUTE COMMUNICABLE DISEASE CONTROL

ANNUAL MORBIDITY REPORT

AND SPECIAL STUDIES REPORT

2000

COUNTY OF LOS ANGELES
DEPARTMENT OF HEALTH SERVICES

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

2000 ACUTE COMMUNICABLE DISEASE MORBIDITY REPORT
TABLE OF CONTENTS

Overview Page

Acute Communicable Disease Control Program

TABLE OF CONTENTS (Cont'd)

2000 ACUTE COMMUNICABLE DISEASE MORBIDITY REPORT
MAPS

2000 ACUTE COMMUNICABLE DISEASE MORBIDITY REPORT
TABLES

PURPOSE OF THE LOS ANGELES COUNTY ANNUAL MORBIDITY AND SPECIAL STUDIES REPORTS

The Acute Communicable Disease Control **Annual Morbidity Report** of Los Angeles County's Department of Health Services, Public Health is compiled to:

1. Summarize annual morbidity from acute communicable diseases in Los Angeles County;
2. assess the effectiveness of established communicable disease control programs;
3. identify patterns of disease as an aid in 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 2000 ACDC Annual Morbidity Report does **not** include reports on the following diseases: Tuberculosis, Sexually Transmitted Diseases, or Adult HIV.

LOS ANGELES COUNTY DEMOGRAPHIC DATA

Population figures from the Census 2000 were unavailable at the time of printing; therefore, figures used for calculating the 2000 disease rates in this report were derived from 2000 population estimation of the Regional Population Model (RPM) file developed by the County of Los Angeles, Chief Administrative Office, Urban Research Division for the Population Estimation and Projection System Consortium. These population estimates were projected from 1990 MARS file (Modified Age, Race, and Sex) produced by the US Census Bureau and modified by local death rates, migration rates, and fertility rates within age, sex and racial/ethnic groups. Live birth data used were based on 2000 preliminary birth data from the Automatic Vital Statistics System (AVSS) obtained from the Los Angeles County Data Collection and Analysis Unit.

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

National and California state counts of reportable diseases were obtained from the Centers for Disease Control and Prevention (CDC), Final 2000 Reports of Notifiable Diseases, *Morbidity and Mortality Weekly Report* 2001/50(33);712. The *MMWR* report also includes Bureau of the Census 2000 population estimates for the United States and the State of California; those figures were used to calculate national and California rates of disease. According to that report, the population of the US in 2000 was 272,692,000, and that of California was 33,145,000.

Population estimates for Los Angeles County (not including Pasadena and Long Beach) used in this report are listed in Table A for 2000 as well as for the previous five years. Population data also are given by age, sex, race and health district for 2000 (Tables B-E). Additional disease cases identified after publication of prior annual reports are included in summary tables. Thus, for overall case totals and disease rates from prior years, the current data are considered more accurate than those in prior annual reports.

Table A. Los Angeles County[a] Population by Year, 1995-2000

Year	Population
1995	8,753,853
1996	8,880,054
1997	9,051,337
1998	9,097,041
1999	9,171,507
2000	9,246,541

[a]Cities of Pasadena and Long Beach are excluded from this table.

Table B. Los Angeles County[a] Population by Age Group, 2000

Age Group in Years	Population
<1	183,067
1-4	560,559
5-14	1,391,035
15-34	2,794,767
35-44	1,504,814
45-54	1,086,039
55-64	725,950
65+	1,000,310
Total	**9,246,541**

[a]Cities of Pasadena and Long Beach are excluded from this table.

Table C. Los Angeles County[a] Population by Sex, 2000

Sex	Population
Male	4,611,378
Female	4,635,163
Total	**9,246,541**

[a]Cities of Pasadena and Long Beach are excluded from this table.

Table D. Los Angeles County[a] Population by Race, 2000

Race	Population
Asian	1,120,688
Black	766,724
Hispanic	4,310,940
White	2,986,960
Other[b]	61,229
Total	**9,246,541**

[a]Cities of Pasadena and Long Beach are excluded from this table.
[b]Other includes only American Indian, Alaskan Native, Eskimo and Aleut.

Table E. Los Angeles County Population[a] by Health District, 2000

Health District	Population
Alhambra	369,272
Antelope Valley	328,537
Bellflower	361,911
Central	380,232
Compton	284,839
East Los Angeles	245,123
East Valley	412,852
El Monte	470,258
Foothill	306,454
Glendale	340,507
Harbor	214,709
Hollywood-Wilshire	513,248
Inglewood	410,891
Northeast	410,046
Pomona	546,322
San Antonio	444,476
San Fernando	378,206
South	176,256
Southeast	187,597
Southwest	367,360
Torrance	451,385
West	579,490
West Valley	733,182
Whittier	333,388
Total	**9,246,541**

[a]Pasadena and Long Beach are separate public health jurisdictions and are excluded from this table.

DATA SOURCES

Data on occurrence of communicable diseases in Los Angeles County (LAC) were obtained through passive and sometimes active surveillance.

1. Passive surveillance relies on physicians, laboratories, and other health-care providers to report diseases of their own accord to the Department of Health Services (DHS) using the Confidential Morbidity Report (CMR) form, electronically, by telephone, or by facsimile.
2. Active surveillance entails ACDC staff regularly contacting hospitals, laboratories and physicians in an effort to identify all cases of a given disease. In 2000, ACDC did active surveillance for pediatric cases of acquired immunodeficiency syndrome. In addition, ACDC staff contacted schools, hospitals, nursing homes, student health centers and sentinel physicians to collect reports of vaccine-preventable diseases and to investigate outbreaks.

DATA LIMITATIONS

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

1. Problems with cases reporting

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 relatively 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%, which is the cut-off for rate reliability used by the National Center for Health Statistics. Also, rates of zero, based on no events, will not be reported as such, because their standard errors and reliability cannot be determined. Therefore, unreliable rates should be interpreted with caution.

In the Annual Morbidity Report, rates of disease for groups (e.g., Hispanic versus non-Hispanic) 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 percent

Some deaths from communicable diseases may not appear on LAC's Vital Records computer files. Deaths are filed with only underlying cause of death indicated. Any contributing or otherwise significant conditions, including communicable diseases, are not indicated in the computer record. Also, case-fatality percent is based on deaths that occurred in 2000 regardless of year of disease onset; therefore, fatality data should be interpreted with caution.

4. Case definitions

To standardize surveillance, "Case Definitions for Infectious Conditions under Public Health Surveillance," *MMWR* 1997;46(RR-10):1-57 is used. Since verification by a laboratory test is required for the diagnosis of some diseases, cases reported without such verification may not be true cases. Therefore, an association between a communicable disease and a death or an outbreak possibly may not be identified.

5. Onset Date versus Report Date

Some cases of disease occurring in 2000 were not reported until after this annual report was completed. Slight differences in the number of cases and rates of disease for 2000 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. Population data for 1991 through 2000 were derived from the 1990 census using a sophisticated estimation model developed in 1999. These independent population estimates facilitate trend analysis. Also, 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. At time of printing, the 2000 census population breakdown for LAC was unavailable.

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 among the Hispanic 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 category changes

The five major racial/ethnic categories and their definitions as used in this report are as follows:

a. Asian– Person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands.

b. 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.

c. Black– Person having origins in any of the black racial groups of Africa.

d. Hispanic– Person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.

e. 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 2000. If the onset was unknown, the date of diagnosis was used. For sexually transmitted diseases and tuberculosis, this number reflects cases reported and confirmed in 2000.

- **Annual Incidence Rates in Los Angeles County:** Number of new cases in 2000 divided by 2000 county population estimate multiplied by 100,000.

- **Annual Incidence Rates in the US and California:** 2000 incidence rates for the US and California were taken from the previously cited *Morbidity and Mortality Weekly Report*. The *MMWR* records diseases by date of report rather than date of onset.

- **Mean Age at Onset:** Arithmetic average age of all cases.

- **Median Age at Onset:** The age that represents the midpoint of the sequence of all case ages.

- **Range of Ages at Onset:** Ages of the youngest and oldest cases in 2000. For cases under one year of age, less than one (<1) was used.

- **Case Fatality:** Number of deaths in 2000 due to disease (when data were available) divided by the number of new cases of the disease in 2000, expressed as a percentage. Note that deaths may be due to infections acquired prior to 2000.

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

3. DISEASE ABSTRACT: A synopsis or the highlights of disease activity in 2000.

4. STRATIFIED DATA

- **Trends:** Any trends in case characteristics during recent years.
- **Seasonality:** Number of cases that occurred during each month of 2000.
- **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: A description of county programs and other measures that address the disease.

6. COMMENTS: Miscellaneous information not fitting easily into above categories, as well as elaboration of some findings of interest.

7. ADDITIONAL RESOURCES: includes agencies, phone numbers, websites, and other resources on the subject.

CHANGES IN DISEASE INCIDENCE

Incidence rates for several diseases monitored by Acute Communicable Disease Control in 2000 were markedly different from those in 1999. The percent change in incidence during 2000 compared to 1999 is presented in Table F for those diseases where at least 15 cases were reported in either 1999 or 2000, and substantial change was observed.

Table F. Percent Change in Incidence of Selected Notifiable Communicable Diseases, Los Angeles County, 2000

Disease	1999	2000	Percent Change
Vibrio	0.03	0.19	495
Typhus	0.07	0.18	181
E. coli O157:H7	0.13	0.29	123
Cysticercosis	0.29	0.39	32
Hepatitis C	0.23	0.30	32
Shigellosis	7.29	9.00	23
Amebiasis	1.46	1.15	-22
Hepatitis A	12.24	9.07	-26
Malaria	0.68	0.47	-31
Pertussis	2.57	1.10	-57

Table G. Reported Cases of Selected Notifiable Diseases by Year of Onset
Los Angeles County, 1995-2000

Disease	Year of Onset						Previous 5-year Average	5-Yr 95% Upper Limit[a]
	1995	1996	1997	1998	1999	2000		
Amebiasis	187	215	148	158	134	106	168	232
Botulism	2	4	3	3	4	0	3	5
Brucellosis	3	12	6	2	3	4	5	13
Campylobacteriosis	1,401	1,736	1,523	1,215	1,089	1,273	1,393	1,891
Cholera	2	0	0	2	0	0	1	3
Coccidioidomycosis	80	70	46	51	48	51	59	89
Cryptosporidiosis	211	149	77	94	71	74	120	237
Cysticercosis	26	33	34	23	27	36	29	38
Dengue	2	0	2	6	3	3	3	7
E. coli O157:H7	9	18	20	23	12	27	16	28
Encephalitis	59	33	34	46	39	46	42	63
Foodborne outbreaks	15	12	40	32	39	40	28	54
Giardiasis	940	971	770	678	592	499	790	1,111
Haemophilus influenzae type b	6	4	10	7	0	1	5	13
Hansen's Disease (Leprosy)	10	9	18	13	10	9	12	19
Hepatitis A	1,062	1,371	1,480	888	1,123	839	1,185	1,654
Hepatitis B	231	247	109	92	61	65	148	315
Hepatitis C	205	246	23	12	21	28	101	325
Hepatitis unspecified	22	28	16	10	9	11	17	33
Kawasaki syndrome	39	20	20	37	29	28	29	47
Legionellosis	16	12	32	20	16	14	19	34
Listeriosis, nonperinatal	26	30	14	24	21	19	27	38
Listeriosis, perinatal	10	5	8	7	12	8	10	15
Lyme disease	5	3	4	3	8	5	5	9
Malaria	76	62	55	50	62	43	61	80
Measles	7	2	4	3	1	5	3	8
Meningitis, viral	167	185	227	441	227	260	249	466
Meningococcal infections	52	59	74	50	49	53	57	77
Mumps	42	37	39	21	24	29	33	51
Pertussis	103	120	32	77	236	102	114	263
Psittacosis	0	0	1	0	1	0	0	1
Q-fever	0	0	0	1	0	1	0	1
Relapsing fever	0	0	0	0	1	0	0	1
Rheumatic fever, acute	1	2	1	0	1	1	1	2
Rubella	3	3	5	0	0	3	2	6
Salmonellosis	2,084	1,773	1,675	1,253	1,101	989	1,577	2,359
Shigellosis	1,747	1,130	848	783	669	832	1,035	1,883
Strongyloidiasis	17	11	4	9	7	1	10	19
Tetanus	4	1	4	1	2	0	2	5
Trichinosis	1	0	2	3	0	0	1	4
Tularemia	1	1	2	0	0	0	1	2
Typhoid fever, case	26	31	26	17	20	21	24	35
Typhoid fever, carrier	6	4	1	12	4	5	5	13
Typhus fever	11	16	13	7	6	17	11	19
Vibrio	12	23	28	31	3	18	19	42

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

Table H. Annual Incidence Rates of Selected Notifiable Diseases by Year of Onset
Los Angeles County, 1995-2000

Disease	Annual Incidence Rate (Cases per 100,000) [b]					
	1995	1996	1997	1998	1999	2000
Amebiasis	2.14	2.42	1.64	1.74	1.46	1.15
Botulism	0.02	0.05	0.03	0.03	0.04	-
Brucellosis	0.03	0.14	0.07	0.02	0.03	0.04
Campylobacteriosis	16.00	19.55	16.83	13.36	11.87	13.77
Cholera	0.02	-	-	0.02	-	-
Coccidioidomycosis	0.91	0.79	0.51	0.56	0.52	0.55
Cryptosporidiosis	2.41	1.68	0.85	1.03	0.77	0.80
Cysticercosis	0.30	0.37	0.38	0.25	0.29	0.39
Dengue	0.02	-	0.02	0.07	0.03	0.03
E. coli O157:H7	0.10	0.20	0.22	0.25	0.13	0.29
Encephalitis	0.67	0.37	0.38	0.51	0.43	0.50
Giardiasis	10.74	10.93	8.51	7.45	6.45	5.40
Haemophilus influenzae type b	0.07	0.05	0.11	0.08	-	0.01
Hansen's disease (Leprosy)	0.11	0.10	0.20	0.14	0.11	0.10
Hepatitis A	12.13	14.99	16.35	9.76	12.24	9.07
Hepatitis B	2.64	2.78	1.20	1.01	0.67	0.70
Hepatitis C	2.34	2.77	0.25	0.13	0.23	0.30
Hepatitis unspecified	0.25	0.32	0.18	0.11	0.10	0.12
Kawasaki syndrome	0.45	0.23	0.22	0.41	0.32	0.30
Legionellosis	0.18	0.14	0.35	0.22	0.17	0.15
Listeriosis, nonperinatal	0.30	0.34	0.15	0.26	0.23	0.21
Listeriosis, perinatal [a]	5.81	3.19	5.02	4.19	7.69	5.54
Lyme disease	0.06	0.03	0.04	0.03	0.09	0.05
Malaria	0.87	0.70	0.61	0.55	0.68	0.47
Measles	0.08	0.02	0.04	0.03	0.01	0.05
Meningitis, viral	1.91	2.08	2.51	4.85	2.48	2.81
Meningococcal infections	0.59	0.66	0.82	0.55	0.53	0.57
Mumps	0.48	0.42	0.43	0.23	0.26	0.31
Pertussis	1.18	1.35	0.35	0.85	2.57	1.10
Psittacosis	-	-	0.01	-	0.01	-
Q-fever	-	-	-	0.01	-	0.01
Relapsing fever	-	-	-	-	0.01	-
Rheumatic fever, acute	0.01	0.02	0.01	-	0.01	0.01
Rubella	0.03	0.03	0.06	-	-	0.03
Salmonellosis	23.81	19.97	18.51	13.77	12.00	10.70
Shigellosis	19.96	12.73	9.37	8.61	7.29	9.00
Strongyloidiasis	0.19	0.12	0.04	0.10	0.08	0.01
Tetanus	0.05	0.01	0.04	0.01	0.02	-
Trichinosis	0.01	-	0.02	0.03	-	-
Tularemia	0.01	0.01	0.02	-	-	-
Typhoid fever, case	0.30	0.35	0.29	0.19	0.22	0.23
Typhoid fever, carrier	0.07	0.05	0.01	0.13	0.04	0.05
Typhus fever	0.13	0.18	0.14	0.08	0.07	0.18
Vibrio	0.14	0.26	0.31	0.34	0.03	0.19

[a] Rates for perinatal listeriosis were calculated as cases per 100,000 live births.

[b] Rates of disease based on less than 19 cases or events are considered "unreliable." A zero rate made from no events is especially hazardous and are not reported here, except with a dash ("-"). Conclusions drawn from unreliable rates should be made with caution, if they are to be made at all.

Table I. Five-Year Average of Notifiable Diseases by Month of Onset Los Angeles County, 1996-2000

Disease	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total[a]
Amebiasis	12.4	11.4	12.2	13.4	12.4	8.8	11.8	11.6	8.6	12.0	8.8	9.4	151.6
Botulism	0.2	0.0	0.2	0.4	0.4	0.4	0.6	0.0	0.0	0.2	0.2	0.2	3.2
Brucellosis	0.0	0.2	0.2	0.4	0.4	0.6	1.0	0.4	0.2	1.0	0.2	0.4	5.4
Campylobacteriosis	81.6	76.6	76.4	107.4	141.2	149.2	150.4	131.2	132.0	116.2	95.0	69.8	1359.8
Cholera	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.2	0.4
Coccidioidomycosis	2.8	3.2	2.8	4.2	2.6	3.4	3.8	2.4	4.4	5.0	2.8	4.2	50.2
Cryptosporidiosis	8.6	5.6	7.0	3.2	5.8	6.0	7.4	7.6	10.4	7.6	5.2	5.0	88.6
Cysticercosis	1.6	1.4	1.8	2.4	2.2	2.0	1.6	3.4	1.4	2.0	1.8	2.0	29.8
Dengue	0.6	0.0	0.0	0.2	0.2	0.6	0.2	0.0	0.2	0.2	0.0	0.4	2.8
E. coli O157:H7	1.8	0.4	1.0	0.8	0.6	2.2	4.2	2.0	2.4	2.4	1.0	0.8	19.6
Encephalitis	2.8	3.2	3.0	3.4	3.6	1.8	2.2	1.2	3.8	3.8	3.2	2.4	37.6
Giardiasis	43.6	38.8	54.8	50.2	51.6	47.0	64.0	74.2	73.8	55.6	44.4	39.0	699.0
Haemophilus influenzae type b	0.4	0.8	0.2	0.6	0.2	0.4	0.4	0.2	0.2	0.2	0.8	0.0	4.4
Hansen's disease (Leprosy)	0.6	0.2	0.2	0.2	0.2	1.2	0.4	1.2	0.4	0.2	1.0	0.4	8.8
Hepatitis A	80.4	78.6	89.0	74.0	76.8	68.0	73.8	100.8	121.0	98.2	83.6	63.6	1122.0
Hepatitis B	10.8	9.8	8.8	9.6	9.2	7.8	11.8	9.2	11.8	8.8	8.6	9.4	123.6
Hepatitis C [a]	0.5	0.5	0.8	0.8	0.8	1.3	0.5	1.0	0.5	0.3	0.0	0.0	15.8
Hepatitis unspecified	0.8	0.8	1.2	0.8	0.6	1.2	0.4	1.0	0.6	0.6	0.4	0.4	12.4
Kawasaki syndrome	2.8	3.0	3.4	1.6	2.8	1.6	1.6	1.4	2.2	1.8	1.2	3.4	27.6
Legionellosis	0.6	2.2	0.8	1.2	0.6	0.8	1.0	1.0	1.4	2.2	3.0	1.4	18.6
Listeriosis, nonperinatal	1.2	2.4	1.6	0.4	1.6	3.4	2.0	2.2	3.4	1.6	1.6	1.0	22.4
Listeriosis, perinatal	0.6	0.4	0.4	0.8	1.0	1.2	0.6	0.8	1.0	0.6	0.4	0.2	8.0
Lyme disease	0.2	0.0	0.2	0.4	0.2	0.2	0.6	0.8	0.6	0.4	0.0	0.2	3.8
Malaria	4.0	2.6	2.6	3.4	5.2	3.2	5.4	7.4	4.8	3.4	2.2	2.2	54.0
Measles	0.0	0.0	2.0	3.0	2.0	3.0	2.0	2.0	0.0	1.0	0.0	0.0	3.0
Meningitis,viral	12.6	10.8	13.4	13.2	19.0	26.0	24.6	34.0	34.4	24.8	14.6	11.0	265.4
Meningococcal infections	9.6	5.8	5.6	5.6	3.8	5.4	2.8	2.2	1.8	2.2	1.4	4.6	54.2
Mumps	4.4	1.8	3.2	1.8	1.8	2.8	1.0	1.0	2.8	3.0	1.4	0.4	28.0
Pertussis	6.4	7.0	5.0	9.2	9.8	10.2	12.2	14.6	13.8	11.4	5.6	8.4	113.6
Psittacosis	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Q-fever	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
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	0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.8
Rubella	0.0	0.2	0.2	0.2	0.2	0.8	0.0	0.2	0.0	0.0	0.4	0.0	2.2
Salmonellosis	85.0	65.2	79.0	92.0	106.4	121.4	148.2	156.8	144.8	131.2	104.8	69.4	1349.6
Shigellosis	70.8	37.0	40.8	40.6	47.2	64.4	109.2	138.6	108.6	77.8	56.2	33.6	848.8
Strongyloidiasis	0.2	0.4	0.4	1.0	0.4	0.4	0.6	0.6	0.0	0.4	0.4	0.0	5.8
Tetanus	0.2	0.2	0.2	0.4	0.0	0.0	0.2	0.0	0.2	0.0	0.0	0.0	1.6
Trichinosis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tularemia	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.0	0.2	0.0	0.0	0.6
Typhoid fever, case	1.2	2.0	2.8	1.2	2.6	2.8	2.0	2.0	2.8	1.8	0.6	1.0	23.2
Typhoid fever, carrier	0.6	0.4	0.4	0.0	0.4	0.2	0.2	0.4	0.2	0.6	0.0	0.4	4.8
Typhus fever	0.2	0.2	0.2	0.8	1.0	1.0	1.0	0.8	0.6	2.4	2.0	1.0	11.4
Vibrio	0.4	1.2	0.8	0.6	1.6	3.6	4.2	2.2	2.4	2.0	0.4	0.2	20.6

[a] Four-year average.

Table J. Number of Cases of Selected Notifiable Diseases by Age Group
Los Angeles County, 2000

Disease	<1	1-4	5-14	15-34	35-44	45-54	55-64	65+	Total[a]
Amebiasis	0	3	18	28	34	8	7	6	106
Botulism	0	0	0	0	0	0	0	0	0
Brucellosis	0	0	0	2	0	0	2	0	4
Campylobacteriosis	56	193	170	386	182	126	73	87	1,273
Cholera	0	0	0	0	0	0	0	0	0
Coccidioidomycosis	0	0	2	11	11	7	8	12	51
Cryptosporidiosis	0	7	7	26	17	10	4	3	74
Cysticercosis	0	0	3	14	7	3	4	5	36
Dengue	0	0	0	1	2	0	0	0	3
E. coli O157:H7	0	8	9	1	4	1	1	3	27
Encephalitis	2	5	15	7	5	1	4	7	46
Giardiasis	3	93	119	117	93	45	19	8	499
Haemophilus influenzae type b	0	0	0	0	0	0	0	1	1
Hansen's disease (Leprosy)	0	0	0	3	1	1	2	2	9
Hepatitis A	1	47	275	246	96	72	46	56	839
Hepatitis B	0	0	0	35	19	7	3	1	65
Hepatitis C	0	0	0	4	10	10	1	2	28
Hepatitis unspecified	0	0	1	1	5	0	2	2	11
Kawasaki syndrome	5	17	6	0	0	0	0	0	28
Legionellosis	0	0	0	1	1	6	0	6	14
Listeriosis, nonperinatal	0	0	0	1	1	4	2	11	19
Listeriosis, perinatal	0	0	0	7	1	0	0	0	8
Lyme disease	0	1	1	1	0	0	1	1	5
Malaria	0	2	5	19	7	6	1	3	43
Measles	0	2	0	3	0	0	0	0	5
Meningitis, viral	61	22	50	61	32	17	10	7	260
Meningococcal infections	7	8	4	16	5	6	3	4	53
Mumps	2	11	11	4	1	0	0	0	29
Pertussis	63	4	14	5	11	1	1	3	102
Psittacosis	0	0	0	0	0	0	0	0	0
Q-fever	0	0	0	0	0	0	1	0	1
Relapsing fever	0	0	0	0	0	0	0	0	0
Rheumatic fever, acute	0	0	0	0	1	0	0	0	1
Rubella	0	2	0	0	1	0	0	0	3
Salmonellosis	81	213	159	200	92	79	70	82	989
Shigellosis	11	192	209	195	116	59	26	24	832
Strongyloidiasis	0	0	1	0	0	0	0	0	1
Trichinosis	0	0	0	0	0	0	0	0	0
Tularemia	0	0	0	0	0	0	0	0	0
Typhoid fever, case	0	3	2	9	6	1	0	0	21
Typhoid fever, carrier	0	0	0	0	3	0	0	2	5
Typhus fever	0	1	2	5	3	5	1	0	17
Vibrio	0	0	0	4	10	3	1	0	18

[a]Totals include cases with unknown age.

Table K. Incidence Rates of Selected Notifiable Diseases by Age Group
Los Angeles County, 2000

	Age-group Rates (Cases per 100,000) [b]							
Disease	**<1**	**1-4**	**5-14**	**15-34**	**35-44**	**45-54**	**55-64**	**65+**
Amebiasis	-	0.5	1.3	1.0	2.3	0.7	1.0	0.6
Botulism	-	-	-	-	-	-	-	-
Brucellosis	-	-	-	0.1	-	-	0.3	-
Campylobacteriosis	30.6	34.4	12.2	13.8	12.1	11.6	10.1	8.7
Cholera	-	-	-	-	-	-	-	-
Coccidioidomycosis	-	-	0.1	0.4	0.7	0.6	1.1	1.2
Cryptosporidiosis	-	1.2	0.5	0.9	1.1	0.9	0.6	0.3
Cysticercosis	-	-	0.2	0.5	0.5	0.3	0.6	0.5
Dengue	-	-	-	0.0	0.1	-	-	-
E. coli O157:H7	-	1.4	0.6	0.0	0.3	0.1	0.1	0.3
Encephalitis	1.1	0.9	1.1	0.3	0.3	0.1	0.6	0.7
Giardiasis	1.6	16.6	8.6	4.2	6.2	4.1	2.6	0.8
Haemophilus influenzae type b	-	-	-	-	-	-	-	0.1
Hansen's disease (Leprosy)	-	-	-	0.1	0.1	0.1	0.3	0.2
Hepatitis A	0.5	8.4	19.8	8.8	6.4	6.6	6.3	5.6
Hepatitis B	-	-	-	1.3	1.3	0.6	0.4	0.1
Hepatitis C	-	-	-	0.1	0.7	0.9	0.1	0.2
Hepatitis unspecified	-	-	0.1	0.0	0.3	-	0.3	0.2
Kawasaki syndrome	2.7	3.0	0.4	-	-	-	-	-
Legionellosis	-	-	-	0.0	0.1	0.6	-	0.6
Listeriosis, nonperinatal	-	-	-	-	0.1	0.4	0.3	1.1
Listeriosis, perinatal[a]	-	-	-	6.1	3.6	-	-	-
Lyme disease	-	0.2	0.1	0.0	-	-	0.1	0.1
Malaria	-	0.4	0.4	0.7	0.5	0.6	0.1	0.3
Measles	-	0.4	-	0.1	-	-	-	-
Meningitis, viral	33.3	3.9	3.6	2.2	2.1	1.6	1.4	0.7
Meningococcal infections	3.8	1.4	0.3	0.6	0.3	0.6	0.4	0.4
Mumps	1.1	2.0	0.8	0.1	0.1	-	-	-
Pertussis	34.4	0.7	1.0	0.2	0.7	0.1	0.1	0.3
Psittacosis	-	-	-	-	-	-	-	-
Q-fever	-	-	-	-	-	-	0.1	-
Relapsing fever	-	-	-	-	-	-	-	-
Rheumatic fever, acute	-	-	-	-	0.1	-	-	-
Rubella	-	0.4	-	-	0.1	-	-	-
Salmonellosis	44.2	38.0	11.4	7.2	6.1	7.3	9.6	8.2
Shigellosis	6.0	34.3	15.0	7.0	7.7	5.4	3.6	2.4
Strongyloidiasis	-	-	0.1	-	-	-	-	-
Tetanus	-	-	-	-	-	-	-	-
Trichinosis	-	-	-	-	-	-	-	-
Tularemia	-	-	-	-	-	-	-	-
Typhoid fever, case	-	0.5	0.1	0.3	0.4	0.1	-	-
Typhoid fever, carrier	-	-	-	-	0.2	-	-	0.2
Typhus fever	-	0.2	0.1	0.2	0.2	0.5	0.1	-
Vibrio	-	-	-	0.1	0.7	0.3	0.1	-

[a] Rates for perinatal listeriosis were calculated as cases per 100,000 live births.

[b] Rates of disease based on less than 19 cases or events are considered "unreliable." A zero rate made from no events is especially hazardous and are not reported here, except with a dash ("-"). Conclusions drawn from unreliable rates should be made with caution, if they are to be made at all.

Table L. Number of Cases of Selected Notifiable Diseases by Race/Ethnicity Los Angeles County, 2000

Disease	Asian	Black	Hispanic	White	Other[a]	Unknown
Amebiasis	3	4	49	34	2	14
Botulism	0	0	0	0	0	0
Brucellosis	0	0	4	0	0	0
Campylobacteriosis	127	56	606	481	3	0
Cholera	0	0	0	0	0	0
Coccidioidomycosis	1	6	16	12	5	11
Cryptosporidiosis	0	5	28	24	2	0
Cysticercosis	0	0	34	2	0	0
Dengue	1	0	0	1	0	1
E. coli O157:H7	1	1	5	14	1	5
Encephalitis	8	4	19	13	0	2
Giardiasis	12	15	216	171	16	69
Haemophilus influenzae type b	0	0	0	1	0	0
Hansen's disease (Leprosy)	2	0	7	0	0	0
Hepatitis A	51	35	416	221	23	93
Hepatitis B	10	14	15	23	2	1
Hepatitis C	2	2	11	8	0	5
Hepatitis unspecified	1	2	4	1	0	3
Kawasaki syndrome	8	2	8	7	0	3
Legionellosis	0	1	3	8	0	2
Listeriosis, nonperinatal	4	3	2	10	0	0
Listeriosis, perinatal	1	0	3	4	0	0
Lyme disease	1	0	0	4	0	0
Malaria	3	14	17	9	0	0
Measles	0	1	3	1	0	0
Meningitis, viral	8	16	91	74	6	65
Meningococcal infections	2	12	16	13	3	7
Mumps	1	0	17	1	0	9
Pertussis	7	10	48	35	0	2
Psittacosis	0	0	0	0	0	0
Q-fever	0	0	0	1	0	0
Relapsing fever	0	0	0	0	0	0
Rheumatic fever, acute	0	0	1	0	0	0
Rubella	0	0	2	1	0	0
Salmonellosis	117	72	410	303	13	47
Shigellosis	18	61	461	292	0	0
Strongyloidiasis	0	0	0	0	0	1
Tetanus	0	0	0	0	0	0
Trichinosis	0	0	0	0	0	0
Tularemia	0	0	0	0	0	0
Typhoid fever, case	14	0	6	1	0	0
Typhoid fever, carrier	2	0	3	0	0	0
Typhus fever	0	0	5	11	0	1
Vibrio	2	0	13	1	2	0

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

Table M. Incidence Rate of Selected Notifiable Diseases by Race/Ethnicity
Los Angeles County, 2000

Disease	Race/Ethnicity Rate (Cases per 100,000) [b]			
	Asian	Black	Hispanic	White
Amebiasis	0.3	0.5	1.1	1.1
Botulism	-	-	-	-
Brucellosis	-	-	0.1	-
Campylobacteriosis	11.3	7.3	14.1	16.1
Cholera	-	-	-	-
Coccidioidomycosis	0.1	0.8	0.4	0.4
Cryptosporidiosis	-	0.7	0.6	0.8
Cysticercosis	-	-	0.8	0.1
Dengue	0.1	-	-	0.0
E. coli O157:H7	0.1	0.1	0.1	0.5
Encephalitis	0.7	0.5	0.4	0.4
Giardiasis	1.1	2.0	5.0	5.7
Haemophilus influenzae type b	-	-	-	0.0
Hansen's Disease (Leprosy)	0.2	-	0.2	-
Hepatitis A	4.6	4.6	9.6	7.4
Hepatitis B	0.9	1.8	0.3	0.8
Hepatitis C	0.2	0.3	0.3	0.3
Hepatitis unspecified	0.1	0.3	0.1	0.0
Kawasaki syndrome	0.7	0.3	0.2	0.2
Legionellosis	-	0.1	0.1	0.3
Listeriosis, nonperinatal	0.4	0.4	0.0	0.3
Listeriosis, perinatal[a]	10.1	-	3.3	15.2
Lyme Disease	0.1	-	-	0.1
Malaria	0.3	1.8	0.4	0.3
Measles	-	0.1	0.1	0.0
Meningitis, viral	0.7	2.1	2.1	2.5
Meningococcal infections	0.2	1.6	0.4	0.4
Mumps	0.1	-	0.4	-
Pertussis	0.6	1.3	1.1	1.2
Psittacosis	-	-	-	-
Q-fever	-	-	-	-
Relapsing fever	-	-	-	-
Rheumatic fever, acute	-	-	-	-
Rubella	-	-	-	-
Salmonellosis	10.4	9.4	9.5	10.1
Shigellosis	1.6	8.0	10.7	9.8
Strongyloidiasis	-	-	-	-
Tetanus	-	-	-	-
Trichinosis	-	-	-	-
Tularemia	-	-	-	-
Typhoid fever, case	1.2	-	0.1	-
Typhoid fever, carrier	0.2	-	0.1	-
Typhus fever	-	-	0.1	0.4
Vibrio	0.2	-	0.3	0.0

[a] Rates for perinatal listeriosis were calculated as cases per 100,000 live births.

[b] Rates of disease based on less than 19 cases or events are considered "unreliable." A zero rate made from no events is especially hazardous and are not reported here, except with a dash ("-"). Conclusions drawn from unreliable rates should be made with caution, if they are to be made at all.

Table N. Number of Cases and Annual Incidence Rate of Selected Notifiable Diseases by Sex
Los Angeles County, 2000

Disease	Male		Female	
	Cases	Rate (Cases per 100,000) [b]	Cases	Rate (Cases per 100,000) [b]
Amebiasis	65	1.4	36	0.8
Botulism	0	-	0	-
Brucellosis	2	0.0	2	0.0
Campylobacteriosis	711	15.4	562	12.1
Cholera	0	-	0	-
Coccidioidomycosis	38	0.8	9	0.2
Cryptosporidiosis	60	1.3	14	0.3
Cysticercosis	26	0.6	9	0.2
Dengue	2	-	1	-
E. coli O157:H7	14	0.3	13	0.3
Encephalitis	22	0.5	24	0.5
Giardiasis	305	6.6	181	3.9
Haemophilus influenzae type b	0	-	1	0.0
Hansen's disease (Leprosy)	9	0.2	0	-
Hepatitis A	466	10.1	361	7.8
Hepatitis B	47	1.0	15	0.3
Hepatitis C	17	0.4	9	0.2
Hepatitis unspecified	7	0.2	2	0.0
Kawasaki syndrome	18	0.4	10	0.2
Legionellosis	8	0.2	6	0.1
Listeriosis, nonperinatal	12	0.3	7	0.2
Listeriosis, perinatal[a]	0	-	8	11.4
Lyme disease	2	0.0	3	0.1
Malaria	36	0.8	7	0.2
Measles	2	0.0	3	0.1
Meningitis, viral	117	2.5	114	2.5
Meningococcal infections	33	0.7	20	0.4
Mumps	19	0.4	10	0.2
Pertussis	52	1.1	50	1.1
Psittacosis	0	-	0	-
Q-fever	1	0.0	0	-
Relapsing fever	0	-	0	-
Rheumatic fever, acute	0	-	1	0.0
Rubella	3	0.1	0	-
Salmonellosis	492	10.7	496	10.7
Shigellosis	452	9.8	380	8.2
Strongyloidiasis	1	0.0	0	-
Tetanus	0	-	0	-
Trichinosis	0	-	0	-
Tularemia	0	-	0	-
Typhoid fever, case	12	0.3	9	0.2
Typhoid fever, carrier	2	0.0	3	0.1
Typhus fever	7	0.2	10	0.2
Vibrio	15	0.3	3	0.1

[a] Rates for perinatal listeriosis were calculated as cases per 100,000 live births.

[b] Rates of disease based on less than 19 cases or events are considered "unreliable." A zero rate made from no events is especially hazardous and are not reported here, except with a dash ("-"). Conclusions drawn from unreliable rates should be made with caution, if they are to be made at all.

Table O-1. Selected Notifiable Diseases
SPA 1. Antelope Valley Area
Los Angeles County, 2000

Disease	Frequency	Rate (Cases per 100,000) [b]
	Antelope	Antelope
Amebiasis	2	0.6
Botulism	0	-
Brucellosis	0	-
Campylobacteriosis	32	9.7
Cholera	0	-
Coccidioidomycosis	5	1.5
Cryptosporidiosis	1	0.3
Cysticercosis	0	-
Dengue	0	-
E. coli O157:H7	1	0.3
Encephalitis	0	-
Giardiasis	12	3.7
Haemophilus influenzae type b	0	-
Hansen's disease (Leprosy)	0	-
Hepatitis A	19	5.8
Hepatitis B	0	-
Hepatitis C	3	0.9
Hepatitis unspecified	0	-
Kawasaki syndrome	0	-
Legionellosis	0	-
Listeriosis, nonperinatal	0	-
Listeriosis, perinatal[a]	0	-
Lyme disease	0	-
Malaria	0	-
Measles	0	-
Meningitis, viral	6	1.8
Meningococcal infections	2	0.6
Mumps	1	0.3
Pertussis	2	0.6
Psittacosis	0	-
Q-fever	0	-
Relapsing fever	0	-
Rheumatic fever, acute	0	-
Rubella	0	-
Salmonellosis	23	7.0
Shigellosis	22	6.7
Strongyloidiasis	0	-
Tetanus	0	-
Trichinosis	0	-
Tularemia	0	-
Typhoid fever, case	0	-
Typhoid fever, carrier	0	-
Typhus fever	0	-
Vibrio	0	-

[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 19 cases or events are considered "unreliable." A zero rate made from no events is especially hazardous and are not reported here, except with a dash ("-"). Conclusions drawn from unreliable rates should be made with caution, if they are to be made at all.

Table O-2. Selected Notifiable Diseases
SPA 2. San Fernando Area
Los Angeles County, 2000

Disease	Frequency					Rate (Cases per 100,000) [b]				
	EV	GL	SF	WV	TOTAL	EV	GL	SF	WV	TOTAL
Amebiasis	5	3	6	11	25	1.2	0.9	1.6	1.5	1.3
Botulism	0	0	0	0	0	-	-	-	-	-
Brucellosis	1	0	0	0	1	0.2	-	-	-	0.1
Campylobacteriosis	47	62	81	131	321	11.4	18.2	21.4	17.9	17.2
Cholera	0	0	0	0	0	-	-	-	-	-
Coccidioidomycosis	6	1	3	12	22	1.5	0.3	0.8	1.6	1.2
Cryptosporidiosis	2	0	2	5	9	0.5	-	0.5	0.7	0.5
Cysticercosis	3	2	4	8	17	0.7	0.6	1.1	1.1	0.9
Dengue	0	0	0	0	0	-	-	-	-	-
E. coli O157:H7	1	7	0	2	10	0.2	2.1	-	0.3	0.5
Encephalitis	2	1	1	3	7	0.5	0.3	0.3	0.4	0.4
Giardiasis	31	16	20	36	103	7.5	4.7	5.3	4.9	5.5
Haemophilus influenzae type b	0	0	0	0	0	-	-	-	-	-
Hansen's disease (Leprosy)	0	0	0	0	0	-	-	-	-	-
Hepatitis A	26	34	35	51	146	6.3	10.0	9.3	7.0	7.8
Hepatitis B	4	1	0	6	11	1.0	0.3	-	0.8	0.6
Hepatitis C	0	0	2	1	3	-	-	0.5	0.1	0.2
Hepatitis unspecified	2	0	0	0	2	0.5	-	-	-	0.1
Kawasaki syndrome	3	0	1	7	11	0.7	-	0.3	1.0	0.6
Legionellosis	1	1	1	0	3	0.2	0.3	0.3	-	0.2
Listeriosis, nonperinatal	1	0	1	3	5	0.2	-	0.3	0.4	0.3
Listeriosis, perinatal[a]	0	0	0	1	1	-	-	-	0.3	0.1
Lyme disease	0	0	1	1	2	-	-	0.3	0.1	0.1
Malaria	2	1	1	9	13	0.5	0.3	0.3	1.2	0.7
Measles	1	0	0	0	1	0.2	-	-	-	0.1
Meningitis, viral	6	7	19	14	46	1.5	2.1	5.0	1.9	2.5
Meningococcal infections	1	1	3	6	11	0.2	0.3	0.8	0.8	0.6
Mumps	2	1	0	2	5	0.5	0.3	-	0.3	0.3
Pertussis	2	0	9	13	24	0.5	-	2.4	1.8	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	1	1	-	-	-	0.1	0.1
Rubella	0	0	0	0	0	-	-	-	-	-
Salmonellosis	26	54	57	90	227	6.3	15.9	15.1	12.3	12.2
Shigellosis	36	31	61	78	206	8.7	9.1	16.1	10.6	11.0
Strongyloidiasis	0	0	0	1	1	-	-	-	0.1	0.1
Tetanus	0	0	0	0	0	-	-	-	-	-
Trichinosis	0	0	0	0	0	-	-	-	-	-
Tularemia	0	0	0	0	0	-	-	-	-	-
Typhoid fever, case	2	1	3	0	6	0.5	0.3	0.8	-	0.3
Typhoid fever, carrier	0	0	0	0	0	-	-	-	-	-
Typhus fever	0	0	0	1	1	-	-	-	0.1	0.1
Vibrio	1	3	0	2	6	0.2	0.9	-	0.3	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 19 cases or events are considered "unreliable." A zero rate made from no events is especially hazardous and are not reported here, except with a dash ("-"). Conclusions drawn from unreliable rates should be made with caution, if they are to be made at all.

Table O-3. Selected Notifiable Diseases
SPA 3. San Gabriel Area
Los Angeles County, 2000

Disease	Frequency					Rate (Cases per 100,000) [b]				
	AH	EM	FH	PO	TOTAL	AH	EM	FH	PO	TOTAL
Amebiasis	1	0	0	2	3	0.3	-	-	0.4	0.2
Botulism	0	0	0	0	0	-	-	-	-	-
Brucellosis	0	0	0	0	0	-	-	-	-	-
Campylobacteriosis	47	10	36	73	166	12.7	2.1	11.7	13.4	9.8
Cholera	0	0	0	0	0	-	-	-	-	-
Coccidioidomycosis	0	0	1	4	5	-	-	0.3	0.7	0.3
Cryptosporidiosis	2	3	3	1	9	0.5	0.6	1.0	0.2	0.5
Cysticercosis	1	2	2	0	5	0.3	0.4	0.7	-	0.3
Dengue	0	0	0	0	0	-	-	-	-	-
E. coli O157:H7	1	0	1	0	2	0.3	-	0.3	-	0.1
Encephalitis	5	2	1	4	12	1.4	0.4	0.3	0.7	0.7
Giardiasis	28	9	14	26	77	7.6	1.9	4.6	4.8	4.6
Haemophilus influenzae type b	0	0	0	0	0	-	-	-	-	-
Hansen's disease (Leprosy)	0	1	0	0	1	-	0.2	-	-	0.1
Hepatitis A	48	8	15	26	97	13.0	1.7	4.9	4.8	5.7
Hepatitis B	4	0	2	3	9	1.1	-	0.7	0.5	0.5
Hepatitis C	3	0	3	3	9	0.8	-	1.0	0.5	0.5
Hepatitis unspecified	2	0	0	2	4	0.5	-	-	0.4	0.2
Kawasaki syndrome	2	0	0	3	5	0.5	-	-	0.5	0.3
Legionellosis	1	0	0	2	3	0.3	-	-	0.4	0.2
Listeriosis, nonperinatal	1	0	0	0	1	0.3	-	-	-	0.1
Listeriosis, perinatal[a]	1	0	0	0	1	0.6	-	-	-	0.1
Lyme disease	0	0	1	0	1	-	-	0.3	-	0.1
Malaria	1	2	0	3	6	0.3	0.4	-	0.5	0.4
Measles	0	0	0	0	0	-	-	-	-	-
Meningitis, viral	11	6	13	23	53	3.0	1.3	4.2	4.2	3.1
Meningococcal infections	1	0	1	5	7	0.3	-	0.3	0.9	0.4
Mumps	1	2	0	1	4	0.3	0.4	-	0.2	0.2
Pertussis	6	1	5	5	17	1.6	0.2	1.6	0.9	1.0
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	49	24	49	72	194	13.3	5.1	16.0	13.2	11.5
Shigellosis	14	8	18	29	69	3.8	1.7	5.9	5.3	4.1
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	0	0	3	3	6	-	-	1.0	0.5	0.4
Typhoid fever, carrier	0	0	0	0	0	-	-	-	-	-
Typhus fever	6	0	7	0	13	1.6	-	2.3	-	0.8
Vibrio	1	1	0	2	4	0.3	0.2	-	0.4	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 19 cases or events are considered "unreliable." A zero rate made from no events is especially hazardous and are not reported here, except with a dash ("-"). Conclusions drawn from unreliable rates should be made with caution, if they are to be made at all.

Table O-4. Selected Notifiable Diseases
SPA 4. Metro Area
Los Angeles County, 2000

Disease	Frequency				Rate (Cases per 100,000) [b]			
	CE	HW	NE	TOTAL	CE	HW	NE	TOTAL
Amebiasis	9	12	2	23	2.4	2.3	0.5	1.8
Botulism	0	0	0	0	-	-	-	-
Brucellosis	0	0	0	0	-	-	-	-
Campylobacteriosis	31	75	48	154	8.2	14.6	11.7	11.8
Cholera	0	0	0	0	-	-	-	-
Coccidioidomycosis	3	2	0	5	0.8	0.4	-	0.4
Cryptosporidiosis	10	15	2	27	2.6	2.9	0.5	2.1
Cysticercosis	1	2	3	6	0.3	0.4	0.7	0.5
Dengue	0	0	0	0	-	-	-	-
E. coli O157:H7	0	2	0	2	-	0.4	-	0.2
Encephalitis	2	0	2	4	0.5	-	0.5	0.3
Giardiasis	22	51	13	86	5.8	9.9	3.2	6.6
Haemophilus influenzae type b	0	0	0	0	-	-	-	-
Hansen's disease (Leprosy)	0	1	0	1	-	0.2	-	0.1
Hepatitis A	41	67	21	129	10.8	13.1	5.1	9.9
Hepatitis B	4	8	0	12	1.1	1.6	-	0.9
Hepatitis C	2	0	1	3	0.5	-	0.2	0.2
Hepatitis unspecified	0	0	1	1	-	-	0.2	0.1
Kawasaki syndrome	0	2	0	2	-	0.4	-	0.2
Legionellosis	0	3	1	4	-	0.6	0.2	0.3
Listeriosis, nonperinatal	2	2	0	4	0.5	0.4	-	0.3
Listeriosis, perinatal[a]	0	0	0	0	-	-	-	-
Lyme disease	0	0	0	0	-	-	-	-
Malaria	6	1	0	7	1.6	0.2	-	0.5
Measles	0	0	0	0	-	-	-	-
Meningitis, viral	10	8	10	28	2.6	1.6	2.4	2.1
Meningococcal infections	0	1	2	3	-	0.2	0.5	0.2
Mumps	0	1	0	1	-	0.2	-	0.1
Pertussis	5	7	4	16	1.3	1.4	1.0	1.2
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	37	63	40	140	9.7	12.3	9.8	10.7
Shigellosis	45	107	40	192	11.8	20.8	9.8	14.7
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	0.3	-	-	0.1
Typhoid fever, carrier	0	1	0	1	-	0.2	-	0.1
Typhus fever	2	1	0	3	0.5	0.2	-	0.2
Vibrio	1	1	0	2	0.3	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 19 cases or events are considered "unreliable." A zero rate made from no events is especially hazardous and are not reported here, except with a dash ("-"). Conclusions drawn from unreliable rates should be made with caution, if they are to be made at all.

Table O-5. Selected Notifiable Diseases
SPA 5. West Area
Los Angeles County, 2000

Disease	Frequency	Rate (Cases per 100,000) [b]
	West	West
Amebiasis	20	3.5
Botulism	0	-
Brucellosis	0	-
Campylobacteriosis	143	24.7
Cholera	0	-
Coccidioidomycosis	2	0.3
Cryptosporidiosis	6	1.0
Cysticercosis	1	0.2
Dengue	1	0.2
E. coli O157:H7	4	0.7
Encephalitis	1	0.2
Giardiasis	59	10.2
Haemophilus influenzae type b	1	0.2
Hansen's disease (Leprosy)	0	-
Hepatitis A	35	6.0
Hepatitis B	5	0.9
Hepatitis C	1	0.2
Hepatitis unspecified	0	-
Kawasaki syndrome	0	-
Legionellosis	2	0.3
Listeriosis, nonperinatal	0	-
Listeriosis, perinatal[a]	0	-
Lyme disease	1	0.2
Malaria	7	1.2
Measles	0	-
Meningitis, viral	2	0.3
Meningococcal infections	1	0.2
Mumps	1	0.2
Pertussis	8	1.4
Psittacosis	0	-
Q-fever	0	-
Relapsing fever	0	-
Rheumatic fever, acute	0	-
Rubella	1	0.2
Salmonellosis	63	10.9
Shigellosis	45	7.8
Strongyloidiasis	0	-
Tetanus	0	-
Trichinosis	0	-
Tularemia	0	-
Typhoid fever, case	3	0.5
Typhoid fever, carrier	0	-
Typhus fever	0	-
Vibrio	0	-

[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 19 cases or events are considered "unreliable." A zero rate made from no events is especially hazardous and are not reported here, except with a dash ("-"). Conclusions drawn from unreliable rates should be made with caution, if they are to be made at all.

Table O-6. Selected Notifiable Diseases
SPA 6. South Area
Los Angeles County, 2000

Disease	Frequency					Rate (Cases per 100,000) [b]				
	CN	SO	SE	SW	TOTAL	CN	SO	SE	SW	TOTAL
Amebiasis	2	0	3	1	6	0.7	-	1.6	0.3	0.6
Botulism	0	0	0	0	0	-	-	-	-	-
Brucellosis	0	0	0	1	1	-	-	-	0.3	0.1
Campylobacteriosis	42	27	37	38	144	14.7	15.3	19.7	10.3	14.2
Cholera	0	0	0	0	0	-	-	-	-	-
Coccidioidomycosis	0	0	1	0	1	-	-	0.5	-	0.1
Cryptosporidiosis	2	0	0	4	6	0.7	-	-	1.1	0.6
Cysticercosis	0	1	1	0	2	-	0.6	0.5	-	0.2
Dengue	0	0	0	0	0	-	-	-	-	-
E. coli O157:H7	0	0	0	1	1	-	-	-	0.3	0.1
Encephalitis	1	0	4	0	5	0.4	-	2.1	-	0.5
Giardiasis	8	6	8	8	30	2.8	3.4	4.3	2.2	3.0
Haemophilus influenzae type b	0	0	0	0	0	-	-	-	-	-
Hansen's disease (Leprosy)	1	0	0	1	2	0.4	-	-	0.3	0.2
Hepatitis A	29	21	20	30	100	10.2	11.9	10.7	8.2	9.8
Hepatitis B	0	1	1	3	5	-	0.6	0.5	0.8	0.5
Hepatitis C	1	1	0	2	4	0.4	0.6	-	0.5	0.4
Hepatitis unspecified	0	0	0	1	1	-	-	-	0.3	0.1
Kawasaki syndrome	1	0	0	0	1	0.4	-	-	-	0.1
Legionellosis	0	0	0	1	1	-	-	-	0.3	0.1
Listeriosis, nonperinatal	1	1	0	0	2	0.4	0.6	-	-	0.2
Listeriosis, perinatal[a]	0	0	2	0	2	-	-	2.2	-	0.4
Lyme disease	0	0	0	0	0	-	-	-	-	-
Malaria	1	0	2	2	5	0.4	-	1.1	0.5	0.5
Measles	0	0	0	0	0	-	-	-	-	-
Meningitis, viral	6	4	4	6	20	2.1	2.3	2.1	1.6	2.0
Meningococcal infections	1	0	0	1	2	0.4	-	-	0.3	0.2
Mumps	0	0	0	2	2	-	-	-	0.5	0.2
Pertussis	2	4	7	4	17	0.7	2.3	3.7	1.1	1.7
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	25	20	23	26	94	8.8	11.3	12.3	7.1	9.3
Shigellosis	28	13	29	44	114	9.8	7.4	15.5	12.0	11.2
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	1	1	0	2	-	0.6	0.5	-	0.2
Typhoid fever, carrier	0	1	0	0	1	-	0.6	-	-	0.1
Typhus fever	0	0	0	0	0	-	-	-	-	-
Vibrio	1	0	2	0	3	0.4	-	1.1	-	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 19 cases or events are considered "unreliable." A zero rate made from no events is especially hazardous and are not reported here, except with a dash ("-"). Conclusions drawn from unreliable rates should be made with caution, if they are to be made at all.

Table O-7. Selected Notifiable Diseases
SPA 7. East Area
Los Angeles County, 2000

Disease	Frequency					Rate (Cases per 100,000) [b]				
	BF	EL	SA	WH	TOTAL	BF	EL	SA	WH	TOTAL
Amebiasis	3	2	3	2	10	0.8	0.8	0.7	0.6	0.7
Botulism	0	0	0	0	0	-	-	-	-	-
Brucellosis	0	0	1	0	1	-	-	0.2	-	0.1
Campylobacteriosis	40	28	54	36	158	11.1	11.4	12.1	10.8	11.4
Cholera	0	0	0	0	0	-	-	-	-	-
Coccidioidomycosis	3	1	0	1	5	0.8	0.4	-	0.3	0.4
Cryptosporidiosis	4	1	5	0	10	1.1	0.4	1.1	-	0.7
Cysticercosis	0	1	2	0	3	-	0.4	0.4	-	0.2
Dengue	1	0	0	0	1	0.3	-	-	-	0.1
E. coli O157:H7	1	0	3	2	6	0.3	-	0.7	0.6	0.4
Encephalitis	1	0	3	4	8	0.3	-	0.7	1.2	0.6
Giardiasis	15	9	17	8	49	4.1	3.7	3.8	2.4	3.5
Haemophilus influenzae type b	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Hansen's disease (Leprosy)	0	0	3	0	3	-	-	0.7	-	0.2
Hepatitis A	25	28	44	25	122	6.9	11.4	9.9	7.5	8.8
Hepatitis B	1	2	1	0	4	0.3	0.8	0.2	-	0.3
Hepatitis C	0	1	0	1	2	-	0.4	-	0.3	0.1
Hepatitis unspecified	0	0	1	0	1	-	-	0.2	-	0.1
Kawasaki syndrome	2	0	0	0	2	0.6	-	-	-	0.1
Legionellosis	0	0	0	1	1	-	-	-	0.3	0.1
Listeriosis, nonperinatal	2	0	0	0	2	0.6	-	-	-	0.1
Listeriosis, perinatal[a]	0	0	1	0	1	-	-	0.5	-	0.2
Lyme disease	1	0	0	0	1	0.3	-	-	-	0.1
Malaria	0	0	1	0	1	-	-	0.2	-	0.1
Measles	4	0	0	0	4	1.1	-	-	-	0.3
Meningitis, viral	17	1	10	12	40	4.7	0.4	2.2	3.6	2.9
Meningococcal infections	0	1	2	1	4	-	0.4	0.4	0.3	0.3
Mumps	3	1	0	0	4	0.8	0.4	-	-	0.3
Pertussis	3	1	1	1	6	0.8	0.4	0.2	0.3	0.4
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	1	1	-	-	-	0.3	0.1
Salmonellosis	32	26	37	26	121	8.8	10.6	8.3	7.8	8.7
Shigellosis	20	25	30	22	97	5.5	10.2	6.7	6.6	7.0
Strongyloidiasis	0	0	0	0	0	-	-	-	-	-
Tetanus	0	0	0	0	0	-	-	-	-	-
Trichinosis	0	0	0	0	0	-	-	-	-	-
Tularemia	0	0	0	0	0	-	-	-	-	-
Typhoid fever, case	1	0	0	1	2	0.3	-	-	0.3	0.1
Typhoid fever, carrier	0	1	0	1	2	-	0.4	-	0.3	0.1
Typhus fever	0	0	0	0	0	-	-	-	-	-
Vibrio	0	1	1	0	2	-	0.4	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 19 cases or events are considered "unreliable." A zero rate made from no events is especially hazardous and are not reported here, except with a dash ("-"). Conclusions drawn from unreliable rates should be made with caution, if they are to be made at all.

Table O-8. Selected Notifiable Diseases
SPA 8. South Bay Area
Los Angeles County, 2000

	Frequency				Rate (Cases per 100,000)[b]			
Disease	**HB**	**IW**	**TO**	**TOTAL**	**HB**	**IW**	**TO**	**TOTAL**
Amebiasis	2	2	3	7	0.9	0.5	0.7	0.6
Botulism	0	0	0	0	-	-	-	-
Brucellosis	1	0	0	1	0.5	-	-	0.1
Campylobacteriosis	51	42	61	154	23.8	10.2	13.5	14.3
Cholera	0	0	0	0	-	-	-	-
Coccidioidomycosis	1	1	1	3	0.5	0.2	0.2	0.3
Cryptosporidiosis	1	3	0	4	0.5	0.7	-	0.4
Cysticercosis	0	1	0	1	-	0.2	-	0.1
Dengue	0	0	0	0	-	-	-	-
E. coli O157:H7	0	0	1	1	-	-	0.2	0.1
Encephalitis	1	4	3	8	0.5	1.0	0.7	0.7
Giardiasis	14	16	24	54	6.5	3.9	5.3	5.0
Haemophilus influenzae type b	0	0	0	0	-	-	-	-
Hansen's disease (Leprosy)	1	1	0	2	0.5	0.2	-	0.2
Hepatitis A	8	39	17	64	3.7	9.5	3.8	5.9
Hepatitis B	3	11	3	17	1.4	2.7	0.7	1.6
Hepatitis C	1	0	0	1	0.5	-	-	0.1
Hepatitis unspecified	0	0	0	0	-	-	-	-
Kawasaki syndrome	2	1	3	6	0.9	0.2	0.7	0.6
Legionellosis	0	0	0	0	-	-	-	-
Listeriosis, nonperinatal	1	1	0	2	0.5	0.2	-	0.2
Listeriosis, perinatal[a]	0	0	0	0	-	-	-	-
Lyme disease	0	0	0	0	-	-	-	-
Malaria	1	2	0	3	0.5	0.5	-	0.3
Measles	0	0	0	0	-	-	-	-
Meningitis, viral	9	11	17	37	4.2	2.7	3.8	3.4
Meningococcal infections	2	10	2	14	0.9	2.4	0.4	1.3
Mumps	2	8	1	11	0.9	1.9	0.2	1.0
Pertussis	2	2	8	12	0.9	0.5	1.8	1.1
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	1	0	1	-	0.2	-	0.1
Salmonellosis	38	43	39	120	17.7	10.5	8.6	11.1
Shigellosis	27	32	27	86	12.6	7.8	6.0	8.0
Strongyloidiasis	0	0	0	0	-	-	-	-
Tetanus	0	0	0	0	-	-	-	-
Trichinosis	0	0	0	0	-	-	-	-
Tularemia	0	0	0	0	-	-	-	-
Typhoid fever, case	0	0	1	1	-	-	0.2	0.1
Typhoid fever, carrier	0	0	1	1	-	-	0.2	0.1
Typhus fever	0	0	0	0	-	-	-	-
Vibrio	2	0	0	1	0.9	-	-	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 19 cases or events are considered "unreliable." A zero rate made from no events is especially hazardous and are not reported

LIST OF ACRONYMS

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

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

Health Districts

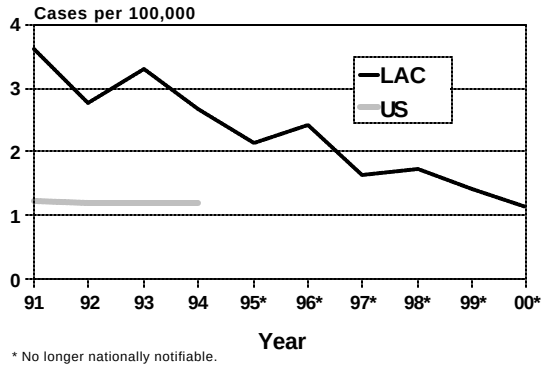
AH Alhambra	**EV** East Valley	**IW** Inglewood	**SO** South
AV Antelope Valley	**EM** El Monte	**NE** Northeast	**SW** Southwest
BF Bellflower	**FH** Foothill	**PO** Pomona	**TO** Torrance
CE Central	**GL** Glendale	**SA** San Antonio	**WE** West
CN Compton	**HB** Harbor	**SE** Southeast	**WV** West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

AMEBIASIS

CRUDE DATA	
Number of Cases	106
Annual Incidence [a]	
LA County	1.2
United States	N/A
Age at Onset	
Mean	34 years
Median	35 years
Range	3 - 99 years
Case Fatality	
LA County	0.0%
United States	N/A

[a] Cases per 100,000 population.

Figure 1
Amebiasis
Incidence Rates by Year
LAC and US, 1991 - 2000



ETIOLOGY

Amebiasis is caused by the protozoan parasite *Entamoeba histolytica*. Cysts shed in human feces may contaminate food or drinking water or be transferred sexually, on hands, or on fomites. Recreational waters such as lakes and pools also may serve as transmission vehicles, since cysts are relatively chlorine-resistant. 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 and, less commonly, in the 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.

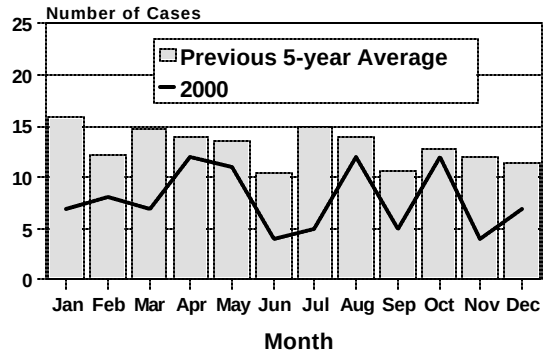
DISEASE ABSTRACT

- Amebiasis rates dropped again in all racial groups, but increased in persons aged 35 - 44 years.
- No amebiasis outbreaks were reported in 2000.

STRATIFIED DATA

Trends: The 2000 amebiasis incidence of 1.2 per 100,000 population is the lowest on record in LAC (Figure 1).

Figure 2
Amebiasis
Cases by Month of Onset
LAC, 2000



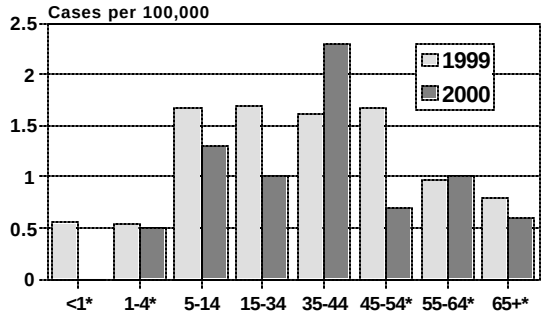
Seasonality: As the number of reported cases decreases, seasonal trends become less apparent (Figure 2).

Age: Compared to 1999 rates, all age group rates dropped or remained stable except that of cases aged 35-44 years (n = 27), which rose 44% from 1.6 to 2.3 cases per 100,000 (Figure 3). Non-Hispanic cases were significantly older than Hispanics (means of 37 and 30 years, respectively; p = 0.003); 70% of non-Hispanic cases were aged 15-44 years, compared to only 43% of Hispanic cases (p = 0.006).

Sex: The male-to-female rate ratio rose slightly from 1.5:1 to 1.8:1. The number of White cases, who are predominantly male (82%), did not decrease as much as Hispanic cases, who tend to have equal male and female rates.

Figure 3

Amebiasis
Incidence Rates by Age Group
LAC, 1999 - 2000



*Rates unreliable due to small numbers of cases.

Race/Ethnicity: Rates fell within each group (Figure 4), though not as much for Whites as for the other racial groups. As in the past, Hispanics comprised the majority of cases in most health districts. Fifteen percent of cases (n = 16) were of unknown race.

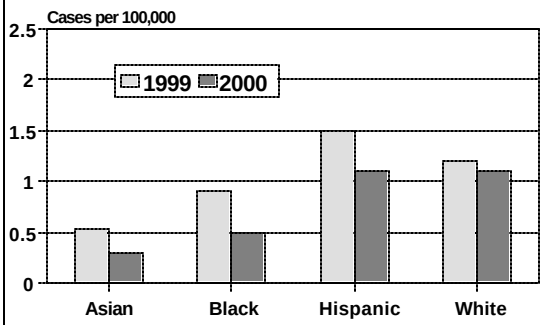
Location: West Health District had the highest rate (3.5 per 100,000), with 20 reported cases. Central and Hollywood-Wilshire Health Districts also had higher rates than average, 2.3 and 2.2 per 100,000, respectively (Map 1).

COMMENTS

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*. 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 is likely to travel to endemic countries in Asia and Central America. Decreasing numbers of refugees and immigrants from endemic regions or reduction in testing may explain the falling rate.

Figure 4

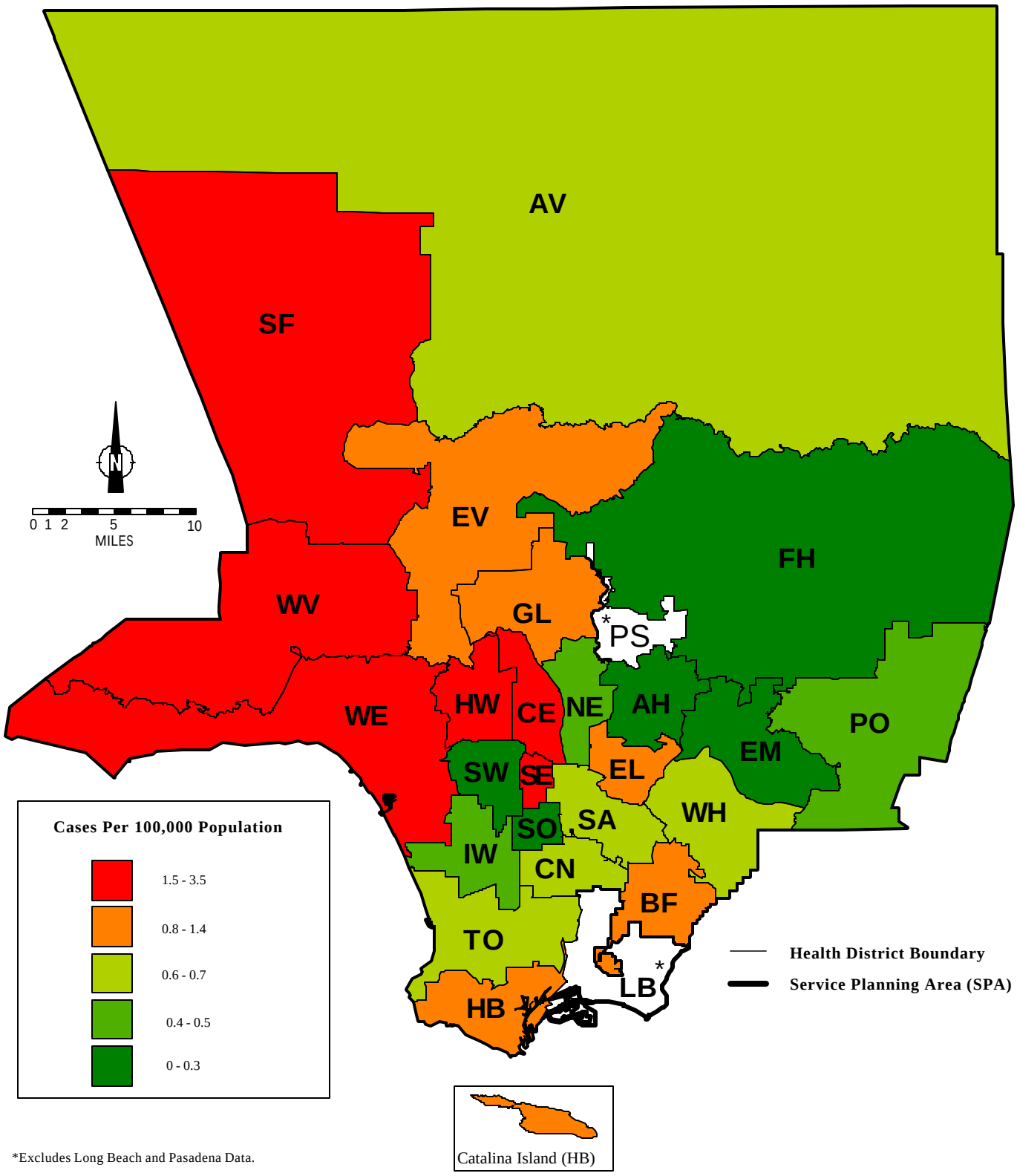
Amebiasis
Race-Specific Incidence Rates
LAC, 1999 - 2000



ADDITIONAL RESOURCES

Amebiasis - Health Information for International Travel, 2001 - 2002.
http://www.cdc.gov/travel/diseases/amebiasis.htm
Acute Communicable Disease Control website:
http://lapublichealth.org/acd/procs/b73/b73index.htm

MAP 1. Amebiasis
Rates by Health District, Los Angeles County, 2000*



*Excludes Long Beach and Pasadena Data.

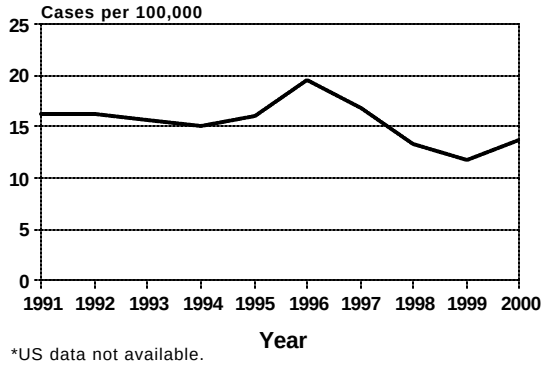
CAMPYLOBACTERIOSIS

CRUDE DATA	
Number of Cases	1,273
Annual Incidence	
LA County [a]	13.8
United States	N/A
Age at Onset	
Mean	28
Median	27
Range	<1 - 98 years
Case Fatality	
LA County	0.1%
United States	N/A

[a] Cases per 100,000 population.

Figure 5

Campylobacteriosis
Incidence Rates by Year *
LAC, 1991 - 2000



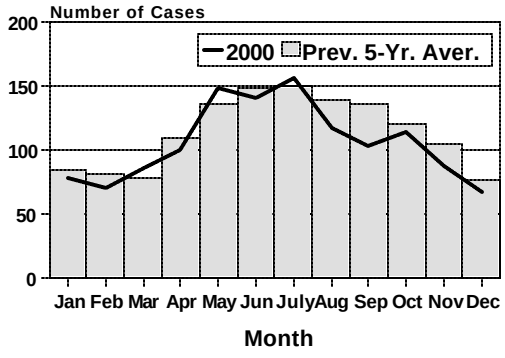
*US data not available.

ETIOLOGY

Campylobacter is a bacterium transmitted through ingestion of contaminated food (specifically undercooked poultry) or water. Symptoms include watery or bloody diarrhea, fever, abdominal pains, muscle aches, and nausea. Rare sequelae include pseudoappendicitis, Guillain-Barre? syndrome and even death.

Figure 6

Campylobacteriosis
Cases by Month of Onset
LAC, 2000



DISEASE ABSTRACT

- Campylobacteriosis incidence rate increased in 2000 after a 4-year decline.
- Rates were highest in infants and children, aged 1 to 4 years.
- Rates were highest in Whites, followed by Hispanics, Asians, and Blacks.

STRATIFIED DATA

Trends: The campylobacteriosis rate of 14 cases per 100,000 population is significantly higher than the 1999 rate of 12 per 100,000. Figure 5 shows a high incidence rate in 1996, followed by a decline

in rates from 1997 to 1999.

Seasonality: As in previous years, incidence peaked from May through September (Figure 6).

Age: Rates remained stable from 1999. The highest rates were among infants aged < 1 year and children, aged 1 - 4 years. Rates among persons aged 55-64 and 65+ years were significantly lower than county average (Figure 7).

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

Race/Ethnicity: While rates increased for both Whites and Hispanics, those for Asians and Blacks did not significantly change from 1999. The current rate for Blacks was significantly lower than county average (Figure 8).

Location: West Health District had the highest incidence in 2000 (25 per 100,000 population), followed by Harbor, San Fernando and West Valley Health Districts, whose rates were significantly higher than county average (Map 2). These higher district rates are consistent with previous years. However, the rate in Torrance Health District decreased from 20 per 100,000 in 1999 to 14 per 100,000 in 2000. The reason for the decline in this geographic area is unknown.

Figure 8

Campylobacteriosis Incidence Rates by Age Group LAC, 1999 - 2000

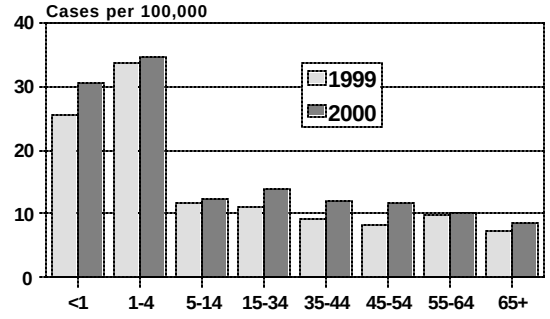
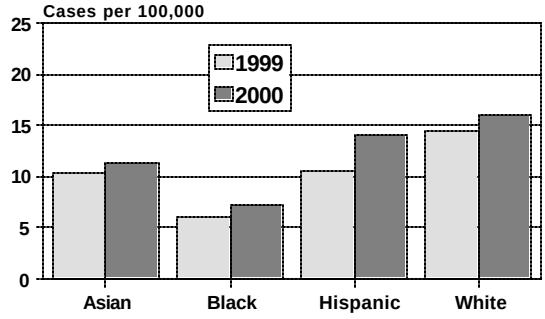


Figure 7

Campylobacteriosis Age-Adjusted Rates by Race/Ethnicity LAC, 1999 - 2000



Comments: The increase in incidence rate observed in 2000 may be related to the longer peak of cases occurring in the summer and the higher rates found in both Hispanics and Whites. There were 3 campylobacteriosis outbreaks in 2000, accounting for 25 total cases. In all 3 outbreaks, chicken was identified as the suspect source.

In 2000,12% (149) of individuals reported a travel history outside of the United States during the incubation period.

As for the severity of illness, 13% (169) of reported campylobacteriosis cases were hospitalized and one campylobacteriosis-associated death occurred.

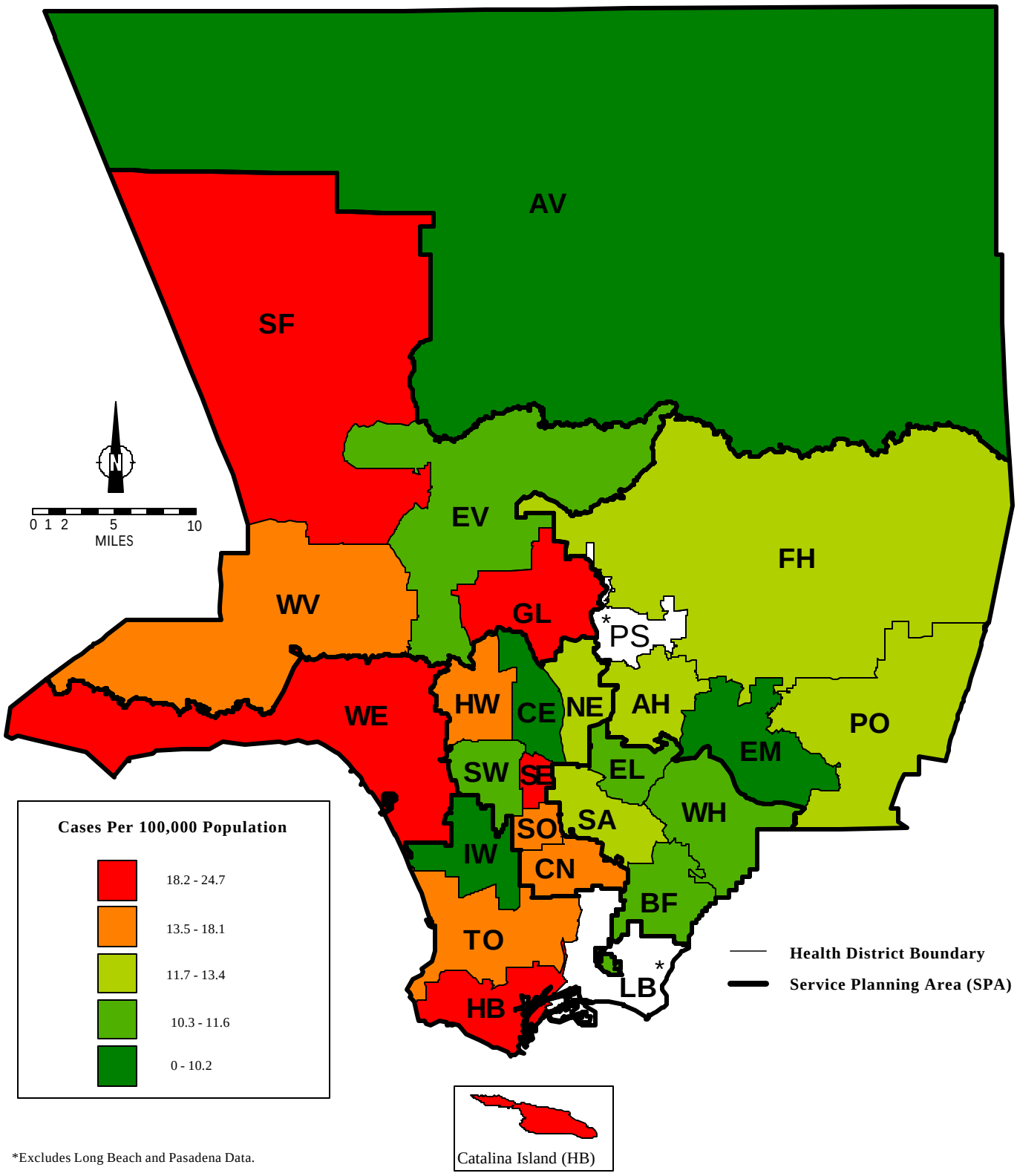
Prevention: All foodstuffs derived from animal sources should be thoroughly cooked, particularly poultry. Utensils, counter tops, cutting boards, sponges and hands must be thoroughly washed after coming in contact with raw poultry. The juices from raw poultry must be contained and not allowed to drip on other foods in the refrigerator.

ADDITIONAL RESOURCES

http://www.cdc.gov/ncidod/dbmd/diseaseinfo/campylobacter_g.htm

http://lapublichealth.org/acd/procs/b73/b73index.htm

MAP 2. Campylobacteriosis
Rates by Health District, Los Angeles County, 2000*



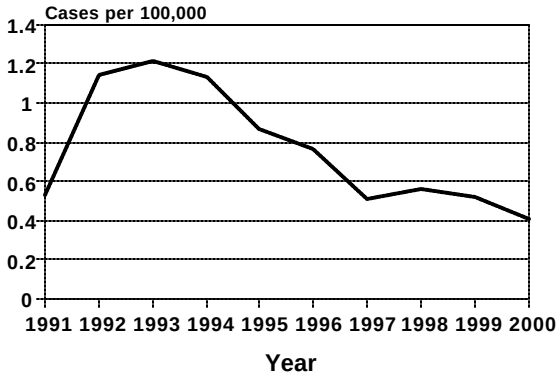
*Excludes Long Beach and Pasadena Data.

COCCIDIOIDOMYCOSIS

CRUDE DATA	
Number of Cases	38
Annual Incidence [a]	
LA County	0.41
California [b]	2.42
United States	N/A
Age at Onset	
Mean	48 years
Median	43 years
Range	7 - 88 years
Case Fatality	
LA County	16%
United States	N/A

Figure 9

Coccidioidomycosis Incidence Rates by Year LAC, 1991 - 2000



[a] Cases per 100,000 population.
[b] California Department of Health Services Surveillance and Statistics Section.

ETIOLOGY

Coccidioidomycosis, or "San Joaquin Valley Fever," is a fungal disease commonly transmitted through the inhalation of infective spores from *Coccidioides immitis* carried in dust. Environmental conditions conducive to an increased occurrence of coccidioidomycosis are as follows: arid to semi-arid regions, dust storms, low altitude, hot summers, warm winters, and sandy, alkaline soils. It is endemic in the southwestern United States as well as parts of Mexico and South America.

Most infected individuals exhibit no symptoms or have a mild respiratory illness; however, about 1% of those infected 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 by microscopic examination, culture, or serologic testing. Blacks, Hispanics, American Indians, Filipinos, males, pregnant women, children aged less than 5 years, elderly, and immunocompromised individuals are at high risk for severe disease.

DISEASE ABSTRACT

- The incidence rate for coccidioidomycosis dropped to its lowest point in 10 years in LAC.
- As in past years, the elderly, males, Blacks, and residents of the Antelope Valley and San Fernando Valley are at higher risk for severe disease.
- Adult men, aged 65 years and older, accounted for nearly one-quarter of all cases reported.

STRATIFIED DATA

Trends: The incidence rate continued to decrease from 1.2 cases per 100,000 population in 1993 to 0.4 in 2000 (Figure 9).

Seasonality: In 2000, the 2 months with the highest number of cases were March (6 cases) and November (5 cases). March was the only month where the number of cases surpassed the previous five-year average (Figure 10). Although not reflected in LAC's cases, cases commonly occur in the summer after a rainy winter or spring especially after wind and dust storms. Perhaps because of LAC's temperate climate, the fluctuation of cases per month is not great.

Age: For 2000, cases once again were most frequent in the older age groups, with 24% of all cases among adults aged 65 years and older. There were no cases reported in children, aged less than 7 years (Figure 11).

Sex: The male-to-female rate ratio was 8:1. The mean age for males was 49 years and for females it was 41 years. The gender difference is likely due to occupational and recreational dust exposure of males although this is not clearly evident from the information collected. The most commonly reported occupations were construction worker (3) and student (2). Also, 2 cases were unemployed and 4 were retired. No female cases reported being pregnant.

Race/Ethnicity: A higher incidence of coccidioidomycosis was observed among Blacks compared to the other race/ethnic groups, although the rates were unstable due to small numbers. Whites and Hispanics had the highest number of cases (14), but Blacks and Whites were proportionately more affected than were Hispanics or Asians (Figure 12). Of the 4 cases with disseminated disease, 2 were Hispanic, 1 was Asian, and 1 was White.

Location: Among Service Planning Areas, SPA 2 (San Fernando Valley) had the highest number of coccidioidomycosis (13) with West Valley Health District contributing 6 of those cases. SPA 1 (Antelope Valley Health District) had 7 cases; SPA 7 had 5 cases; SPAs 3 and 4 had 4 cases each; SPAs 5 and 6 had 2 cases each; and SPA 8 had 1 case.

Figure 10

Coccidioidomycosis
Cases by Month of Onset
LAC, 2000 (N=38)

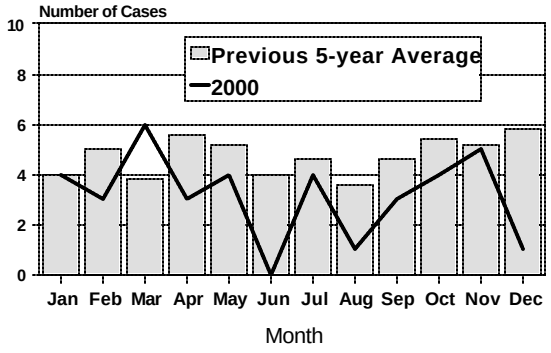


Figure 11

Coccidioidomycosis
Incidence by Age and Sex
LAC, 2000 (N = 38)

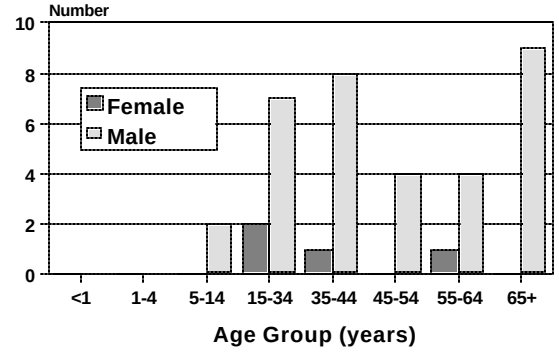
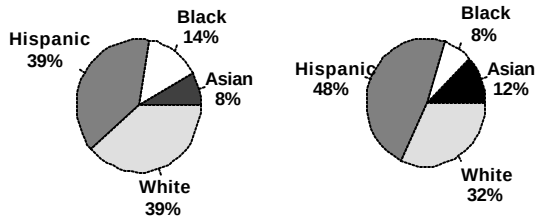


Figure 12

Coccidioidomycosis
Percent Cases by Race/Ethnicity
LAC, 2000 (N = 36*)



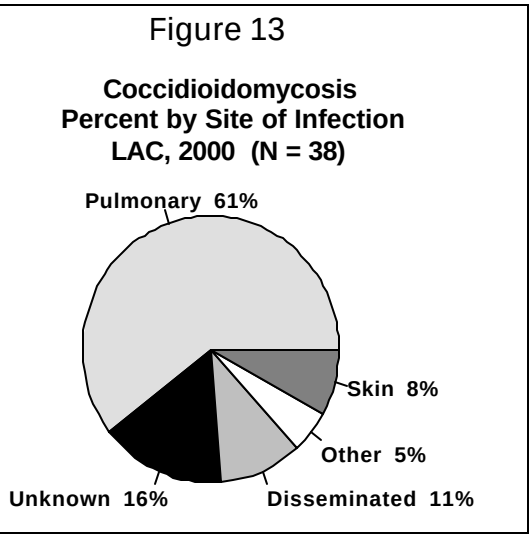
* Does not include 2 cases where race/ethnicity unknown.

Travel: Although coccidioidomycosis is endemic to Southern California, 7 cases also reported travel within four weeks prior to onset of illness to other highly endemic areas: 3 reported travel to the central San Joaquin Valley of California and 4 to endemic areas outside California–such as Arizona and Mexico.

Underlying Disease: Of 9 cases with known underlying disease, 3 were diabetic, 2 had chronic obstructive pulmonary disease, and 1 case each had an organ transplant, HIV, history of chronic heart failure, or juvenile arthritis.

Severity of Disease: Of the cases reported in 2000, sites of infection were reported as 61% primary pulmonary, 11% disseminated, and 8% had skin involvement; in 16% of the cases, infection site was unknown (Figure 13). Sixty-six percent (25) of cases were culture-confirmed, with the remaining cases diagnosed by serology. Of the 32 cases where information was available, 88% (28) were hospitalized. Six cases died. The 2000 case-fatality rate (16%) doubled from last year but was similar to previous years.

Figure 13



PREVENTION

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

COMMENTS

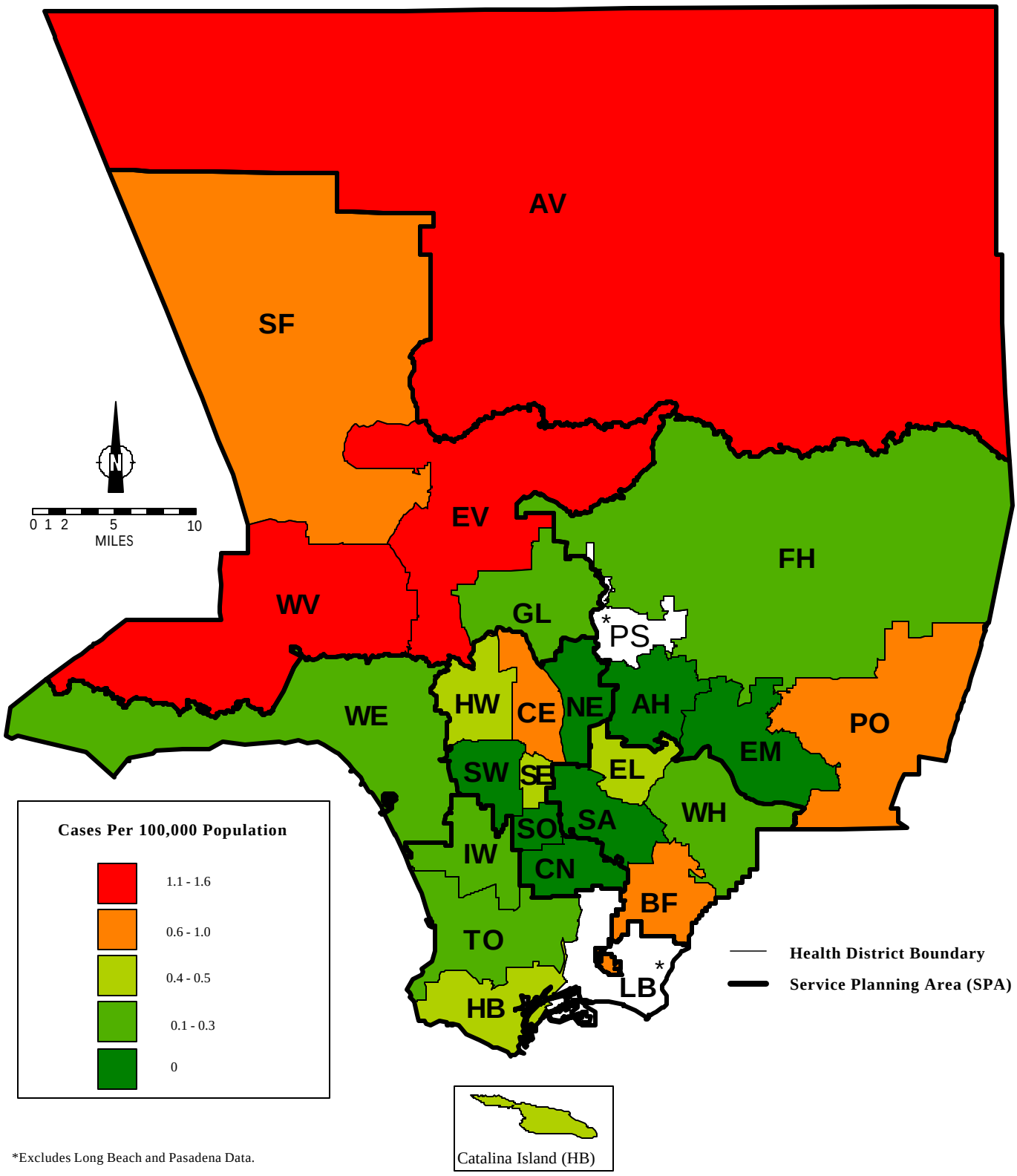
A documented peak occurred in 1992 to 1994 probably as a result of a 5-year drought ending with a heavy rainfall in 1991, 1992, and 1993. Also, there was increased media attention and reporting because of a Simi Valley outbreak and increased dust exposure related to the Northridge earthquake in 1994. Although the reasons are unclear, Kern County, which has the majority of the cases in California, also essentially observed the same decreasing trend as LAC.

Although the rate was low, the cost of coccidioidomycosis, in terms of disease severity, hospitalization, and mortality, was substantial.

ADDITIONAL RESOURCES

- American Public Health Association. *Control of Communicable Diseases Manual*, Seventeenth edition. Chin J, editor. Washington, DC:American Public Health Association, 2000.
- Centers for Disease Control and Prevention website: http://www.cdc.gov/ncidod/dbmd/diseaseinfo/coccidioidomycosis_t.htm
- Kirkland TN, Fierer J. Coccidioidomycosis: a reemerging infectious disease. *Emerg Infect Dis* 1996; 2:192-9.
- Acute Communicable Disease Control website: http://lapublichealth.org/acd/procs/b73/b73index.htm

MAP 3. Coccidioidomycosis
Rates by Health District, Los Angeles County, 2000*



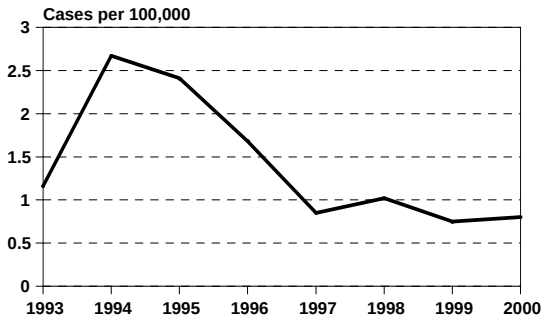
*Excludes Long Beach and Pasadena Data.

CRYPTOSPORIDIOSIS

CRUDE DATA	
Number of Cases	74
Annual Incidence [a]	
LA County	0.8
California	0.7
United States	1.1
Age at Onset	
Mean	33 years
Median	34 years
Range	1 - 77 years
Case Fatality	
LA County	0.0%
United States	0.0%

[a] Cases per 100,000 population.

Figure 14

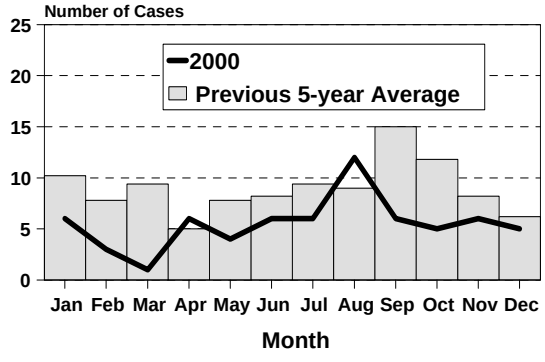


ETIOLOGY

Cryptosporidiosis is transmitted by the fecal-oral route (for example, swallowing contaminated recreational/untreated water, eating raw or undercooked contaminated food) by ingestion of cysts of the parasite *Cryptosporidium parvum*. 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. The 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 15



DISEASE ABSTRACT

- The incidence rates have been stable since 1997.
- HIV positivity is the most common identified risk factor for cryptosporidiosis. Cryptosporidiosis has been an AIDS-defining disease since 1983, and reported cases have fallen since the advent of highly active antiretroviral therapy.

STRATIFIED DATA

Trends: The rate of cryptosporidiosis (0.8. cases per 100,000) is essentially unchanged from the 1999 rate (0.75; Figure 14).

Seasonality: In 2000, there was a peak in August compared to the previous 5-year average peak seen in September (Figure 15).

Age: The greatest percentage of cryptosporidiosis was in persons aged 15-34 years (35%).

Sex: The male-to-female rate ratio was 4.3:1.

Race/Ethnicity: Hispanics had the highest number of cases, followed by Whites with 24 cases (Figure 17). No cases occurred among Asians. This variable was unknown for 17 cases (23%).

Location: The incidence rate (2.1 cases per 100,000) in SPA 4 was higher than the overall county rate of 0.8 cases per 100,000. Twenty percent of cases lived in Hollywood-Wilshire Health District, followed by 14% in Central Health District.

Figure 16

Cryptosporidiosis
Percent Cases by Age Group
LAC, 2000

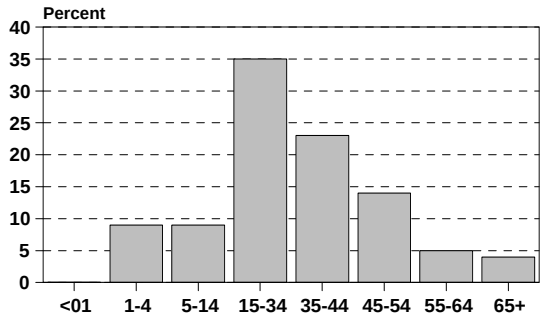
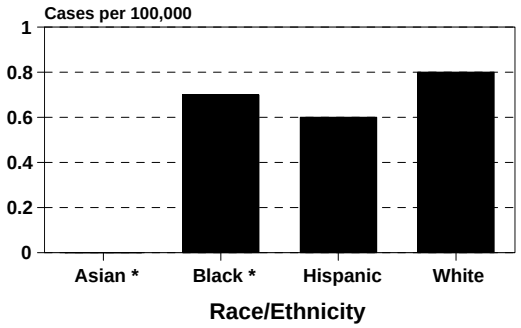


Figure 17

Cryptosporidiosis
Incidence Rates by Race/Ethnicity
LAC, 2000 (N = 57)



* Rate unreliable due to small numbers.

COMMENTS

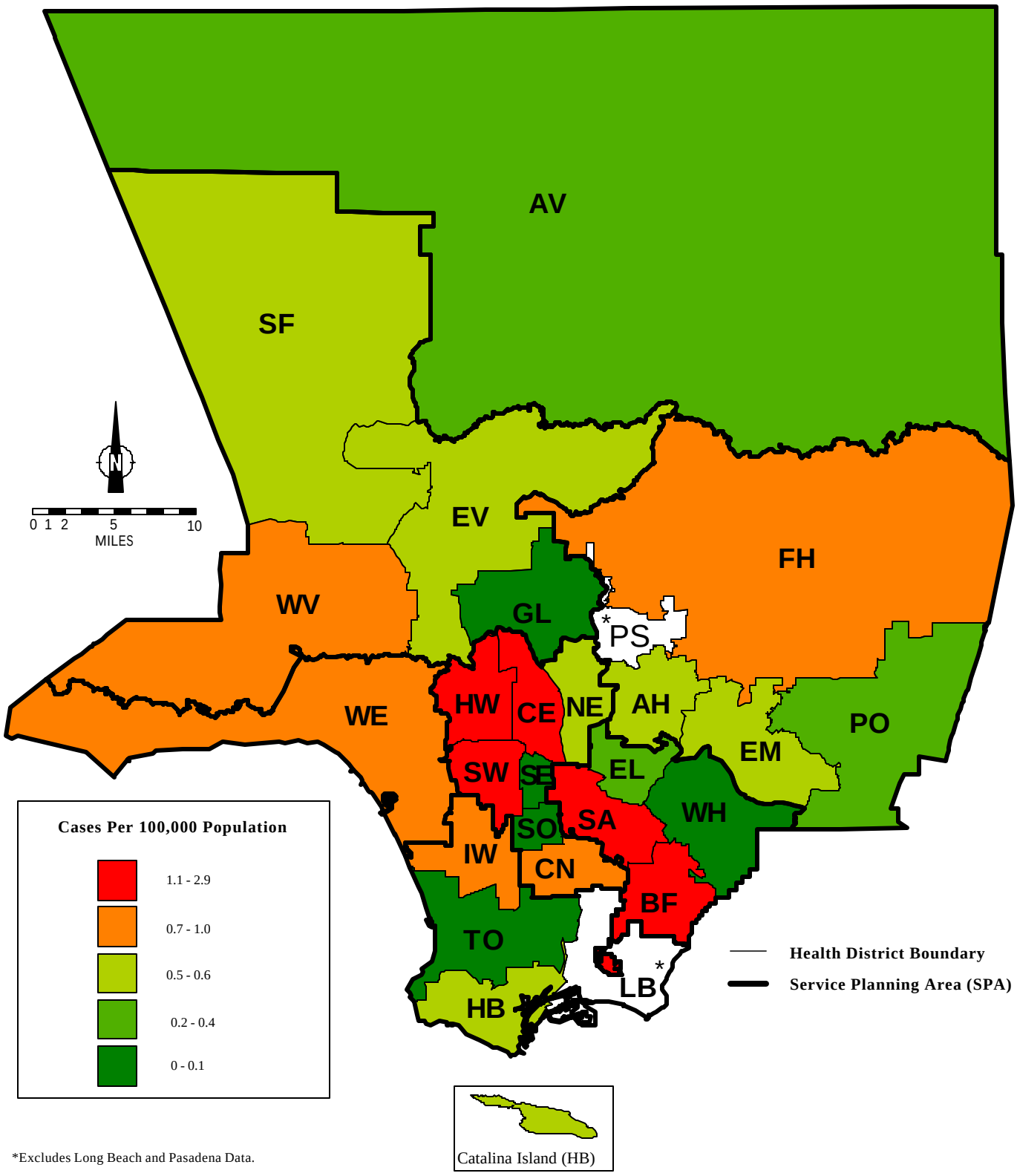
Risk information from completed case history forms was available on 56 (76%) cases. Of 52 cases in which HIV status was known, 56% (including 1 female and 28 males) reported being HIV positive. Cryptosporidiosis has been an AIDS-defining disease since 1983 and reported cases have fallen since the advent of highly active antiretroviral therapy.

Traveling to another country (30%) and being an immigrant (30%) were the two highest risk factors in 2000. Outdoor activities such as camping, hiking, swimming or fishing were reported among 26% of cases, followed by animal contact with 25%. Further details such as type of animal or nature of animal exposure, swimming location, country visited, or date of immigration were not provided. All other risk factors occurred in less than 10% of cases.

ADDITIONAL RESOURCES

http://www.cdc.gov/ncidod/dpd/parasites/cryptosporidiosis/default.htm
http://lapublichealth.org/acd/procs/b73/b73index.htm

MAP 4. Cryptosporidiosis
Rates by Health District, Los Angeles County, 2000*



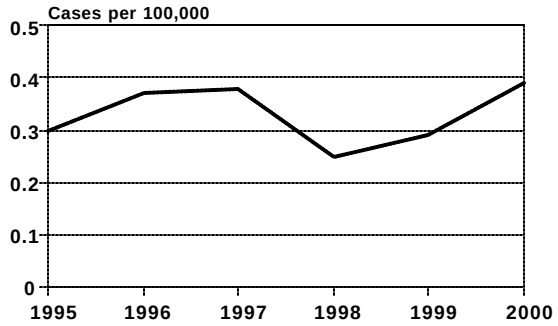
*Excludes Long Beach and Pasadena Data.

CYSTICERCOSIS

CRUDE DATA	
Number of Cases	32
Annual Incidence [a]	
LA County	0.4
United States	N/A
Age at Onset	
Mean	36
Median	38
Range	14 - 86 years
Case Fatality	
LA County	12.5%
United States	N/A

Figure 18

Cysticercosis
Incidence Rates by Year
LAC, 1995 - 2000



[a] Cases per 100,000 population.

ETIOLOGY

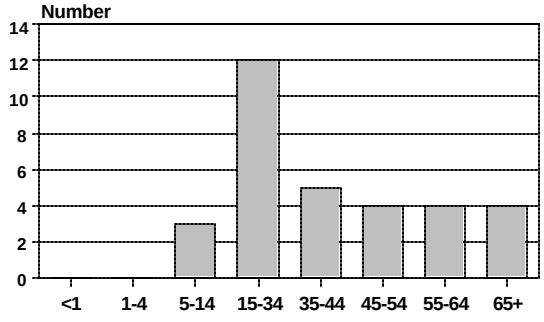
Cysticercosis results from an infection with the larval form of the pork tapeworm *Taenia solium*. It is caused by ingestion of tapeworm eggs excreted in human feces. The larvae that hatch from the eggs are called cysticerci and they may invade any organ. The most serious manifestation is neurocysticercosis, infection in the central nervous system, including the brain, meninges, spinal column, and eye. Tapeworm infection is caused by consuming raw or undercooked meat, usually pork, infested with viable larvae.

DISEASE ABSTRACT

- Most cases occur in persons born in foreign countries where the pork tapeworm is endemic.
- The large majority of LAC cases are born in Mexico and Central America.
- Occasionally cases are acquired locally.

Figure 19

Cysticercosis
Incidence by Age Group
LAC, 2000 (N = 32)



STRATIFIED DATA

Trends: The rate of reported disease has remained stable for the past five years. However, previous studies have demonstrated extensive under-reporting of this disease. Further complicating surveillance is the fact that the disease is lifelong, leading to multiple

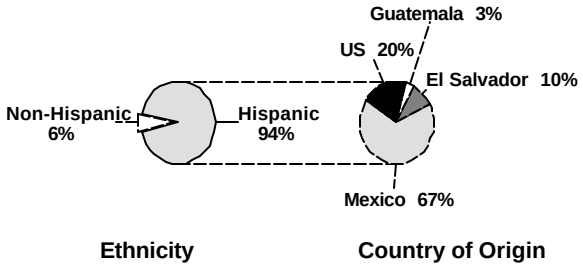
medical examinations, hospitalizations, and treatments, with the potential for being reported at each occasion.

Seasonality: There is no seasonality to disease onset**.**

Age: Ages ranged from 14 to 86 years; the greatest number of cases was in persons, aged 15-34 years (Figure 19). Fewer cases occur in children because of the latency between infection and development of clinical symptoms leading to diagnosis. Most acute infections are asymptomatic; symptoms develop months or years later due to the inflammatory response or space-occupying lesions in the central nervous system.

Figure 20

Cysticercosis Cases by Ethnicity and Country of Origin LAC, 2000



Sex: Of the 32 reported cases, 24 (75%) were male; the male:female rate ratio was 3:1. There is no explanation for the male preponderance.

Race/Ethnicity: Thirty cases (94%) were Hispanic (0.8 cases per 100,000) and 2 (6%) were non-Hispanic White (Figure 20). Twenty-four of the 30 Hispanic cases were foreign born: 20 in Mexico, 3 in El Salvador, and one in Guatemala. Of the 8 cases born in the US, 6 (75%) were Hispanic.

Location: Since the incubation period may be decades long, it is generally not possible to pinpoint the time or place of infection of cases born or traveling frequently outside the US.

Six of the 8 US-born cases gave a history of travel to places endemic for tapeworm, most commonly Mexico (5 cases). Four of those with significant travel histories were aged 18 years or less at diagnosis: one had visited El Salvador in 1998, one made a trip to Mexico in 1996, and 2 cases aged 15 years traveled to Mexico on an annual basis. A 25-year-old man developed seizures three months after a trip to Mexico. The sixth case was 76 years old; his last foreign excursion was to Mexico in 1990. The 2 remaining US-born cases were elderly Hispanic men with no history of foreign travel.

COMMENTS

Symptoms: The most common presenting symptoms were headache (72%) and seizures (63%). In 4 cases diagnosed at autopsy, cysticercosis appeared to be the underlying cause of death, giving a case-fatality rate of 12.5%. One case, a 14-year-old boy, was found dead in bed without preceding symptoms. A 27-year-old man had a history of severe headache for two years; he died suddenly after exacerbation of headache pain. A 49-year-old woman suffered what was presumed to be a massive ischemic stroke; the coroner determined the cause of death as multiple cysticercal lesions in the brain. The fourth fatal case was a 39-year-old man who had been under neurologic care for 10 years before succumbing to the disease. One case had a tumor of the lip that was identified on biopsy as a cysticercus.

Diagnosis: Twenty-seven of 32 cases (84%) were diagnosed by either MRI or CT scan. While such scans are not usually definitive, the diagnosis of cysticercosis can be made with reasonable accuracy given typical appearance, number, and location of brain lesions. Serology may be helpful, especially in individuals without a history of exposure in endemic parts of the world. Serologic tests were significant in all 6 cases where used. Biopsy is the definitive method of diagnosis, and was positive in all 5 cases where used.

Public Health Impact: Stool examinations for ova and parasites (O&P) were performed on only 16 cases (50%): 10 cases submitted three specimens, 4 cases submitted two specimens, and 2 cases submitted only one specimen. Of the 8 US-born cases, 3 were not screened. No tapeworms were identified in this group. Tapeworm carriers are capable of autoinfection, so patients with radiologic evidence of recent (active) cysticercal lesions may carry a tapeworm in their own gut; such patients should submit stool specimens for screening prior to taking the antiparasitic treatment. Treatment with certain antihelminthic drugs successfully eradicates intestinal tapeworm and negates the need to screen the patient further. However, in some circumstances ova and parasite testing may provide information critical to identifying the source of infection.

ADDITIONAL RESOURCES

Cysticercosis Fact Sheet
http://www.cdc.gov/ncidod/dpd/parasites/cysticercosis/factsht_cysticercosis.htm

Controversies in the Management of Cysticercosis
http://www.cdc.gov/ncidod/eid/vol3no3/evans.htm

Centers for Disease Control: *Locally acquired neurocysticercosis* – North Carolina, Massachusetts, and South Carolina, 1989-1991. *MMWR* 1992; 41:1-4.
http://www.cdc.gov/epo/mmwr/preview/mmwrhtml/00015878.htm

Acute Communicable Disease Control website:
http://lapublichealth.org/acd/procs/b73/b73index.htm

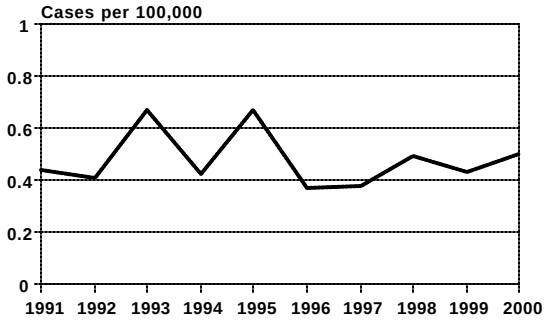
ENCEPHALITIS

CRUDE DATA	
Number of Cases	46
Annual Incidence [a]	
LA County	0.5
California	N/A
United States	N/A
Age at Onset	
Mean	31 years
Median	18 years
Range	0 - 90 years
Case Fatality	
LA County	20% [b]
United States	N/A

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

Figure 21

Encephalitis
Incidence Rates by Year
LAC, 1991 - 2000

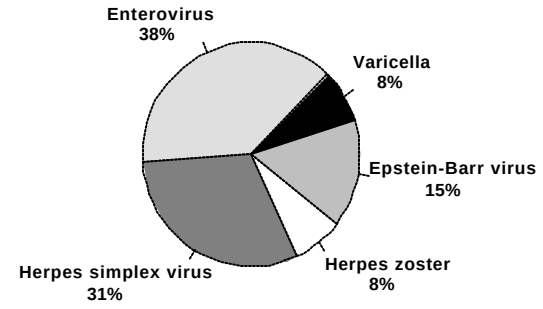


ETIOLOGY

Encephalitis, an inflammation of the brain, causes headache, stiff neck, fever and altered mental status. It can result from infection with a number of different agents--including viral, parasitic, rickettsial, bacterial, and chemical. Public health surveillance is limited to cases of suspected or confirmed viral etiology and includes primary and post-infectious encephalitis. Of special concern is arboviral (mosquito-borne) encephalitis, which can be prevented by personal protection and mosquito control activities. The etiologies of cases reported in 2000 are shown in Figure 22.

Figure 22

Encephalitis
by Etiology
LAC, 2000 (N = 14)



*Note: the etiology of the encephalitis was not identified in 70% of cases.

DISEASE ABSTRACT

- The 2000 incidence of viral encephalitis (46 cases; rate = 0.50 cases per 100,000) is in the range seen during non-epidemic years.
- Of the 46 cases, 22 (48%) were in children aged less than 14 years, 13 (28%) were in persons aged 15 - 34 years, and 11 occurred in persons aged 55 years or greater.
- Cases were about evenly split between females (24) and males (22).
- While cases occurred throughout LAC, SPA 3 had the most (12), followed by SPAs 7 and 8 (each with 8 cases).
- The etiology of the encephalitis was not identified in 70% of cases.

COMMENTS

Of particular public health concern in LAC are the arthropod-borne (arboviral) encephalitides, especially those due to St. Louis encephalitis (SLE) and Western equine encephalitis (WEE) viruses. Since 1985, sporadic cases of SLE have been reported, following an outbreak of 16 cases in 1984. The potential for another SLE outbreak exists, as the sporadic cases in previous years and identification of SLE in sentinel animal populations indicate that the virus is now endemic in LAC.

The annual mosquito-borne encephalitis surveillance program consists of surveillance for equine cases of WEE, monitoring of mosquito populations, laboratory testing of mosquitoes for WEE and SLE viruses, and twice monthly testing of sentinel chicken flocks for SLE and WEE seroconversion. In addition, the state of California began to include testing for West Nile virus in its surveillance system beginning in 2000.

Despite the fact that the Public Health Laboratory provides free testing of clinical samples for arboviral encephalitis, few are submitted, and the etiologic agent for most cases is not identified. The California Encephalitis Project of the California Department of Health Services also provides enhanced diagnostic testing as part of an ongoing study. In 2000, the etiology was unknown for 70% of reported cases. Determining the etiology of encephalitis allows public health to follow disease trends, to notify the community of increased disease risk, and to implement prevention efforts.

Prevention measures for arboviral encephalitis consist of personal protection, including use of screens on windows, avoiding mosquito-infested areas, especially at dusk, when most mosquitoes are active, wearing protective clothing and use of insect repellents. Elimination of standing water and proper maintenance of ponds and swimming pools decrease the available sites for hatching and maturation of mosquito larvae. The State of California and special Mosquito Abatement Districts monitor and control populations of these insects, especially in public-use areas.

ADDITIONAL RESOURCES

http://www.cdc.gov/ncidod/diseases/list_mosquitoborne.htm (for mosquito-borne)

http://www.nlm.nih.gov/medlineplus/encephalitis.html (for consumers)

http://www.postgradmed.com/issues/1998/03_98/guti.htm (more detailed information, list of causes)

http://lapublichealth.org/acd/procs/b73/b73index.htm

Meningitis Foundation of America, Inc.
7155 Shadeland Station, Suite 190
Indianapolis, IN 46256-3922
support@musa.org or http://www.musa.org
Tel: 800-668-1129 or 317-595-6383; Fax: 317-595-6370

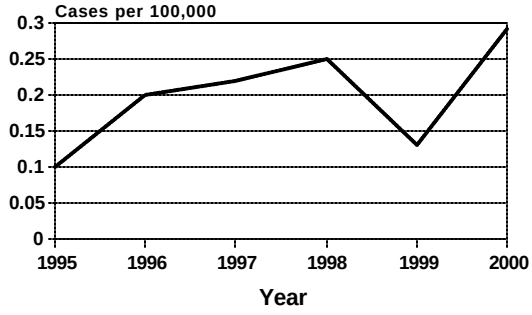
National Institute of Allergy and Infectious Diseases (NIAID)
National Institutes of Health
31 Center Drive, Rm. 7A50 MSC 2520
Bethesda, MD 20892-2520
http://www.niaid.nih.gov or Tel: 301-496-5717

ESCHERICHIA COLI O157:H7

CRUDE DATA	
Number of Cases	27
Annual Incidence [a]	
LA County	0.3
California [b]	0.9
United States [b]	1.7
Age at Onset	
Mean	23 years
Median	10 years
Range	1 - 79 years
Case Fatality	
LA County	0.0%
United States	N/A

Figure 23

***Escherichia coli* O157:H7**
Incidence by Year of Onset
LAC, 1995 - 2000



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

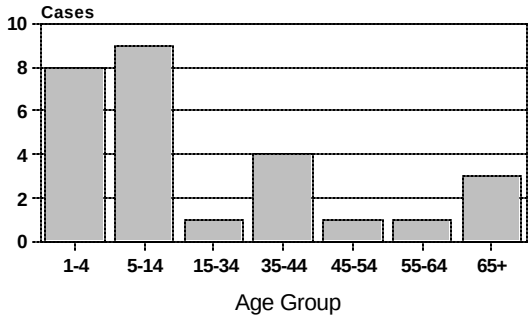
ETIOLOGY

Escherichia coli O157:H7 is a specific serotype of *Escherichia coli* bacteria that produces Shiga-toxins (STEC). Abdominal cramps and watery diarrhea that can turn to bloody diarrhea are typical symptoms, while fever is uncommon. The common modes of transmission are person-to-person (e.g., day-care settings) and foodborne (for example, undercooked ground beef, unpasteurized juice or milk, and vegetables eaten raw–such as sprouts and lettuce).

Children under 5 are at highest risk for a clinical complication known as hemolytic uremic syndrome (HUS) which consists of hemolytic anemia, thrombocytopenia, and acute renal dysfunction. Adults may get thrombotic thrombocytopenic purpura (TTP) after infection.

Figure 24

***Escherichia coli* O157:H7**
Number of Cases by Age Group
LAC, 2000 (N =27)



DISEASE ABSTRACT

- The 27 cases in 2000 represent the largest annual number of *E. coli* O157:H7 cases reported in LAC since reporting began in 1993.
- No outbreaks were identified in LAC in 2000.
- Nearly 2/3rds of cases occurred in children aged 1-14 years.

STRATIFIED DATA

Trends: The incidence rate for 2000 is 0.29 cases per 100,000 which is the highest rate seen in LAC since mandatory reporting began in 1995 (Figure 23).

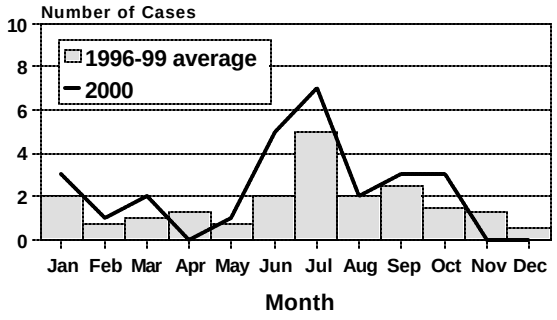
Seasonality: As in previous years, the greatest number of cases was observed in July, with 7 cases in 2000 (Figure 24).

Age: The median age was 10 years (mean 23; range 1 - 70). Seventeen cases (63%) occurred in children aged under 15 years (Figure 25).

Sex: Of cases, 14 (52%) were male.

Figure 25

***Escherichia coli* O157:H7**
Cases by Month of Onset
LAC, 1996 - 2000



Race/Ethnicity: The highest number of cases was seen among Whites (14), followed by Hispanics (5), Asians (1), and Blacks (1), Other (1), and Unknown (5).

Location: Among Service Planning Areas, SPA 2 had 10 cases, SPA 7 had 6 cases, SPA 5 had 4 cases, SPAs 3 and 4 each had 2 cases, SPAs 6 and 8 had 1 case each, and SPA 1 had 0 cases. Among health districts, Glendale had the greatest number of cases (7). West had 4 cases and San Antonio had 3 cases.

COMMENTS

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

There were 4 cases of HUS without *E. coli* O157:H7 infection. No organism was isolated from them. However, there were 3 cases reported with both confirmed *E. coli* O157:H7 infection and HUS and one diagnosed with TTP and *E. coli* O157:H7 infection.

The reason for the increase in cases in 2000 is not known, but may include better reporting by physicians. In 2000, the most common reported exposures were ground beef 41%, cider 41%, lettuce 50%, fast food 41%, and other restaurants 37%. The mean duration of illness for all ages was 7 days (range 2-19 days). Reported cases had symptoms of diarrhea 96%, bloody diarrhea 89%, abdominal cramps 89%, fever 52% (mean temperature=100.7), vomiting 52%, and nausea 48%. Three cases were on antibiotics a week prior to onset. Sixty-three percent were hospitalized. The mean hospital stay for children aged 0-5 years was 6.4 days, while that for children aged 6 years and older was 5 days. There were no deaths.

There were no outbreaks within LAC; however, there were 3 cases associated with 2 multi-state outbreaks during the summer months identified by matching pulsed-field gel electrophoresis (PFGE) patterns. No source was identified in either outbreak.

Collaborative efforts among physicians, laboratories and the health department are important for enhancement of surveillance activities. 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. It is important that physicians request testing for *E. coli* O157:H7 on all bloody stools. Laboratory-based reporting through PulseNet has been notable in detecting clusters of *E. coli* O157:H7.

Preventative measures should be implemented on a continual basis. The public needs increased education regarding food handling practices, proper hygiene and high-risk foods. Collection of detailed food histories and strengthening of national processing regulations to decrease food contamination should be targeted.

ADDITIONAL RESOURCES

Foodborne and Diarrheal Diseases Branch at:
http://www.cdc.gov/ncidod/dbmd/foodborn.htm

Outbreak Response and Surveillance Unit at:
http://www.cdc.gov/ncidod/dbmd/outbreak/

FoodNet at:
http://www.cdc.gov/foodnet/

Center for Food Safety and Applied Nutrition at:
http://vm.cfsan.fda.gov/list.html

Gateway to Government Food Safety Information at:
www.FoodSafety.gov

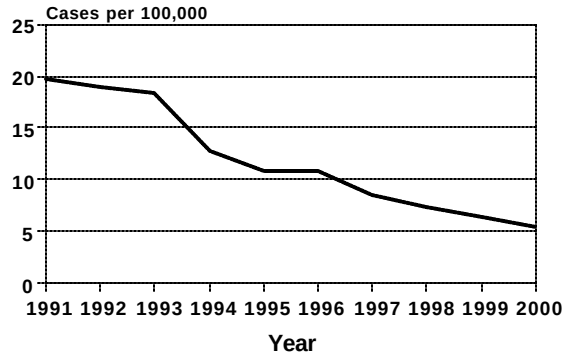
Acute Communicable Disease Control website at:
http://lapublichealth.org/acd/procs/b73/b73index.htm

GIARDIASIS

CRUDE DATA	
Number of Cases	499
Annual Incidence [a]	
LA County	5.4
United States	N/A
Age at Onset	
Mean	24 years
Median	17 years
Range	0 - 100 years
Case Fatality	
LA County	0.2%
United States	N/A

[a] Cases per 100,000 population.

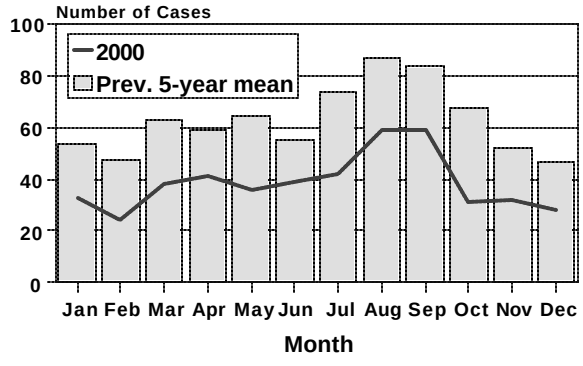
Figure 26
Giardiasis
Incidence Rates by Year
LAC, 1991 - 2000



ETIOLOGY

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 also may serve as vehicles of transmission. The disease is usually asymptomatic. Symptoms can include chronic diarrhea, bloating, cramps, fatigue, and weight loss. Complications are rare, but may include malabsorption of fats and fat-soluble vitamins. Children in day care represent a reservoir of disease in developed countries. Rural states report higher rates than urban states. There is no vaccine.

Figure 27
Giardiasis
Cases by Month of Onset
LAC, 2000 (N=499)



DISEASE ABSTRACT

- With 499 cases for 2000, giardia annual incidence continues to decline.
- Giardiasis in LAC affects mostly children aged less than 15 years.

STRATIFIED DATA

Trends: The annual rate continued its ten-year decline, with the lowest rate ever recorded in 2000 (Figure 26). Rates fell in all age, sex, and race/ethnic categories.

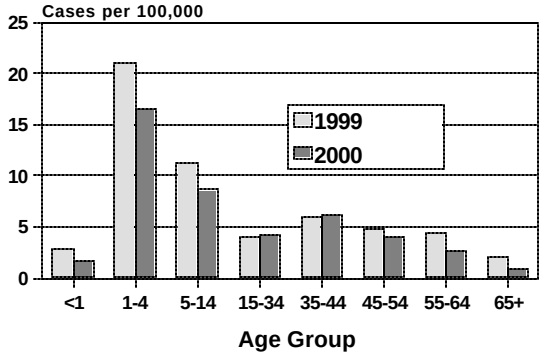
Seasonality: Rates are higher in the summer and fall, consistent with increased exposure of children to recreational waters. This pattern is seen nationally as well (Figure 27).

Age: The age-specific incidence of giardiasis was greatest in children aged 1-4 years (16.6 per 100,000) followed by children aged 5-14 years (8.6 per 100,000) (Figure 28). Rates fell in each group except teens and young adults (aged 15-44 years).

Sex: The male-to-female rate ratio was 1.7:1. This is higher than in recent years, but no specific reason is apparent. Recent studies demonstrate that most parasitic diseases occur with greater frequency among males, and sex hormones may influence immunologic resistance factors.

Figure 28

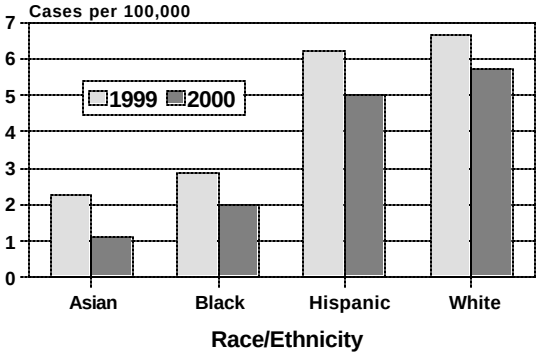
Giardiasis
Incidence Rates by Age Group
LAC, 1999 - 2000 (N = 497)



Race/Ethnicity: As usual, rates for Hispanics and Whites were substantially higher than those of Asians and Blacks (Figure 29). A similar rate drop was noted in each group compared to the previous year. White cases (mean age, 31 years; median age, 35 years) were significantly older than Hispanic cases (mean age, 17 years, median age, 9 years; $p < 0.0001$). The racial difference was true for both males and females, suggesting the age difference between Whites and Hispanics is not explained just by a high incidence among White males who have sex with other males.

Figure 29

Giardiasis
Incidence Rates by Race/Ethnicity
LAC, 1999 - 2000 (N = 422)



Location: The highest rates were recorded by West (10.2 per 100,000), Hollywood-Wilshire (9.9 per 100,000), and Alhambra (7.6 per 100,000) Health Districts. Cases in West and Hollywood-Wilshire Health Districts were more likely to be male than cases in all other districts ($p = 0.03$)

COMMENTS

There were no outbreaks reported. Risk factors were not summarized for 2000.

ADDITIONAL RESOURCES

Centers for Disease Control and Prevention. Giardiasis Surveillance — United States, 1992–1997. *MMWR* 2000; 49(SS-7):1-13. Available at:
http://www.cdc.gov/epo/mmwr/preview/mmwrhtml/ss4907a1.htm

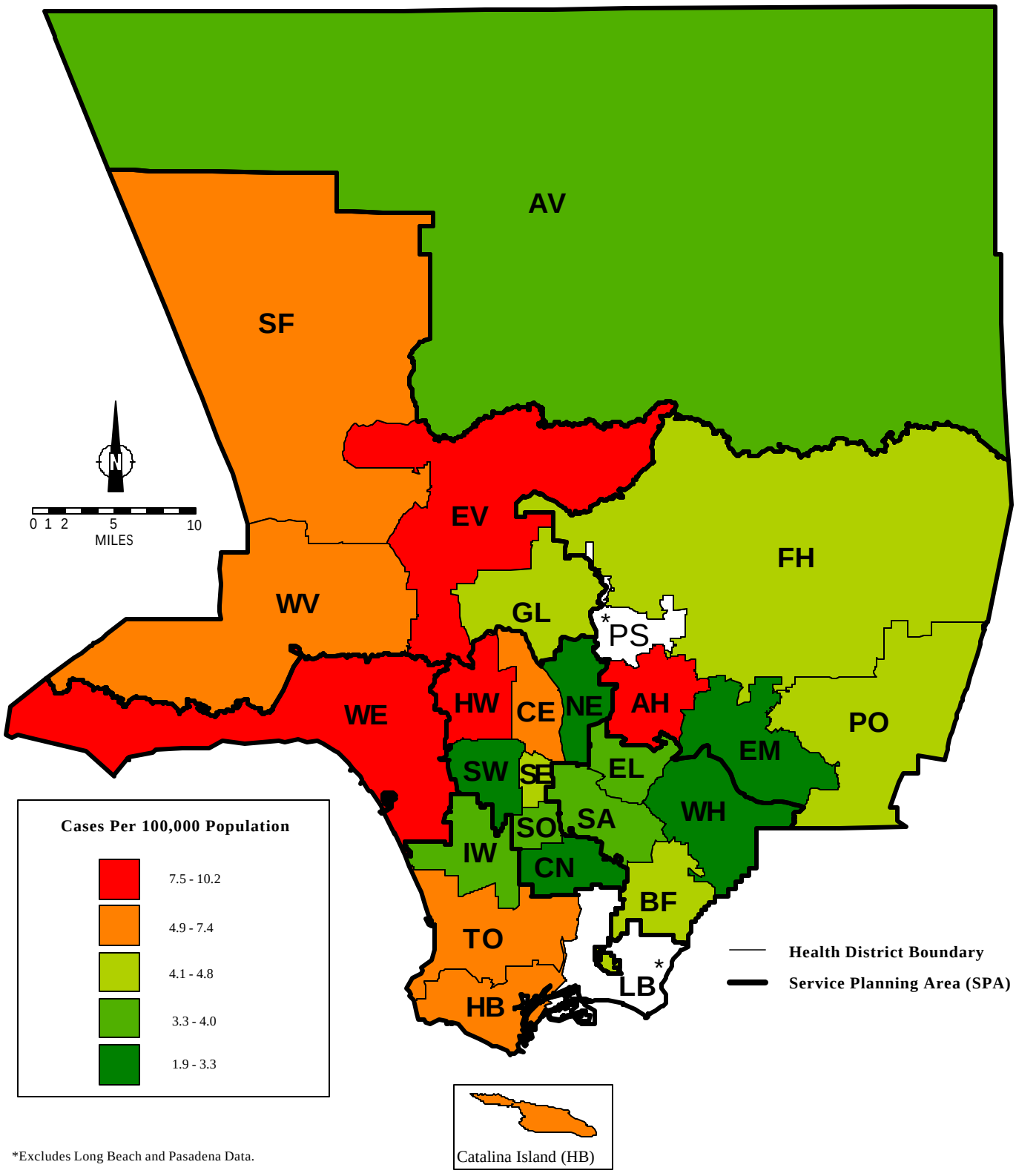
CDC Parasitic Disease Information. Fact Sheet – Giardiasis
http://www.cdc.gov/ncidod/dpd/parasites/giardiasis/factsht_giardia.htm

Centers for Disease Control and Prevention. Surveillance for Waterborne-Disease Outbreaks–United States, 1997–1998. *MMWR* 2000; 49(SS-4):1-35. Available at:
http://www.cdc.gov/mmwr/preview/mmwrhtml/ss4904a1.htm

Acute Communicable Disease Control website at:
http://lapublichealth.org/acd/procs/b73/b73index.htm

MAP 5. Giardiasis

Rates by Health District, Los Angeles County, 2000*



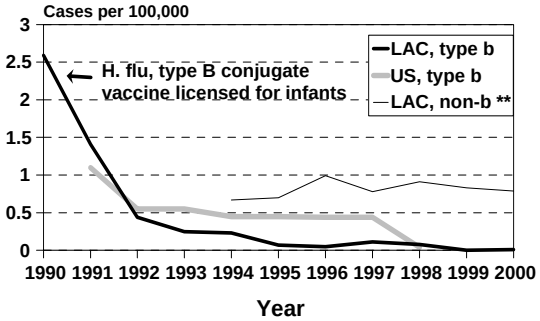
*Excludes Long Beach and Pasadena Data.

HAEMOPHILUS INFLUENZAE INVASIVE DISEASE

CRUDE DATA	
Number of Cases	73
Annual Incidence [a]	
LA County	0.79
California	0.32 [b]
United States	0.43
Age at Onset	
Mean	44 years
Median	54 years
Range	birth -102 years
Case Fatality	
LA County	8%
United States	N/A

Figure 30

***H. influenzae* Invasive Disease Incidence Rates by Year LAC and US,* 1990 - 2000**



* Hib not nationally notifiable until 1991; no national data for non-b types.
** No data before 1994; surveillance started in 1995.

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

ETIOLOGY

Haemophilus influenzae can cause both invasive and non-invasive disease. *H. influenzae* invasive disease can cause meningitis, sepsis, pneumonia, cellulitis, and septic arthritis. *H. influenzae* can be transmitted by contact with the respiratory secretions of individuals colonizing the organism. There are six encapsulated, typable strains (a-f) and unencapsulated, nontypable strains of *H. influenzae*. The disease primarily affects infants and the elderly, as well as immunocompromised individuals and those who have abnormal splenic function. An effective vaccine against *H. influenzae* type b (Hib) was licensed in 1990. *H. influenzae* type b is the only type that is vaccine-preventable.

DISEASE ABSTRACT

- The widespread use of the Hib vaccine since 1990 has dramatically decreased the incidence of *H. Influenzae* type b.
- In 2000, 73 cases of *H. influenzae* invasive disease were reported, with only one case reported as type b.
- No cases of Hib in LAC were reported in children aged less than 5 years.

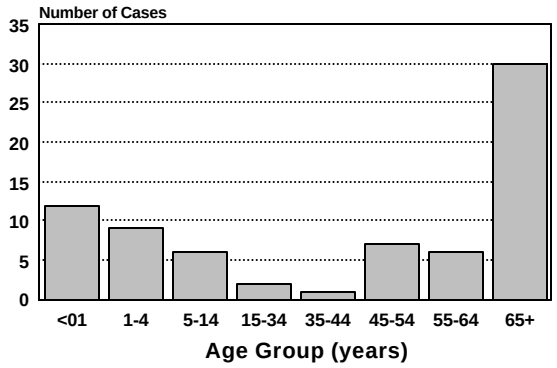
STRATIFIED DATA

Trends: Only one case of Hib invasive disease was reported in LAC during 2000. Since the Hib vaccine was licensed in 1990, Hib invasive disease has decreased from an incidence of 2.6 cases per 100,000 population to nearly zero. Incidence rates for non-b serotypes of *H. influenzae* have not varied substantially in LAC since the start of data collection in 1994 (Figure 30).

Age: The incidence of *H. influenzae* invasive disease was highest in persons over 65 years of age and infants. The lowest incidence was found in persons aged 35-44 years and the highest incidence in persons aged 65 years and older. Infants most likely had the highest rate of disease, but the number of cases in that age group was too small to calculate a reliable rate.

Figure 31

***H. influenzae* Invasive Disease by Age Group LAC, 2000 (N=73)**



COMMENTS

The only cases of *H. influenzae* investigated in LAC are those in persons aged under 30 years. Contacts of these cases are investigated and chemoprophylaxis is given when appropriate. Non-invasive disease caused by *H. influenzae*, such as conjunctivitis and respiratory infections, is neither investigated nor reported, regardless of the serotype.

H. influenzae type b

One case of Hib was detected in a 75-year-old female with sepsis. No cases of Hib were identified in individuals under the age of 30. Over 95% of infants who receive three doses of the Hib conjugate vaccine will develop a protective immune response.

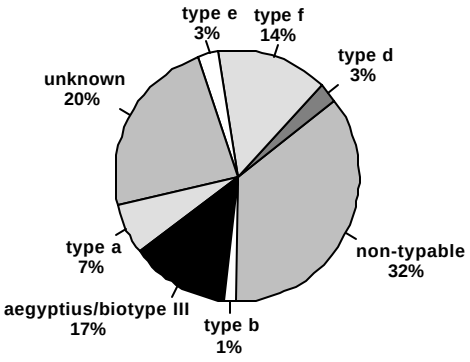
H. influenzae, non-b serotypes

Most *H. influenzae* isolates in 2000 (32%) were non-typable and 17% were *H. aegyptius/H. influenzae* biotype III (Figure 32). Fourteen percent of the isolates were type f and 20% were not serotyped.

Six deaths were reported in 2000 (one non-typable, one type d, one *H. aegyptius/H. influenzae* biotype III, and three unknown). Their ages ranged from six years to 86 years.

Figure 32

***H. influenzae* Invasive Disease by Serotype LAC, 2000 (N=73)**



ADDITIONAL RESOURCES

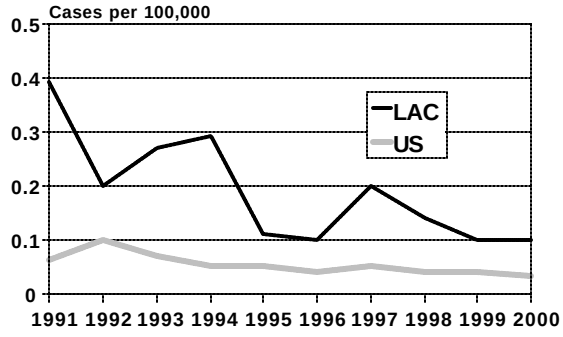
Additional information is available from the National Immunization Program at www.cdc.gov/nip , from the Immunization Action Coalition atwww.immunize.org, and from the Acute Communicable Disease Control website at http://lapublichealth.org/acd/procs/b73/b73index.htm.

HANSEN'S DISEASE (LEPROSY)

CRUDE DATA	
Number of Cases	9
Annual Incidence [a]	
LA County	0.10 [b]
California	0.10
United States	0.03
Age at Diagnosis	
Mean	50
Median	48
Range	27 - 83 years
Case Fatality	
LA County	0.0%
United States	N/A

Figure 33

Hansen's Disease
Annual Rates by Year of Diagnosis
LAC* and US, 1991 - 2000



*Rates unreliable due to small number.

[a] Cases per 100,000 population.
[b] Rates based on less than 19 observations are unreliable.

ETIOLOGY

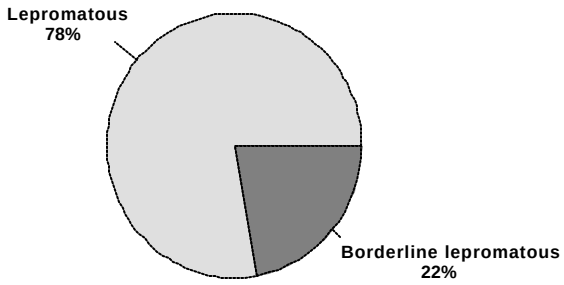
The infectious agent for Hansen's disease, or Leprosy, is *Mycobacterium leprae*, an acid-fast gram-positive bacillus. Although the exact mode of transmission is not clearly established, household and prolonged close contact appear to be important. Common symptoms include skin lesions and peripheral nerve involvement, leading to hypesthesia, anesthesia, paralysis, muscle wasting or trophic ulcers.

DISEASE ABSTRACT

- The 2000 incidence rate of Hansen's disease stayed the same as last year.
- All cases acquired their illness from outside the US, the majority of these being Hispanic males.
- In LAC, the lepromatous form of disease is the most common (Figure 34).

Figure 34

Types of Newly Diagnosed Hansen's Disease
Los Angeles County, 2000
(N=9)



STRATIFIED DATA

Trends: The incidence of Hansen's disease declined 10% from 10 cases in 1999 to 9 cases in 2000 (Figure 33).

Age: The average age at the time of diagnosis is 50 years (range 27-83 years). Due to the insidious progression of disease, the onset date of illness is imprecise and may be several years prior to first physician visit.

Sex: All cases were male. The reason for this male preponderance is unknown.

Race/Ethnicity: As in previous years, cases were mainly Hispanic (7 cases) and Asian (2 cases) who had emigrated from countries with endemic Hansen's disease. Both Asian cases were from the Philippines and all Hispanic cases were from Mexico.

Location: All Hansen's disease cases acquired their illness outside the US.

COMMENTS

ACDC maintains a Hansen's disease registry of all patients in LAC who are currently receiving or should be receiving medical follow-up for this disease. In 2000, there were a total of 330 Hansen's disease cases under medical care in LAC. Patients are monitored until they (1) no longer require medical supervision, (2) move out of LAC, (3) are lost to follow-up, or (4) die.

ADDITIONAL RESOURCES

Additional information about Hansen's disease is available from:

Centers for Disease Control and Prevention, Division of Bacterial and Mycotic Diseases at:
http://www.cdc.gov/ncidod/dbmd/diseaseinfo/hansens_t.htm

WHO Action Programme for the Elimination of Leprosy at:
http://who.int/lep/

Acute Communicable Disease Control website:
http://lapublichealth.org/acd/procs/b73/b73index.htm

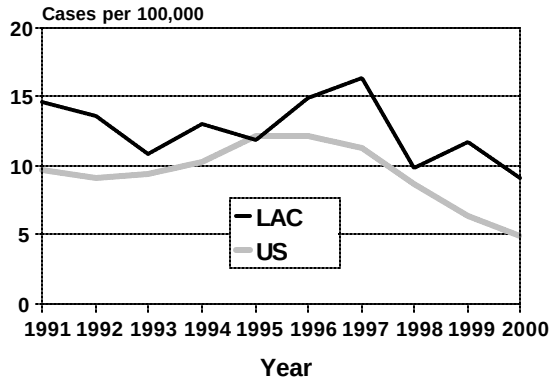
HEPATITIS A

CRUDE DATA	
Number of Cases	839
Annual Incidence [a]	
LA County	9.1
California	9.0
United States	4.9
Age at Onset	
Mean	27
Median	22
Range	5 months - 97 years
Case Fatality	
LA County	0.5%
United States	N/A

[a] Cases per 100,000 population.

Figure 35

Hepatitis A
Incidence Rates by Year
LAC and US, 1991 - 2000



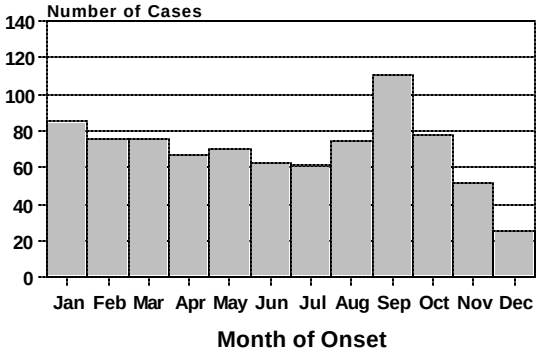
ETIOLOGY

Hepatitis A virus (HAV), a RNA-virus of the Picornaviridae family, is a vaccine-preventable disease usually transmitted by fecal-oral route, person-to-person, or through vehicles such as food.

Signs and symptoms of HAV 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.

Figure 36

Hepatitis A Cases
by Month of Onset
LAC, 2000



DISEASE ABSTRACT

- The annual incidence rate of HAV in LAC again decreased in 2000.
- There were more cases in summer to early autumn and fewer cases in winter.
- With few exceptions, age, race, and gender characteristics were similar to the last five years.
- Hospitalization rates were highest among children and young adults.

STRATIFIED DATA

Trends: The rate of HAV in LAC has remained steady, around 9 per 100,000, since 1998. From 1993-1997, it had ranged from 10-15 per 100,000 (Figure 35).

Seasonality: The increase in HAV cases historically observed in summer to early autumn and decrease in winter was observed again in 2000 (Figure 36). A large portion of this seasonal increase was probably influenced by travel.

Age: The overall mean age for HAV cases in 2000 was 27 years. The mean age is reflective of the Hispanic group, as their mean age was 18 years, while Black, White, and Asian cases had means of 40, 35, and 41 years, respectively. Age-specific rate remained highest in children aged 5-14 years with a rate of 20 per 100,000 (Figure 37). The highest subgroup rate within that age group was among Hispanic cases (24 per 100,000).

Sex: The overall HAV male-to-female rate ratio was 1.3:1. Among Hispanic cases, the male-to-female rate ratio was 1:1, while among White, Asian, and Black cases, incident rates were higher among males, at 2:1, 1.5:1, and 2:1, respectively.

Figure 37

Hepatitis A
Incidence Rates by Age Group
LAC, 2000 (N = 839)

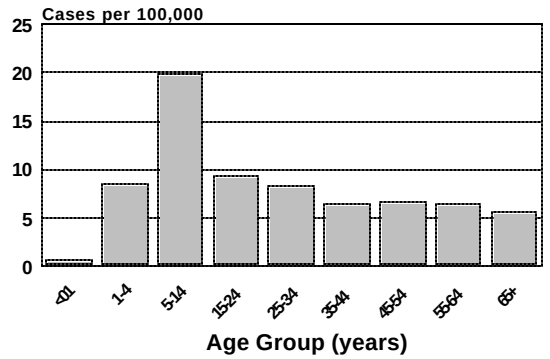
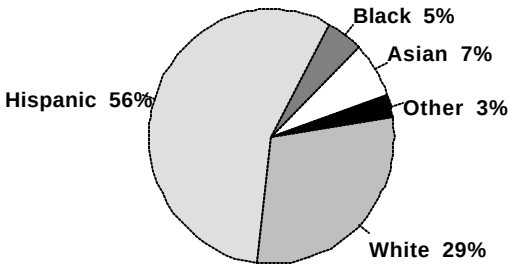


Figure 38

Hepatitis A
Percent of Report by Race/Ethnicity
LAC, 2000 (N = 746*)



* Does not include cases with unknown Race/Ethnicity

Race/Ethnicity: Overall crude rates decreased for all ethnic groups in 2000. The highest 2000 rate, as in prior years, was among Hispanics (9.6 per 100,000), followed by Whites (7.4). The rates for Asian (4.6) and Blacks (4.6) remained significantly lower, with the rate for Blacks down from 10.4 per 100,000 population in 1999 (Figure 38).

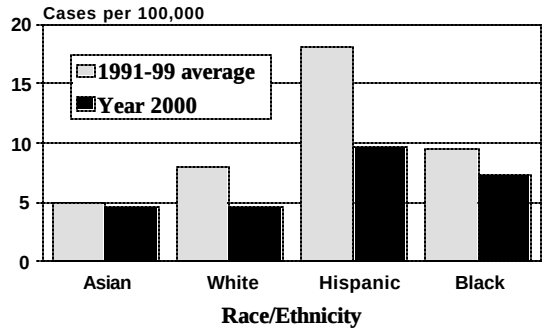
Location: Map 5 shows district-specific HAV rates for 2000. The highest rates were in Hollywood-Wilshire (13.1 cases per 100,000 population), closely followed by Alhambra (13.0), South (11.9), and Central (10.8). Looking at distribution by Service Planning Area (SPA, Figure 40), SPAs 4, 6, and 7 have the highest rates (9.9, 9.8,and 8.8 per 100,000, respectively), while SPAs 3, 5, and 8 have rates significantly lower than the county average.

Severity of Illness: Among all HAV cases in 2000, there were 4 fatalities (case-fatality rate = 0.5%) aged 39-82 years, with no risk factors identified. Hospitalization (7% overall) was most prevalent among children and young adults–with increased liver enzymes, jaundice, fever, nausea and vomiting reported by over 50% who were hospitalized.

Risk Factors: Recent travel (n = 209) outside of the U.S. was the most common risk factor reported in 2000 (25%), followed by eating raw shellfish (9.7%), while 40% did not report any risk factor. Among travelers, Latin-American destinations (80%) were the most frequently cited.

Figure 39

Hepatitis A
Incidence by Race/Ethnicity
LAC, 1991 - 2000

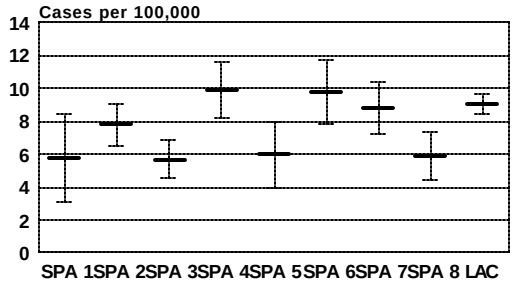


PREVENTION

Good personal hygiene and proper sanitation can prevent HAV. More importantly, since 1995, vaccines have been available for the permanent prevention of HAV infection in persons aged 2 years and older. Immune globulin is also available for short-term prevention of HAV infection and post-exposure prophylaxis in person of all ages. Most infections result from contact with a household member or sexual partner who has HAV. Casual contact, such as that in the office, factory, or school setting, does not spread the virus.

Figure 40

Hepatitis A Virus Infection Rates
by Service Planning Area
LAC, 2000



Over the past year, there was a legislative effort to require HAV immunization for children entering kindergarten and preschool in California. Although it was not successful, many people still believe that such a law will probably be enacted in the future.

In 1999, the Advisory Council on Immunization Practices (ACIP) recommended universal childhood vaccination in states, counties, and communities (including LAC) with rates equal to or greater than twice the national average (20 cases per 100,000) during 1987-1997. LAC began providing the vaccine to children, aged 2-18 since August 1999. Immune globulin is recommended for certain pre-exposure situations.

Widespread post-exposure prophylaxis with immunoglobulin are used to control outbreaks in Los Angeles County, but with questionable success. Since HAV vaccination has become available and in more routine use, it has been suggested that outbreaks of HAV should be effectively interrupted through vaccine use, leading to a sustained reduction in disease incidence.

COMMENTS

There was a significant decrease in the number of cases of HAV reported in LAC since 1997. This decrease may be the result of LAC Health Department following the ACIP recommendation of HAV vaccine and Vaccines for Children (VFC) Program. Other potential reasons for the decrease may be greater public awareness or improved hygienic and sanitary conditions–including improved water supplies, sewage disposal, food sanitation, and less crowded living conditions. Under-reporting and under-diagnosis by physicians cannot be excluded as a reason for the decrease.

The 839 HAV cases reported in 2000 were confirmed with a laboratory test for the IgM antibody to HAV, which indicates acute infection. Studies have shown that many children who acquired HAV were asymptomatic and not tested for HAV-IgM. Even when these children's lab results were confirmed IgM positive, many private health care providers and laboratories did not report HAV cases to county health officials. Therefore, support and encouragement for physician compliance with the ACIP recommendations should continue.

Most cases of HAV result from person-to-person transmission during community-wide outbreaks in areas with high and intermediate rates of HAV. In LAC, there was only one outbreak of HAV in 2000 in a health care facility involving 10 staff members. No suspect sources, such as symptomatic or asymptomatic patients in common to these staff members, were apparent.

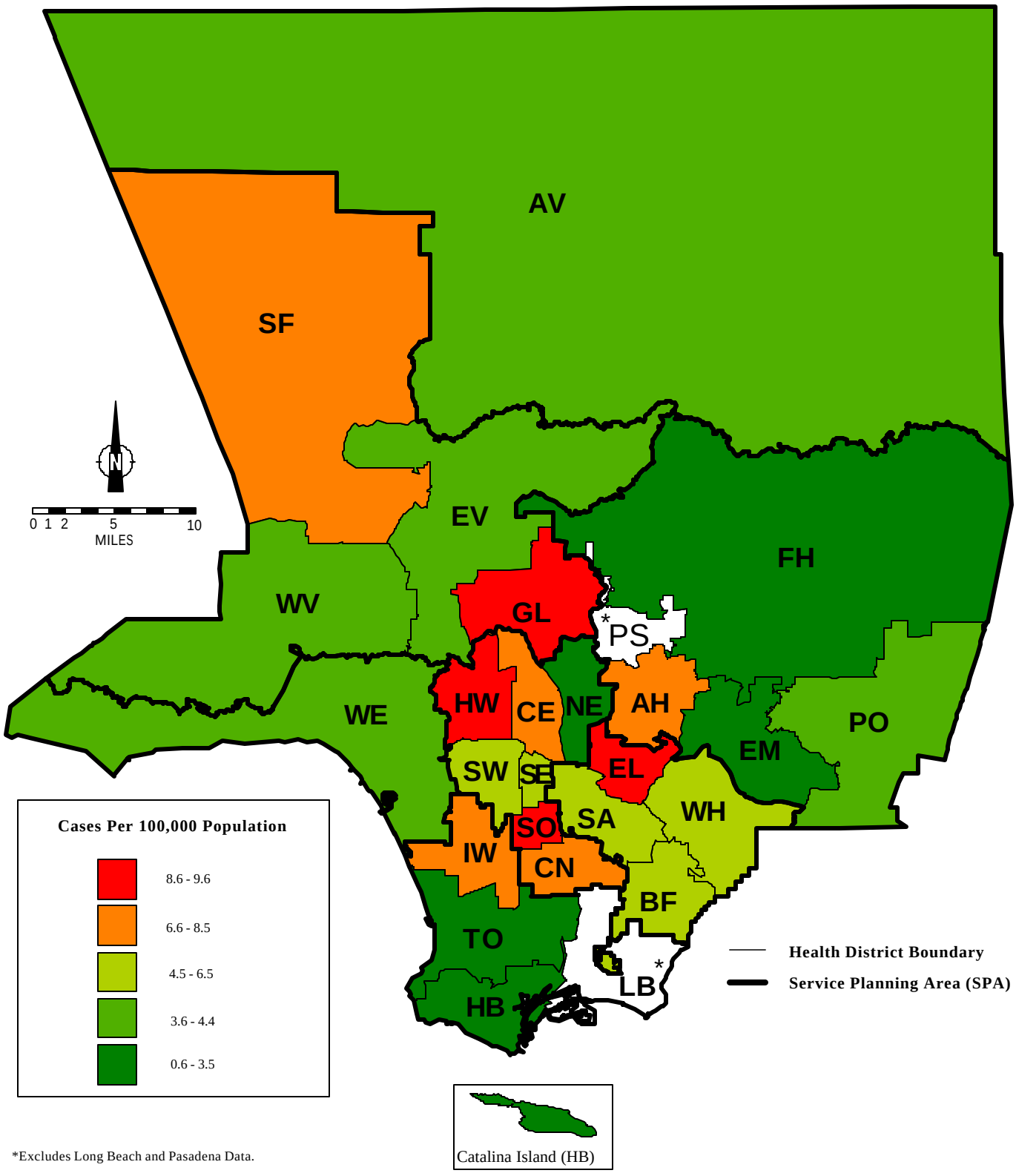
ADDITIONAL RESOURCES:

B-73 Communicable Diseases Control, A Manual of Departmental Rules, Regulations and Control Procedures at:
http://lapublichealth.org/acd/procs/manual.htm

http://www.cdc.gov/ncidod/diseases/hepatitis/slideset/bibliography.htm

http://www.cdc.gov/ncidod/diseases/hepatitis/a/index.htm

MAP 6. Hepatitis A
Rates by Health District, Los Angeles County, 2000*



*Excludes Long Beach and Pasadena Data.

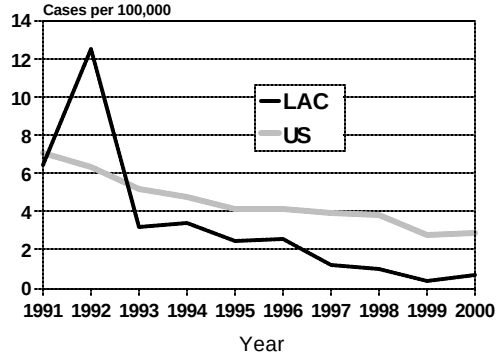
HEPATITIS B, ACUTE

CRUDE DATA	
Number of Cases	65
Annual Incidence [a]	
LA County	0.7
California	3.3
United States	2.9
Age At Onset	
Mean	36 years
Median	32 years
Range	18 - 67 years
Case Fatality	
LA County	N/A
United States	N/A

[a] Cases per 100,000 population.

Figure 41

Acute Hepatitis B
Incidence Rates by Year
LAC and US, 1991 - 2000

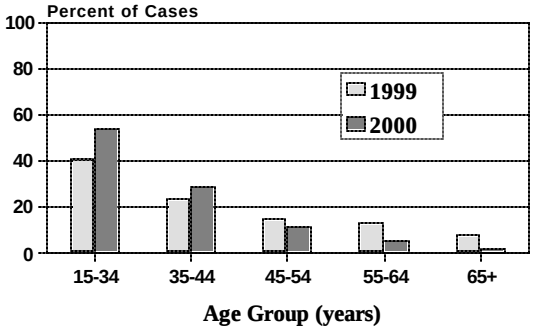


ETIOLOGY

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), a DNA-virus of the Hepadnaviridae family. It is also transmitted from mother to infant during birth. Symptoms, which occur in less than half of those infected, may include fatigue, anorexia, abdominal pain, nausea and vomiting, jaundice and mild fever. Approximately 10% of those acutely infected will remain infected chronically. Death from cirrhosis or liver cancer is estimated to occur in 15-25% of those with chronic infection. Infants infected perinatally, but who remain acutely asymptomatic, are not included in this category.

Figure 42

Acute Hepatitis B
by Age Group
LAC, 1999 - 2000 (N=65)



DISEASE ABSTRACT

- In 2000, the number of cases of acute hepatitis B remained relatively low.
- All acute cases were adults aged 18 years or older and the majority of cases were in men.
- Multiple sexual partners remained the most frequently identified risk factor.

STRATIFIED DATA

Trends: Cases of hepatitis B in LAC have remained low since 1993 (Figure 41). Acute hepatitis B continues to be a disease primarily of young adult males.

Seasonality: None.

Age: Cases ranged in age from 18 to 85 years, with 50% occurring in those aged under 35 years. Since 1999, there was an increase in cases among younger adults aged 15-34 years (Figure 42).

Sex: The male-to-female rate ratio was 2.2:1. The number of cases in males exceeded those in females in all ethnic groups (Figure 43).

Race/Ethnicity: The burden of acute disease was proportionately lowest in Hispanics, who comprise 47% of the population in 2000, but only 22% of hepatitis B cases (Figure 44).

Location: SPA 8 (South Bay/Harbor) had the most cases with 17, followed by SPA 4 (Metro) with 12 and SPA 2 (San Fernando) with 11. SPA 1 (Antelope Valley) had no cases. Six health districts–Antelope Valley, San Fernando, El Monte, Northeast, Compton, and Whittier–had no cases reported.

COMMENTS

Surveillance for hepatitis B is passive and dependent solely upon reports from providers and laboratories. The majority of these reports do not provide a definitive diagnosis or enough information to designate a case as acute or chronic. Additional information is obtained through patient interview and further investigation. With rare exception, an acute case is one in which the information obtained is sufficient to meet the CDC case criteria.

Figure 43

Acute Hepatitis B
by Gender and Race/Ethnicity
LAC, 2000

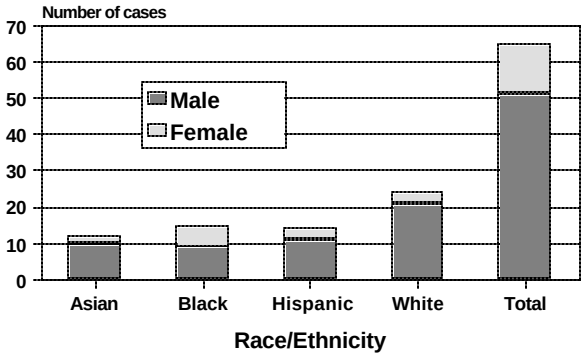
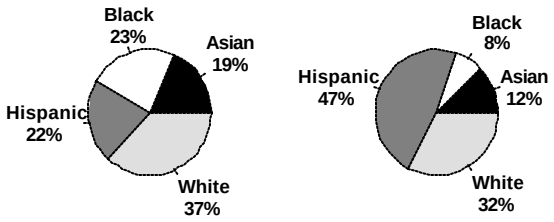


Figure 44

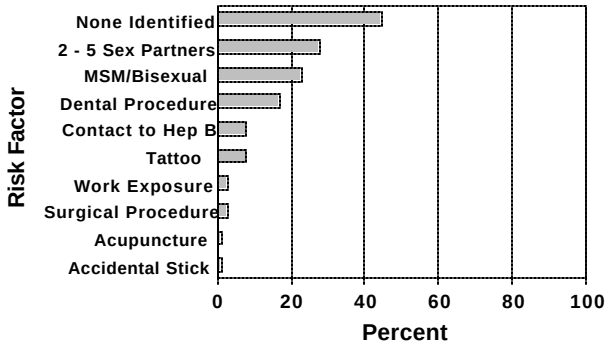
Acute Hepatitis B
Percent Cases by Race/Ethnicity
LAC, 2000 (N = 62)*



*Does not include 3 cases in which the race or ethnicity unknown.

Figure 45

Acute Hepatitis B
Reported Risk Factors
LAC, 2000 (N=65)*



*Includes 36 cases in which one or more risks were identified.

In 2000, there were 65 cases designated as acute hepatitis B following investigation. All were in adults aged 18 years or older. Eighty-three percent were in adults aged 18-44 years. One or more risks were identified in only 55% of cases. The risk factor most often reported by both men and women was multiple sexual partners, accounting for 28% of all risks identified (Figure 45). Fourteen percent reported contact to a person with hepatitis B disease.

There were 7,675 chronic hepatitis B reports. Fifty-one percent were in younger adults aged18- 44 years. Data on chronic cases, which unlike acute cases are not routinely investigated or interviewed, do not include risk factor information. However, it is reasonable to assume that the risks for acquiring disease in those with chronic hepatitis B are similar to the risks reported by those with acute hepatitis B. The current approach of vaccination for adolescents and others at high risk, as well as education aimed at eliminating, reducing, or mitigating high-risk behaviors in sexually active adults, should continue until more is known about the sexual behavior of persons with chronic hepatitis B. Ongoing improvements in data collection and analysis will provide a more accurate description of this infection in the future.

ADDITIONAL RESOURCES

Epidemiology and Prevention of Viral Hepatitis slide set available at:
http://www.cdc.gov/ncidod/diseases/hepatitis/slideset/hep_b/slide_1.htm

CDC Publications, Viral Hepatitis, available at:
http://www.cdc.gov/ncidod/diseases/hepatitis/resource/pubs.htm

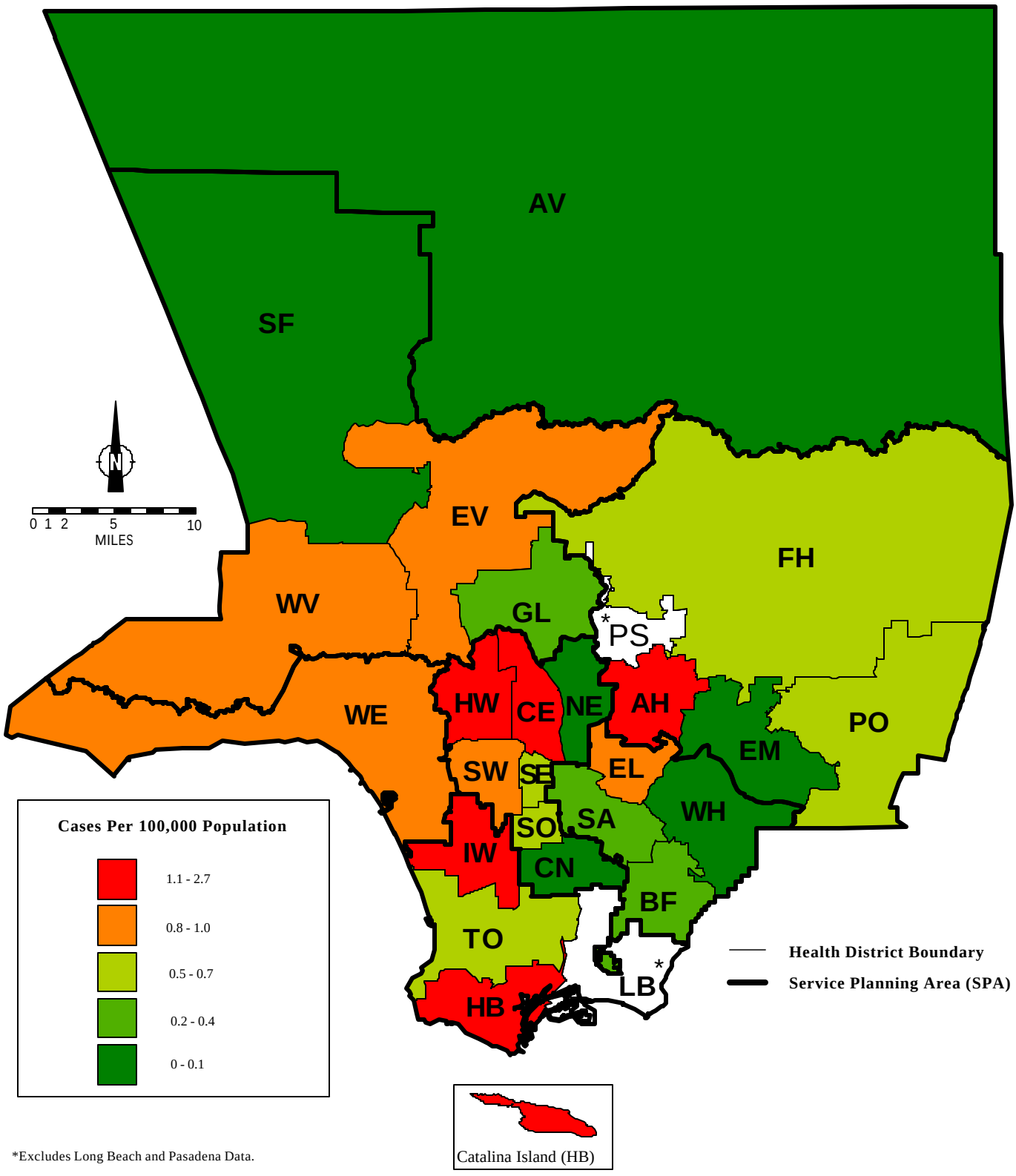
Viral Hepatitis B, available at: http://www.cdc.gov/ncidod/diseases/hepatitis/b/index.htm

Immunization Action Coalition, available at:
www.immunize.org/

Hepatitis B Foundation, available at:
http://www.hepb.org/

Acute Communicable Disease Control website:
http://lapublichealth.org/acd/procs/b73/b73index.htm

MAP 7. Hepatitis B
Rates by Health District, Los Angeles County, 2000*



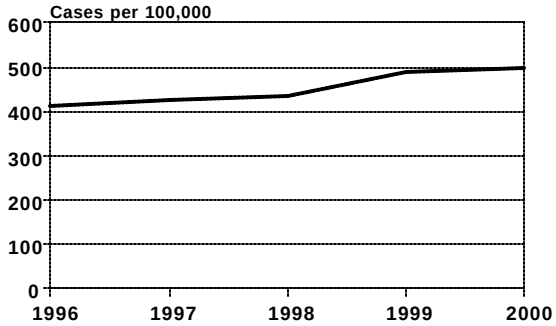
*Excludes Long Beach and Pasadena Data.

PERINATAL HEPATITIS B PREVENTION PROGRAM

CRUDE DATA	
Number of Infants Born to HBsAg-Positive Mothers	718
Annual Incidence [a]	
LA County	497
California	NA
United States	NA
Case Fatality	0.0%
LA County	N/A
United States	N/A

Figure 46

Perinatal Hepatitis B Incidence Rates of Infants Born to HBV-Postive Mothers, by Year LAC, 1996 - 2000



[a] Incidence based on number of infants born to HBsAg-positive mothers per 100,000 live births.

ETIOLOGY

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), a DNA-virus of the Hepadnaviridae family. It is also transmitted from mother to infant during birth. An estimated 90% of infants who become infected by perinatal transmission will have 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.

DISEASE ABSTRACT

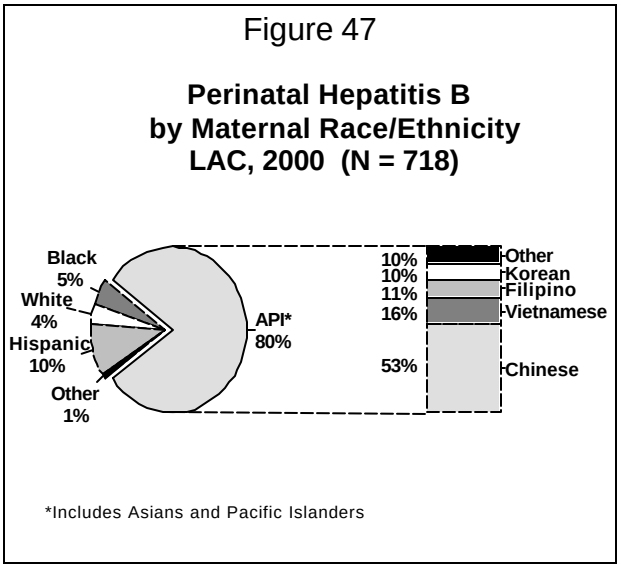
- The Immunization Program's Perinatal Hepatitis B Prevention Program (PHBPP) conducts case management of chronic hepatitis B surface antigen (HBsAg)-positive pregnant women, their newborns, and household contacts.
- The vast majority of cases (80%) were among Asian/Pacific Islander women, in whom hepatitis B disease is endemic.
- Of infants born to HBsAg-positive mothers, 93% were immunized within 12 hours and 96% within 24 hours of birth.
- Of those responding to a survey 3 to 9 months after vaccination was completed, 93% were found to be protected against HBV, 5% were still susceptible, and 3% were found to have been infected with HBV.

STRATIFIED DATA

Trends: In 2000, 718 infants (including 6 sets of twins) were born to 712 HBsAg-positive women. The incidence of infants born to HBsAg-positive mothers was essentially unchanged from 1999 (Figure 46).

Race/Ethnicity: The majority of the cases were among Asian/Pacific Islanders (API), in whom hepatitis B disease is endemic. Five hundred seventy-one (80%) of the women were API, and 76 (10%) were Hispanic (Figure 47). Of API women, 303 (53%) were Chinese, 90 (16%) Vietnamese, 62 (11%) Filipino, 57 (10)% Korean, and 59 (10%) other API–including women from Samoa, Tonga, Japan, Laos, Burma, Mongolia and India.

Figure 47



CASES COMPLETED FOR FOLLOW-UP IN 2000

In 2000, follow-up was completed for 842 women, their newborns, and household contacts. Eighty-two mothers were excluded (27 mothers miscarried, 21 transferred/moved out of LAC prior to delivery, 12 were unable to locate before delivery and 22 were retested and found to be HBsAg negative). Numerous attempts are made by case managers to complete follow up of infants and household contacts; therefore, some of the cases completed in 2000 were reported in 1998 and 1999.

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

Infant Immunoprophylaxis Completion Rates: Of a total of 852 infants (including 10 sets of twins), 93% received hepatitis B vaccine #1 and HBIG within 12 hours of birth, while 97% received hepatitis B vaccine #1 and 96% received HBIG within 24 hours of birth. Of these infants, 10 transferred to other states or counties before six months of age, leaving a total of 842 eligible to complete the hepatitis B vaccine series. Of those 842 remaining infants, 89% (750) received HBIG and a complete three-dose series of hepatitis B vaccine (Table 1).

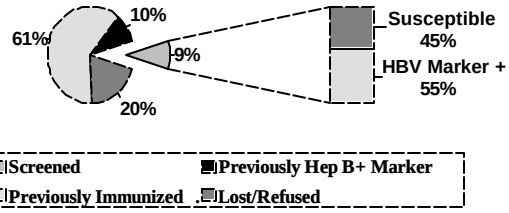
Table 1. Summary of Infant Hepatitis B Immunoprophylaxis, LAC, 2000

Hepatitis B Immunoprophylaxis	Number of Infants	Number of Eligible Infants	Percent
Infants who received hepatitis B vaccine #1 within 12 hours of birth	791	852	93%
Infants who received hepatitis B vaccine #1 within 24 hours of birth	823	852	97%
Infants who received HBIG within 12 hours of birth	789	852	93%
Infants who received HBIG within 24 hours of birth	819	852	96%
Infants who completed HBIG/3-dose hepatitis B vaccine series	750	842*	89%

* This includes 29 infants who moved out of the country before 6 months of age.

Figure 48

Perinatal Hepatitis B HBV Marker Status of Household Contacts to Cases Closed in 2000 LAC (N = 1,208)



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 1,188 household and sexual contacts identified, 712 (60%) had already been vaccinated against hepatitis B, and 118 (10%) were known to have serologic evidence of hepatitis B infection. Of the remaining 358 (30%) contacts, 110 were screened for serologic evidence of hepatitis B infection or immunity, while 240 (20%) refused screening or vaccination, were lost to follow-up, or moved; 8% were vaccinated without screening. Of the 110 household contacts who were serologically screened, 62 (56%) had positive markers for hepatitis B and therefore did not need vaccine. Forty-eight (44%) of the screened household contacts were seronegative–that is, susceptible to hepatitis B infection (Figure 48). At the time of completion of case management for the HBsAg-positive mothers, 36 (75%) of the susceptible household contacts had completed all three doses of hepatitis B vaccine.

Post-vaccination serology results: Postvaccination serology testing of infants born to HBsAg-positive mothers is recommended 3 to 9 months after completing immunoprophylaxis to verify vaccine failure or success. Letters requesting postvaccination serology results were mailed to pediatric health care providers of infants tracked by the PHBPP. The postvaccination serology results of 214 infants whose follow-up was completed in 2000 were received. Of these, 198 (93%) had antibodies to hepatitis B surface antigen indicating protection against HBV, 6 (3%) were HBsAg positive and infected, and 10 (5%) were negative for both markers and revaccination was recommended**.**

ADDITIONAL RESOURCES

Epidemiology and Prevention of Viral Hepatitis slide set.
Available at:
http://www.cdc.gov/ncidod/diseases/hepatitis/slideset/hep_b/slide_1.htm

CDC Publications, Viral Hepatitis.
Available at
http://www.cdc.gov/ncidod/diseases/hepatitis/resource/pubs.htm

Viral Hepatitis B.
Available at:
http://www.cdc.gov/ncidod/diseases/hepatitis/b/index.htm

Immunization Action Coalition. Available at:
www.immunize.org

Hepatitis B Foundation. Available at:
http://www.hepb.org/

Acute Communicable Disease Control website:
http://lapublichealth.org/acd/procs/b73/b73index.htm

HEPATITIS C VIRUS INFECTION

CRUDE DATA	
Number of Cases	10
Annual Incidence [a]	
LA County	0.34
California	0.36
United States	1.17
Case Fatality	
LA County	0%
United States	N/A

[a] Cases per 100,000 population.

ETIOLOGY

Hepatitis C virus (HCV) is a an RNA virus–one of at least 5 different viruses associated with liver disease–that is predominantly transmitted through contact with contaminated blood and blood products. Sexual and perinatal transmission of HCV appears to occur less frequently, but its epidemiology has yet to be fully elucidated. There is no vaccine available for HCV, so primary prevention efforts concentrate mainly on risk-behavior modification– specifically, avoiding contact with contaminated blood.

Symptoms of acute infections can include jaundice, fatigue, anorexia, nausea, or vomiting; however, up to 80% of acute infections have mild or no symptoms and usually go undetected. Hepatitis C completely resolves in only 15% of infections and progresses to a chronic illness in 60 - 70%. Medical complications occur decades after initial infection–including cirrhosis, liver failure, and hepatic cancer. Once infection has taken hold, secondary prevention recommendations include getting vaccinated for hepatitis A and B viruses; stopping or reducing alcoholic beverages; avoiding other high-risk behaviors; and seeing a doctor to be assessed for early treatment.

DISEASE ABSTRACT

- During 2000 there were 10,044 case reports of HCV infection–including acute, chronic, and resolved cases–a 34% increase from 1999.
- Of these, only 10 could be confirmed as acute infections.

COMMENTS

Because of the insidious nature of this agent, identification of infections during their acute phase is problematic. CDC defines a case of acute HCV as follows:

- A positive HCV test (either antibody test–EIA or RIBA–or detection of the HCV-RNA antigen by polymerase-chain reaction);
- Evidence of jaundice, or an onset date within six months of the date of diagnosis/report;
- Serum alanine aminotransferase (ALT) greater than 2.5 times the upper limit of normal;
- No evidence of either acute hepatitis A or B disease.

Even with this suspect definition, with further public health investigation, many were determined to be chronic, with prior history of anti-HCV positive laboratory tests.

Since 1995, yearly increases in reports of chronic infections are likely the result of: (1) the CDC's recommendation that individuals transfused prior to 1992 be screened for HCV; (2) the Food and Drug Administration's targeted look-back program, which traced recipients of HCV-positive-donor blood products as far back as 1988; and (3) increased public awareness.

Universal blood product screening in 1990 and heat-inactivation of other blood concentrates since 1987 have dramatically reduced recipient-associated cases of hepatitis C. That action leaves reduction of high-risk behaviors as the chief further means to prevent transmission. Education aimed at reducing high-risk behaviors for hepatitis B and HIV transmission–such as sharing injection drug equipment–should have additional benefit in reducing hepatitis C cases.

Once chronic infection has occurred, consuming alcohol and becoming co-infected with HIV or other hepatitis A or B virus can accelerate the progression of hepatitis C disease to cirrhosis, liver failure, and hepatocellular carcinoma. Additional funding is necessary to study the feasibility of incorporating HCV screening, counseling, diagnosis, treatment and administration of hepatitis A and hepatitis B vaccine into existing programs that provide drug/alcohol treatment as well as HIV screening and treatment.

ADDITIONAL RESOURCES

American Liver Foundation website:
http://www.liverfoundation.org/

International Liver Foundation website:
http://www.hepfi.org/infomenu.htm

CDC website:
http://www.cdc.gov/ncidod/diseases/hepatitis/

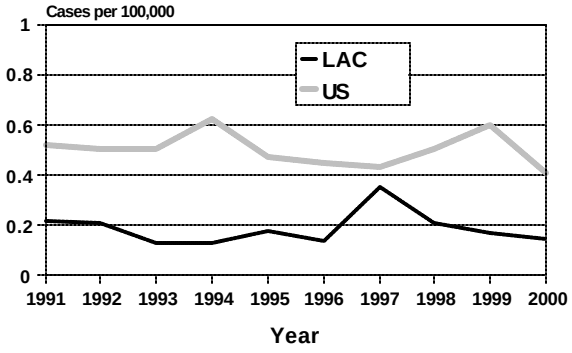
Acute Communicable Disease Control website:
http://lapublichealth.org/acd/procs/b73/b73index.htm

LEGIONELLOSIS

CRUDE DATA	
Number of Cases	14
Annual Incidence [a]	
LA County	0.15
California	0.16
United States	0.41
Age at Onset	
Mean	56 years
Median	49 years
Range	27 - 87 years
Case Fatality	
LA County	7.7%
United States	N/A

Figure 49

Legionellosis Rates by Year LAC and US, 1991 - 2000



[a] Cases per 100,000 population.

ETIOLOGY

Legionellosis is a bacterial infection with two distinct clinical forms: Legionnaires' disease and Pontiac fever. Legionnaires' disease is the more severe form, with pneumonia and a reported case-fatality rate as high as 39%. Pontiac fever is a self-limited, flu-like illness without pneumonia. Ninety percent of cases of Legionnaires' disease are caused by *Legionella pneumophila* serogroup 1 (Lp1). Approximately 11 other species of *Legionellae* are known to cause illness in humans, but mainly in persons with significant underlying illness. Transmission occurs through inhalation of an aerosol containing the bacteria or by aspiration of contaminated water. Pontiac fever may represent a hypersensitivity reaction to inhaled organisms rather than bacterial invasion. There is no vaccine available for legionellosis.

DISEASE ABSTRACT

- All reported cases of legionellosis in 2000 were due to sporadic, community-acquired Legionnaires' disease.
- LAC had no cases of Pontiac fever in 2000.
- The incidence of legionellosis in LAC remains well below the overall US rate of 0.50 cases per 100,000 population.

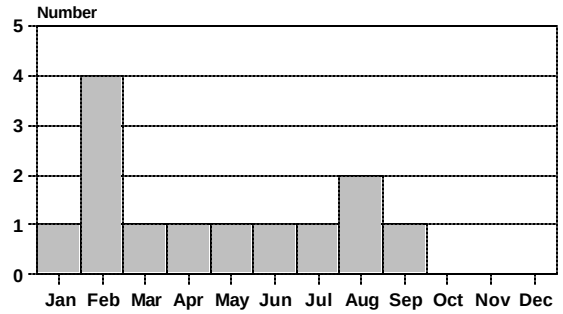
STRATIFIED DATA

Trends: The incidence of legionellosis continued to decline for the third consecutive year from an all-time high in 1997, which was due to a small community outbreak (Figure 49).

Seasonality: In LAC for 2000, cases occurred throughout the year, but peaked in February (Figure 50). National surveillance data consistently show a slight increase in incidence in legionellosis during the summer and autumn months, possibly representing increased exposure related to travel and/or air cooling systems.

Figure 50

Legionellosis by Month of Onset LAC, 2000 (N = 14)



Age: The mean age of reported cases was 56 years (range 27-87 years).

Gender: The male-to-female rate ratio was 3:1. The disproportionately higher rates of legionellosis among males has generally been attributed to a higher prevalence of cigarette smoking among males in the older age groups. A decreasing gender disparity in smoking as a risk factor for legionellosis is expected to eventually narrow the gender gap in legionellosis incidence.

Race/Ethnicity: Of the 14 cases, 57% (8) were Hispanic, 29% (4) were White, and 14% (2) were Black.

Location: Cases were geographically distributed throughout LAC; health districts of residence included Hollywood/Wilshire, Pomona, West, Alhambra, East Valley, Glendale, Northeast, West, San Fernando, and West.

COMMENTS

One or more recognized risk factors for Legionnaires' disease was present in 11 (79%) cases, including heavy cigarette use and/or chronic pulmonary disease (6 cases); malignancy or immunodeficiency syndromes (3 cases); diabetes (1 cases); and advanced age (1 case).

Six of the cases of pneumonia were confirmed as Legionnaires' disease by culture, 6 by demonstration of Lp1 antigen in urine, 1 by detection of *Legionella* in respiratory secretions by direct fluorescent antibody testing, and 1 by four-fold rise in serum *Legionella* antibodies. *L. pneumophila* was the species implicated in 13 cases (93%), while *L. micdadei* was associated with 1 case.

The reported incidence of legionellosis in LAC remains consistently lower than the national rate. Empiric antibiotic therapy for community-acquired pneumonia without appropriate diagnostic testing may have contributed to lower than anticipated rates. In 2000, 15 reports were received that, on investigation, did not meet the surveillance case definition for legionellosis. Nearly all of these diagnoses were based on a single elevated serologic antibody titer, suggesting that some clinicians are unfamiliar with the appropriate use of laboratory tests for confirmation of legionellosis.

ADDITIONAL RESOURCES

Guidelines:

- Centers for Disease Control and Prevention: Guidelines for prevention of nosocomial pneumonia. *MMWR* 1997;46(RR-1):1-79.
  www.cdc.gov/ncidod/hip/pneumonia/pneu_mmw.htm

- Allegheny County Health Department: *Approaches of 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

- Acute Communicable Disease Control website:
  http://lapublichealth.org/acd/procs/b73/b73index.htm

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;13:84-9.

Selected Articles:

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

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

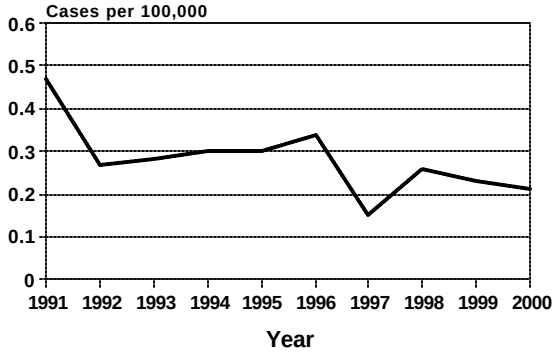
LISTERIOSIS, NONPERINATAL

CRUDE DATA	
Number of Cases	19
Annual Incidence [a]	
LA County	0.21
United States	N/A
Age at Onset	
Mean	63 years
Median	65 years
Range	31 - 83 years
Case Fatality	
LA County	16%
United States	N/A

[a] Cases per 100,000 population.

Figure 51

Nonperinatal Listeriosis Incidence Rates by Year LAC, 1991 - 2000



ETIOLOGY

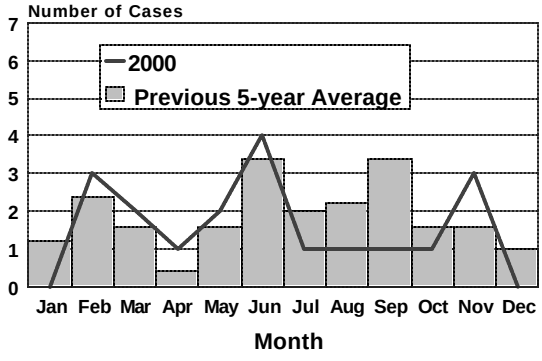
Listeria monocytogenes is a gram-positive bacterium. Consumption of contaminated food can cause listeriosis. Common symptoms may include fever, headache, nausea and neck stiffness. Nonperinatal listeriosis usually presents as meningoencephalitis and/or septicemia. It affects elderly and immunocompromised persons, such as those afflicted with cancer or HIV, and those on immunosuppressive therapy.

DISEASE ABSTRACT

- In 2000, nonperinatal listeriosis rate continued a decade-long downward trend.
- Reports were received for every month except January and December.
- Nearly half of all cases occurred in persons aged 65 years or older.
- Proportionately, Hispanics accounted for fewer cases than expected.

Figure 52

Nonperinatal Listeriosis by Month of Onset LAC, 2000



STRATIFIED DATA

Trends: With 0.21 cases per 100,000 population, nonperinatal listeriosis has been declining since 1991 (Figure 51).

Seasonality: The highest number of reported cases (4) occurred in June, followed by 3 cases each in February and November (Figure 52). The number of cases during the summer months in 2000 is lower than the 5-year average.

Age: Forty-seven percent of cases (11 of 19) were in persons aged 65 years and older (Figure 53).

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

Race/Ethnicity: In 2000, Hispanics were under-represented, as they comprise only 11% of cases, but 47% of the population (Figure 54).

Location: SPAs 4 and 2 had the most cases, with 6 and 5, respectively. West Valley had most of any health district, with 3 cases.

Predisposing Conditions and Medical Risk Factors: Nine of 19 cases (47%) were aged 65 years or older; 7 (37%) were diagnosed with cancer; 6 (32%) were taking antibiotics prior to the onset of listeriosis or had diabetes; and 4 (21%) had GI disease or were taking antacids (Table 2).

Outcome: Three of 19 cases (16%) died.

Culture Sites: *Listeria monocytogenes* was isolated from blood (12), cerebrospinal fluid (4), and left arm fistula (1), peritoneal fluid (1), and spleen (1).

Figure 53

Nonperinatal Listeriosis by Age Group LAC, 2000

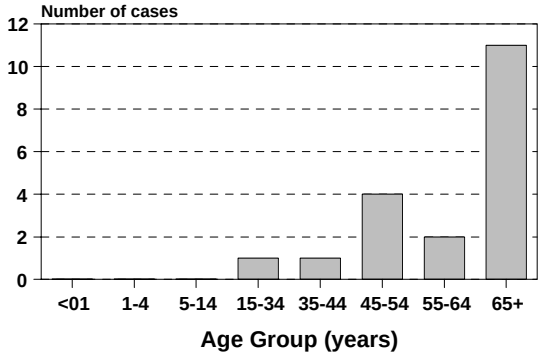
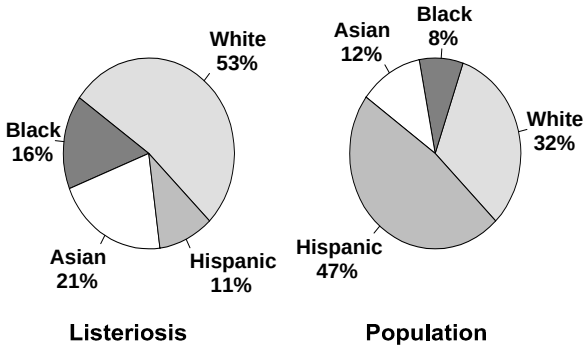


Figure 54

Nonperinatal Listeriosis Percent of Cases by Race/Ethnicity LAC, 2000



COMMENTS

All strains of *Listeria monocytogenes* are now typed by fingerprinted field gel electrophoresis (PFGE). LAC had one case associated with a multistate listeriosis outbreak involving 10 states from May - July 2000. A case-control study implicated eating a specific brand of deli turkey meat as the most likely cause of the outbreak, resulting in a voluntary recall of the product by the facility.

Table 2. Predisposing Factors in Cases of Nonperinatal Listeriosis–LAC, 2000

Medical Condition *	Number (N =19)	Percent
Age 65 years and older	9	47
Steroid use	3	16
Kidney disease	3	16
Prior antibiotic use	6	32
Diabetes	6	32
Cancer	7	37
No identified risk factors	2	11

* Each case may have more than one underlying medical risk factor.

ADDITIONAL RESOURCES

You can find more information on listeriosis at the following websites:

http://www.cdc.gov/ncidod/dbmd/diseaseinfo/listeriosis_g.htm

http://vm.cfsan.fda.gov/~mow/chap6.html

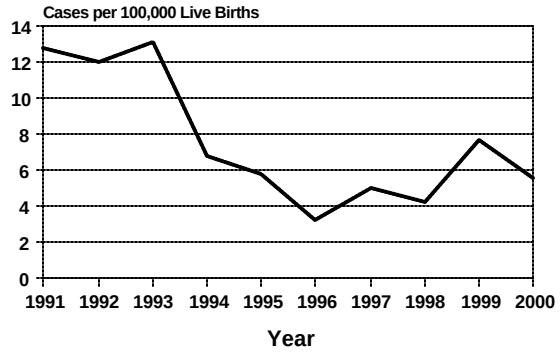
http://lapublichealth.org/acd/procs/b73/b73index.htm

LISTERIOSIS, PERINATAL

CRUDE DATA	
Number of Cases	8
Annual Incidence[a]	
LA County	5.5
United States	N/A
Age at Onset	
Maternal	
Mean	27 years
Median	26 years
Range	16 - 36 years
Infant, Gestational	
Mean	29 weeks
Median	31 weeks
Range	18 - 35 weeks
Case Fatality	
LA County	38 %
United States	N/A

Figure 55

Perinatal Listeriosis Incidence by Year LAC, 1991 - 2000



[a] Cases per 100,000 live births

ETIOLOGY

Perinatal listeriosis occurs when a pregnant woman, her fetus, or a neonate is infected with *Listeria monocytogenes.* Neonatal listeriosis is divided into early onset (0-6 days after birth) and late onset (7-42 days after birth). The fetus may be born prematurely, stillborn, born with septicemia, or develop meningitis in the neonatal period, even if the mother has suffered only mild flu-like symptoms or no symptoms at all.

DISEASE ABSTRACT

- Perinatal listeriosis incidence has remained low since 1994.
- Perinatal listeriosis has a very high case-fatality rate.

STRATIFIED DATA

Trends: The 2000 perinatal listeriosis incidence has decreased since last year, reversing a 3-year upward trend (Figure 55).

Onset: In 2000, all cases were classified as early-onset.

Maternal age: 7 cases were in women aged 15-34 years; one case was in a woman aged 35-44 years.

Sex: Information on 7 of the 8 live-born infants showed that 4 were male and 3 were female.

Race/Ethnicity: Whites had 4 cases, Hispanics had 3 cases, and Asians 1 case.

Type of Delivery: In 5 perinatal cases where the method of delivery was known, 3 were delivered by Caesarean section and 2 were vaginal.

Outcome: Three infants died and 5 survived.

Culture Sites: Of the 8 cases, *Listeria monocytogenes* was isolated from the blood of 4 infants. Common sites of isolation for mothers included blood and the placenta (Table 3).

COMMENTS

Cases of perinatal listeriosis has decreased compared to the number of cases in 1999. Asians had the most cases in 1999,while Whites had the most cases in 2000; however, the numbers were small. There were no perinatal cases associated with outbreaks in 2000.

PREVENTION

Listeria monocytogenes is found in soil and water. Animals can carry *Listeria* without appearing ill, which can result in contaminated foods of animal origin, such as meats and dairy products. In particular, studies have implicated unpasteurized milk or products made from unpasteurized milk (i.e., soft cheeses such as Mexican-style cheese, Brie and Feta), cold cuts from deli counters or undercooked meat (e.g., chicken, paté, pork tongue in jelly). These foods should be avoided by pregnant women. Fruits and vegetables should be thoroughly washed. 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 3: Number and Percent* of *Listeria* isolates from Mothers and Infants–LAC, 2000

	Mother (n = 7)		Infant (n = 5)	
Culture Site	**Number**	**Percent**	**Number**	**Percent**
Blood	3	43%	4	80%
Placenta	3	43%	N/A	---
Amniotic fluid	1	14%	N/A	---

* Percentages may not add up to 100% as cultures may have been obtained from more than one site.

ADDITIONAL RESOURCES

http://www.cdc.gov/ncidod/dbmd/diseaseinfo/listeriosis_g.htm

http://vm.cfsan.fda.gov/~mow/chap6.html

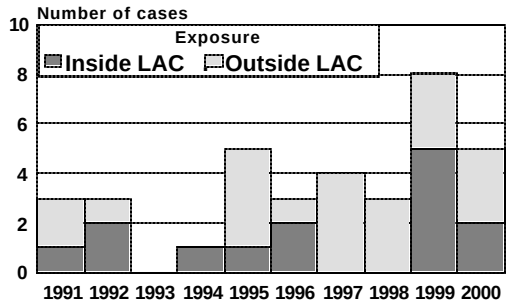
http://lapublichealth.org/acd/procs/b73/b73index.htm

LYME DISEASE

CRUDE DATA	
Number of Cases	5
Annual Incidence [a]	
LA County	0.06
California	0.29
United States	6.50
Age at Onset	
Mean	33 years
Median	18 years
Range	4-73 years
Case Fatality	
LA County	0.0%
United States	N/A

Figure 56

Lyme Disease by Exposure and Year LAC and US, 1991 - 2000



[a] Cases per 100,000 population.

ETIOLOGY

Lyme disease is caused by a bacteria, *Borrelia burgdorferi*, is transmitted to humans by the bite of the Western black-legged tick (*Ixodes pacificus*), and is not common in LAC. The reservoir is in small rodents, with deer serving as a secondary reservoir. Ticks that feed from infected rodents or deer may then transmit the disease to humans, who are accidental hosts. The classic rash, called erythema migrans (an expanding bull's eye rash) is the first sign of illness in about 90% of patients. The incubation period is from 3-32 days; however, early symptoms, such as fever, body aches, headaches and fatigue may be not be recognized as Lyme disease, while some patients may present with later manifestation--including aseptic meningitis, cranial neuritis, cardiac arrhythmias, and arthritis of the large joints. Early disease is treated with a short course of oral antibiotics, while later manifestations may require longer treatment with oral or intravenous (IV) antibiotics. There is now a vaccine available, although it is not routinely recommended in California.

DISEASE ABSTRACT

- Lyme disease is very uncommon in LAC.
- The diagnosis of Lyme disease may be difficult because early symptoms of fever, body aches, headaches, and fatigue can be caused by other diseases.
- Laboratory tests are available, but they are often not sensitive, specific or consistent.
- Lyme disease may be cured by early diagnosis and treatment with antibiotics.

COMMENTS

In 2000, 5 reported cases of Lyme disease met CDC surveillance criteria. Three cases reported exposure outside LAC and 2 of 5 were male. When a case of Lyme disease is reported to LAC-DHS, an investigation is initiated by ACDC which includes collection of information from the physician and the patient. Vector Management staff determine the probable site of tick exposure and initiate field studies. The field studies include collection of ticks and samples from animals to test for Lyme disease.

Lyme disease is reported infrequently in LAC. Since Lyme disease became reportable in 1989, 43 reported cases have met the CDC surveillance criteria. Of these, only 15 (35%) were exposed to ticks inside LAC. Although transmission of Lyme disease does occur in LAC, it is believed to be rare because the Western black-legged tick is not the most common tick in LAC and only 1-2% of Western black-legged ticks in California are infected with the bacterium that causes Lyme disease. The tick must be attached for a minimum of 48 hours for transmission to occur. Although DHS has been testing ticks and reservoir animals for the past ten years, 1999 was the first year for which ticks were confirmed to carry *B. burgdorferi* by culture in LAC.

PREVENTION

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

ADDITONAL RESOURCES

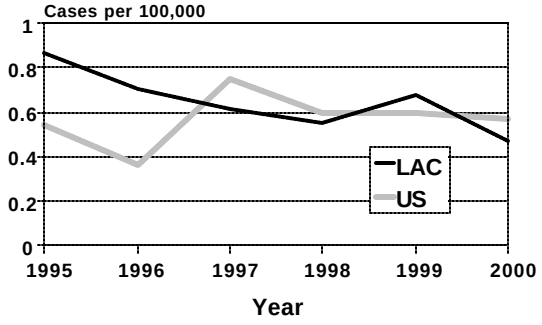
- CDC Lyme disease website:
  http://www.cdc.gov/ncidod/dvbid/lyme/index.htm
- Brochure from California Department of Health Services on Lyme disease:
  http://www.dhs.ca.gov/ps/dcdc/pdf/Lymbro99.pdf
- Acute communicable disease control website:
  http://lapublichealth.org/acd/procs/b73/b73index.htm

MALARIA

CRUDE DATA	
Number of Cases	43
Annual Incidence [a]	
LA County	0.47
California	0.59
United States	0.57
Age at Onset	
Mean	32 years
Median	31 years
Range	2 - 91 years
Case Fatality	
LA County	0.0%
United States	N/A

Figure 57

Malaria
Incidence Rate by Year
LAC and US, 1995 - 2000



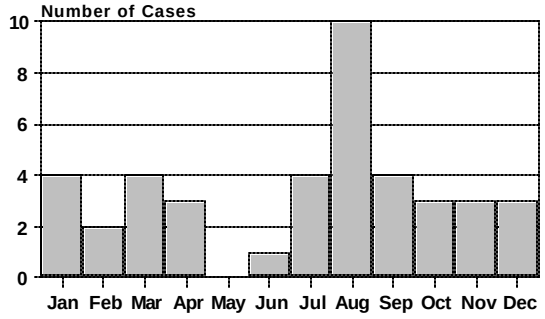
[a] Cases per 100,000 population.

ETIOLOGY

Human malaria is caused by four species of the genus *Plasmodium*: *P. vivax*; *P. falciparum*; *P. malariae*; and *P. ovale*. *P. vivax* and *P. ovale* cause benign tertian malaria. *P. falciparum* causes malignant tertian malaria and *P. malariae* causes quartan malaria. *P. falciparum* can cause cerebral malaria and sometimes death. Malaria is acquired from the bite of an infective female *Anopheles* mosquito. Malaria is not transmitted locally in LAC, although a vector, *Anopheles hermsi*, exists here. Local transmission has not occurred here perhaps due to the dry weather and lack of a concentrated group of people circulating the parasite.

Figure 58

Malaria
by Month of Onset
LAC, 2000 (N = 41*)



DISEASE ABSTRACT

- The incidence of malaria in LAC decreased from 63 cases in 1999 to 43 in 2000.
- The percent of US resident cases who reported foreign travel dropped from 62% in 1999 to 56% in 2000.
- The percent of malaria cases who were recent immigrants or visitors to the US increased from 38% in 1999 to 44% in 2000.
- Only one US resident case was due to a relapse after immigration.
- Of US resident cases, 22% had taken some form of prophylaxis.

- There is no documentation of malaria being transmitted locally, but its vector is in LAC.

Figure 59

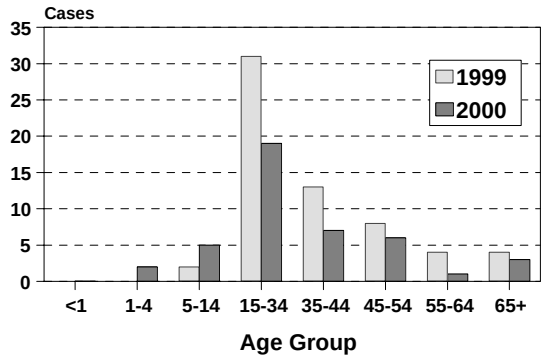
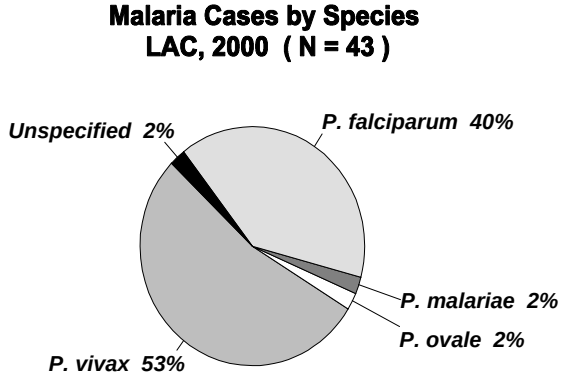


Figure 60



STRATIFIED DATA

Species Frequency: The infecting malarial species was identified for 42 cases (98%) (Figure 60). Most cases were infected with *P. vivax* (55%) or *P. falciparum* (38%). There was one unspecified case (2%).

Seasonality: Malaria is not transmitted locally probably due to a lack of ideal mosquito breeding conditions and a lack of a core group of infected people. This year August had the most cases of malaria. May had no cases and November, December and February had the fewest (Figure 58). These fluctuations in malaria cases by month are probably due to travel.

Age: Malaria incidence was greatest among individuals aged 15-34 years and least among adults aged 55-64 (Figure 59). There were no cases among children <1. Incidence dropped in all ages groups in 2000 except among children aged 1-14 where it rose. The reasons for these changes is unknown, but may be affected by the age of travelers.

Sex: The rate ratio of male-to-female cases was 5:1. The reasons for this are unknown.

Race/Ethnicity: Malaria incidence (both for total cases and LAC residents) was highest among African nationals/Black Americans (Figure 61). Most Hispanic cases were immigrants, individuals visiting the US, or whose residency status was unknown.

Location: As in 1999, the West Valley Health District had the most cases (9) of malaria countywide; West had 7 and Central had 6 cases, respectively.

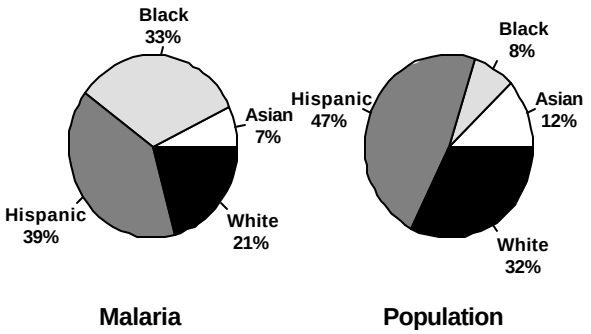
COMMENTS

Transmission of malaria locally, excluding congenital transmission and an occupationally acquired case, has not been documented recently.

Incidence rates that include cases among immigrants and foreign nationals overestimate the risk

to local residents. Residency and/or reason for travel were available for 40 of 43 cases of malaria (Table 4). Fifty-six percent (24/43) of malaria cases were LAC residents who traveled abroad either for work or vacation. Forty-four percent (19/43) were recent immigrants, individuals visiting the US, or those whose residency status was unknown. The reason for this drop in malaria cases overall is probably due to fewer people emigrating from malarial regions. There were more immigrants this year (percentage-wise) that contributed to malaria cases, but this number is still far below the numbers of cases seen throughout the late 1970s through mid- 1980s (yearly average from 1979-1986 = 133 reported cases/year).

Figure 61
Malaria Cases
Percent Cases by Race/Ethnicity
LAC, 2000



Among malaria cases in US residents traveling abroad, Africa was again the most common region visited and Nigeria the most frequent destination. This is mostly due to naturalized Nigerians visiting relatives still living in Nigeria. Forty-two percent (18/43) of all reported malaria cases were from individuals who had traveled to or were coming from African countries. Since the early '90s Blacks/African nationals have been the ethnic group with the highest incidence of malaria in LAC. Figure 62 shows that Blacks make up only 8% of the population of LAC but account for 33% of cases of malaria. Before that, immigrants/refugees from Central America and Southeast Asia made up the majority of all malaria cases seen in LAC. For cases among recent immigrants, visitors to the US, or whose residency status was unknown, Central America and Mexico were the most common regions where malaria was acquired. Sixty-three percent of cases (12/19) who were recent immigrants, visitors to the US, or whose residency status was unknown were from Central America and Mexico.

Antimalarial prophylaxis history was available for 23 of the 24 US resident cases (Table 4). Five individuals (22%) took prophylaxis, down 18% from the previous year. A higher percentage of work-related cases took prophylaxis compared to tourist cases (33 vs. 21%). However, appropriateness of prophylaxis and adherence to regime was unknown, and it was a very small group.

A low percentage of US residents and recent immigrants had a previous history of malaria this year compared to last year (Table 5), most likely due to a change in reporting format on the epidemiologic form. For 2000, a history of malaria was only documented if it was within the previous 12 months, rather than at any time in the past.

ADDITIONAL RESOURCES

CDC website:
http://www.cdc.gov/ncidod/diseases/submenus/sub_malaria.htm

Acute Communicable Disease Control website:
http://lapublichealth.org/acd/procs/b73/b73index.htm

Table 4. Malaria Cases by Species, Residency Status, and Travel Exposure–LAC, 2000

Foreign Travel by US Residents		Recent Immigration, Residency Status Unknown, or Visit to US by Non-US Residents	
Region/Country	**Number of Cases (Species) [a]**	**Country**	**Number of Cases (Species) [a]**
Africa			
Cameroon	1 (1F)	Ghana	2 (2F)
Congo	1 (1F) [b]	Nigeria	3 (3F)
Gambia	1 (1V)	Sierra Leone	1 (1F)
Ghana	1 (1V)		
Ivory Coast	1 (1F)		
Mali	1 (1F)		
Niger	1 (1F)		
Nigeria	4 (3F, 1V)		
Tanzania	1 (1N)		
Uganda	1 (1O)		
Latin America			
Ecuador	1 (1V)	El Salvador	2 (1F,1V) [c]
El Salvador	2 (1F, 1V)	Guatemala	4 (4V)
Guatemala	1 (1V)	Honduras	4 (4V)
Honduras	1 (1V)	Mexico	2 (2V)
Asia/Oceania			
India	2 (2V)		
New Guinea	2 (2V)		
Caribbean			
Guadeloupe	1 (1F)		
Unknown	1(1M)		1(1V)
Total	**24**		**19**

[a] F = *P. falciparum*, M = *P. malariae*, N = not determined, O = *P. ovale, and* V = *P. vivax.*
[b] Case traveled through other African countries.
[c] Cases traveled through other Latin American countries.

Table 5. Malaria Cases by Residency Status, Reason for Travel, Malaria Prophylaxis, and Previous Malaria History–LAC, 2000

	US Residents			Non-US Residents
	Total US Residents	**Travel for Work**	**Travel for Pleasure**	**Recent Immigrant or Foreign Visitor to US**
Prophylaxis (%)	5/24 (21)	1/3 (33)	4/18 (22)	0 *
Previous malaria within last year (%)	1/24 (4)	1/3 (33)	0/18 (0)	1/19 (5)

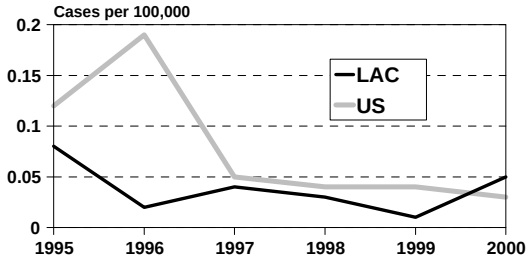
* Natives of malaria-endemic countries generally do not take pre-exposure prophylaxis.

MEASLES

CRUDE DATA	
Number of Cases	5
Annual Incidence [a]	
LA County	0.05 [b]
California	0.06
United States	0.03
Age at Onset	
Mean	16 years
Range	1 - 29 years
Case Fatality	
LA County	0.0%
United States	N/A

Figure 62

Measles
Incidence Rates by Year
LAC* and US, 1995 - 2000



*LAC rates unstable due to small numbers.

[a] Cases per 100,000 population.
[b] Rates based on less than 19 observations are unreliable.

ETIOLOGY

Measles is a vaccine-preventable disease caused by a paramyxovirus. Measles is transmitted by contact with respiratory droplets or by airborne spread. Common 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.

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

- Although measles incidence increased in 2000 compared to the previous four years, the incidence rate remained at a low level in LAC.
- Measles incidence in LAC has decreased substantially since 1990, when the incidence reached 50 cases per 100,000 population.
- Of the 5 cases, 4 were not vaccinated against measles.

STRATIFIED DATA

In 2000, 5 confirmed measles cases were reported, 4 of whom were linked together as part of a cluster of cases in the Bellflower area of LAC during May and June.

Vaccination Status: Only one case had documented evidence of receiving the measles vaccine. All cases were aged over one year and were eligible to receive the MMR vaccine.

Importation Status: None of these cases were linked to an imported case and none had any recent travel or known contact with international travelers. Indigenous measles transmission is considered to have been eliminated in the US.

Hospitalization: Four cases were hospitalized, with an average length of stay of 5 days. One case was pregnant and gave birth two days after rash onset. No other complications were reported.

COMMENTS

The 2000 measles cluster included unvaccinated siblings aged 1 and 3 years. No source of infection could be identified for these siblings. While hospitalized, these cases infected a 24-year-old hospital employee. The index cases also infected a 9-month-old from Long Beach while this infant was visiting their home. A 29-year-old LAC resident developed measles after visiting the 9-month-old infant in a hospital. With the exception of the 9-month-old infant from Long Beach, all cases in this cluster could have been prevented with the measles vaccine.

An estimated 99% of individuals who receive two doses of the MMR vaccine will develop immunity to measles.

ADDITIONAL RESOURCES

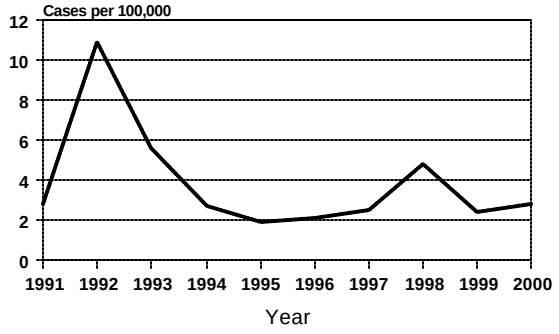
Additional information about measles is available from the National Immunization Program at www.cdc.gov/nip, the Immunization Action Coalition at www.immunize.org, and the Acute Communicable Disease Control website at http://lapublichealth.org/acd/procs/b73/b73index.htm.

MENINGITIS, VIRAL

CRUDE DATA	
Number of Cases	206
Annual Incidence [a]	
LA County	2.8
United States	N/A
Age at Onset	
Mean	20 years
Median	13 years
Range	6 days - 90 years
Case Fatality	
LA County	N/A
United States	N/A

Figure 63

Viral Meningitis
Incidence Rates by Year
LAC, 1991 - 2000



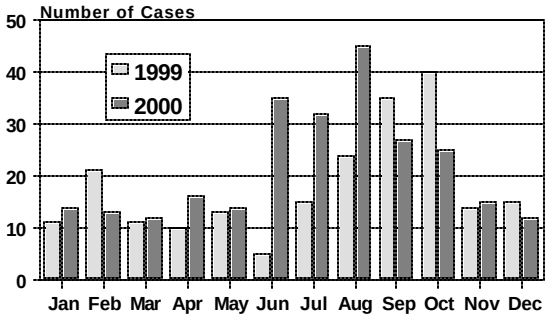
[a] Cases per 100,000 population.

ETIOLOGY

Viral meningitis, also referred to as aseptic meningitis, is a clinical syndrome in which no bacterial etiology is identified. When an organism is detected it is most often an enterovirus. Symptoms, which usually last from 7 to 10 days, are characterized by sudden onset of fever, severe headache, stiff neck, photophobia, drowsiness or confusion, and nausea and vomiting. Transmission may be fecal-oral, respiratory or by another route specific to the etiologic agent. Viral meningitis can occur at any age and rarely causes serious illness. Recovery is usually complete.

Figure 64

Viral Meningitis
by Month of Onset
LAC, 1999 - 2000



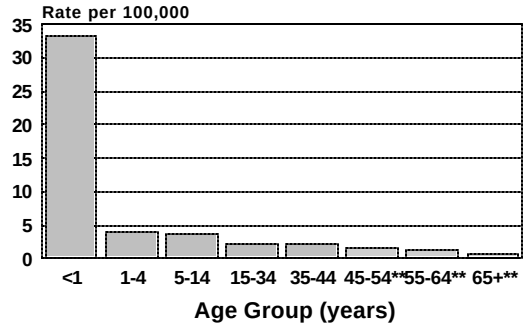
DISEASE ABSTRACT

- In 2000, reports of viral meningitis remained essentially unchanged from 1999 (Figure 63).
- A higher and earlier seasonal increase was seen in 2000 compared with 1999 (Figure 64).
- There were no unusual viral etiologies, associated cases, or clusters reported in 2000.
- The highest rate (33 per 100,000) was seen in infants aged less than 1 year.

COMMENTS

Figure 65

Viral Meningitis
Rates by Age Group
LAC, 2000 (N = 256*)



* Does not include 4 cases of unknown age.
** Rate unstable due to small number of observations.

Surveillance for viral meningitis is passive and information about the causative agents of viral meningitis is unavailable. Viral cultures are usually not performed because of the need for special laboratory capabilities, cost, and lack of specific therapy. If done, viral culture results are most often reported by hospitals. As improved diagnostic tests become available, a better understanding of the etiology of viral meningitis should emerge.

The treatment for viral meningitis remains supportive, though antiviral agents for enterovirus treatment are being developed. Since enterovirus is the most frequently identified etiologic agent of viral meningitis and since transmission is primarily through the fecal-oral route, the most practical and effective preventive action against transmission is good personal hygiene–especially handwashing and avoiding the sharing of oral secretions.

ADDITIONAL RESOURCES

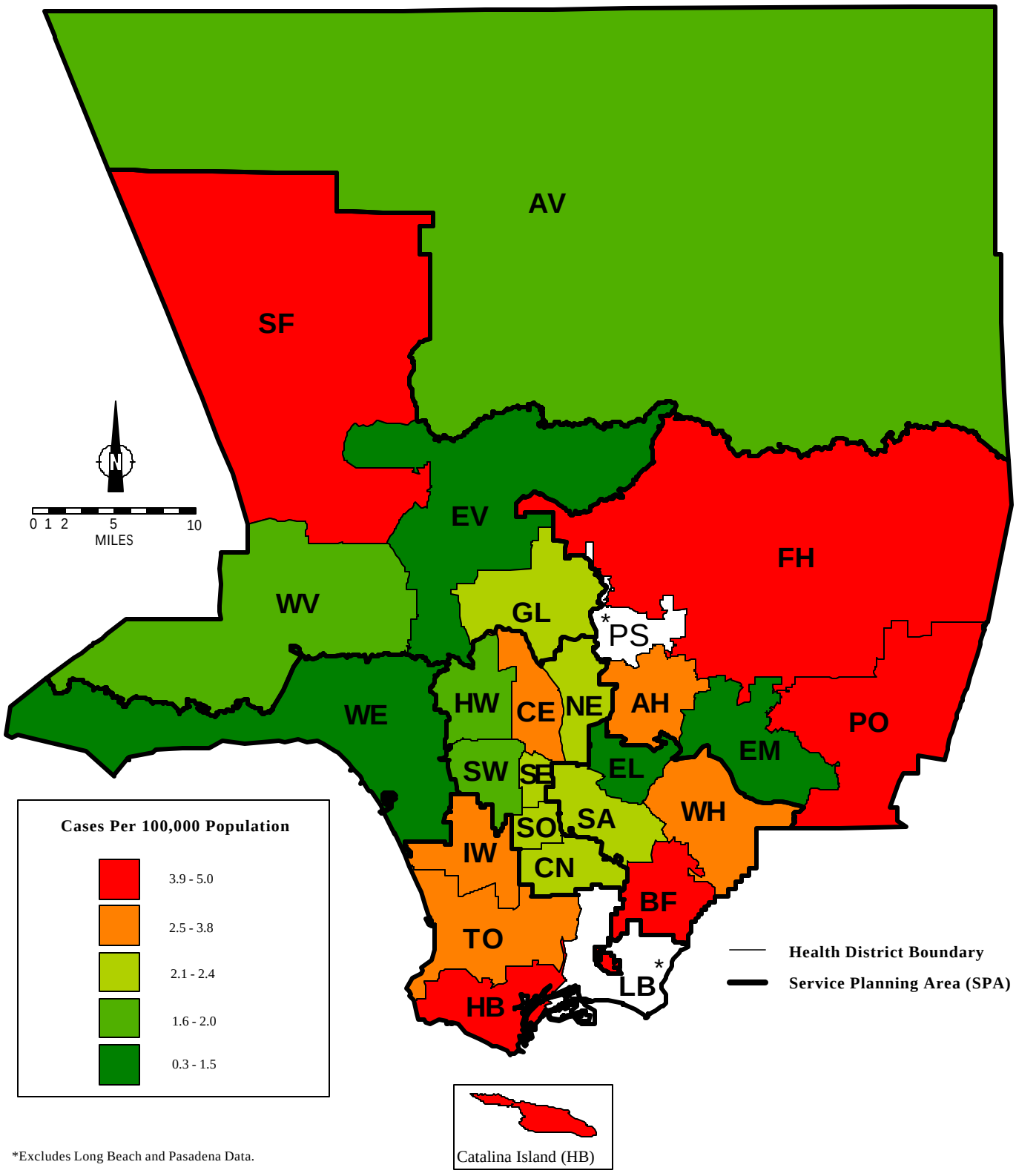
CDC, Respiratory and Enteric Viruses Branch, Viral (Aseptic) Meningitis at: http://www.cdc.gov/ncidod/dvrd/virlmen.htm

CDC, Respiratory and Enteric Viruses Branch, Non-polio Enterovirus Infections at: http://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: http://www.astdhpphe.org/infect/vmenin.html

Acute Communicable Disease Control website: http://lapublichealth.org/acd/procs/b73/b73index.htm

MAP 8. Meningitis, Viral
Rates by Health District, Los Angeles County, 2000*



*Excludes Long Beach and Pasadena Data.

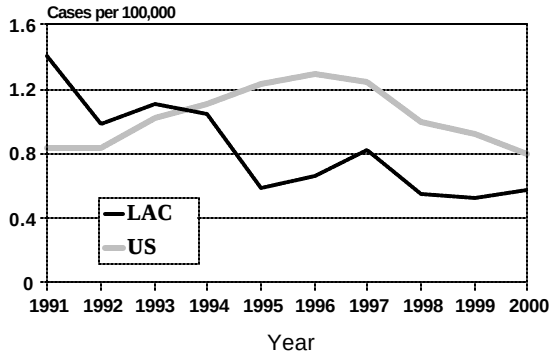
MENINGOCOCCAL DISEASE

CRUDE DATA	
Number of Cases	53
Annual Incidence [a]	
LA County	0.57
California	0.99
United States	0.83
Age at Onset	
Mean	28 years
Median	22 years
Range	2 weeks - 98 years
Case Fatality	
LA County	11%
United States	N/A

[a] Cases per 100,000 population.

Figure 66

Meningococcal Disease Incidence Rates by Year of Onset LAC and US, 1991 - 2000

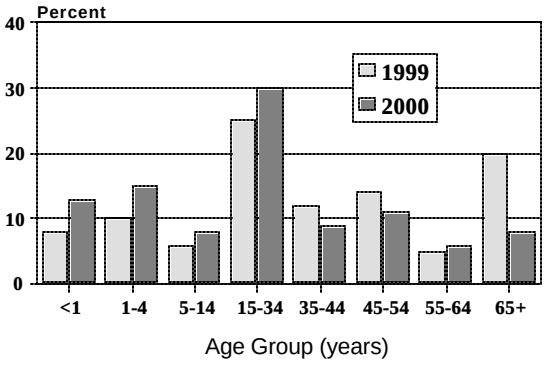


ETIOLOGY

Meningococcal disease, occurring most often as meningococcal meningitis or meningococcemia, is transmitted through direct or droplet contact with nose or throat secretions of a person infected with the *Neisseria meningitidis* bacterium. Common symptoms include sudden onset of fever, headache, nausea and vomiting, stiff neck and lethargy, which can progress to overwhelming sepsis, shock and death within hours. Meningococcal disease affects all age groups but occurs most often in infants. Serogroups A, C, Y and W-135 are vaccine-preventable. Serogroups B, C and Y are the serogroups commonly seen in the US.

Figure 67

Meningococcal Disease Percent by Age Group LAC, 1999 - 2000 (N = 53)



DISEASE ABSTRACT

- Meningococcal disease incidence remained low in LAC.
- There were no secondary cases or outbreaks.
- Serogroup W-135, last seen in 1996, reappeared, while serogroup B predominated.

STRATIFIED DATA

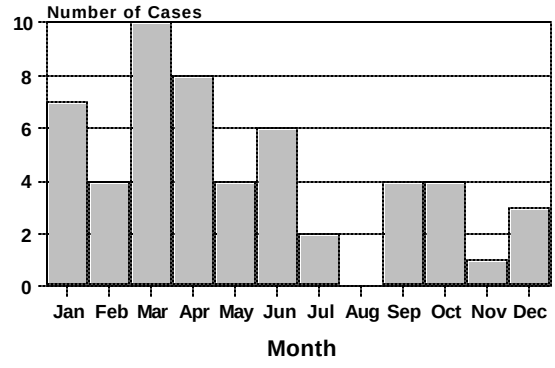
Trends: The number of cases remained low (Figure 66). Serogroup B surpassed Y as the predominant serogroup identified.

Seasonality: Cases were highest during winter and early spring. Over half occurred in the first four months of the year (Figure 67).

Age: Most cases occurred in those aged 15-34 years (30%, n = 16), followed by cases in children aged 1 - 4 years (13%, n = 8) and in infants (11%, n=7). Among those aged 65 years and older, there was a decrease from 20% (n = 10) of all cases in 1999 to only 8% (n = 4) in 2000. Changes among other age groups were not as marked (Figure 68).

Figure 68

Meningococcal Disease by Month of Onset LAC, 2000 (N = 53)



Sex: The male-to-female rate ratio was 1.8:1.

Race/Ethnicity: The number of cases increased among all ethnic groups except Whites where there was a decrease from 43% (n=21) of all cases in 1999 to only 21% (n=11) in 2000. Most cases occurred in Hispanics (42%, n=22) (Figure 69).

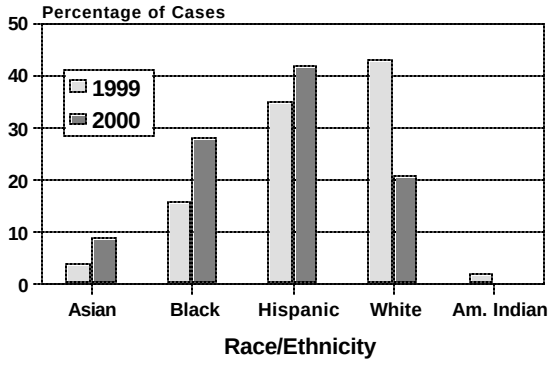
Location: The percentage of the cases was highest in the Inglewood Health District(19%, n=10), followed by the West Valley (11%, n=6) and Pomona (9%, n=5)(Map 9).

COMMENTS

In 2000*, N. meningitidis* was isolated from 47 cases (89%): 28 (60%) from blood, 11 (23%) from cerebrospinal fluid, 7 (15%) from both, and 1 (2%) from synovial fluid (Figure 70). Serogroup identification was made in 64% of cases. Serogroup B (n=13) increased to 38% from 33%. Serogroup C (n=7) increased to 21% from 18%, serogroup Y (n=10) decreased from 49% to 29%,and the remaining 12% (n=4) were evenly divided between serogroup W-135 and those that were non-groupable (Figure 71). Since 1999, following CDC studies indicating that freshman college students are at modestly increased risk for meningococcal disease, interest in meningococcal disease among college students has continued. In 2000 there were 12 cases in young adults of college age

Figure 69

Meningococcal Disease Percent by Race/Ethnicity LAC, 1999 - 2000



(18-30 years), including 2 college students attending different universities. Of the 2 college students, one had serogroup B and lived in a dormitory and the other (a fatality) had serogroup C and lived in an apartment. Among the non-college cases, 7 case isolates were available for serogrouping: 2 serogroup B, 3 (including one fatality) serogroup C, 1 serogroup Y, and 1 non-groupable.

In 2000, the serogroups of more than half of the cases in which a serogroup was identified, including cases among those aged 18-30 years, were included in the available meningococcal vaccine.

Figure 70

Meningococcal Disease by Culture Site LAC, 2000 (N = 53)

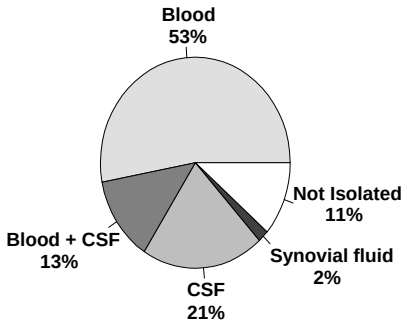
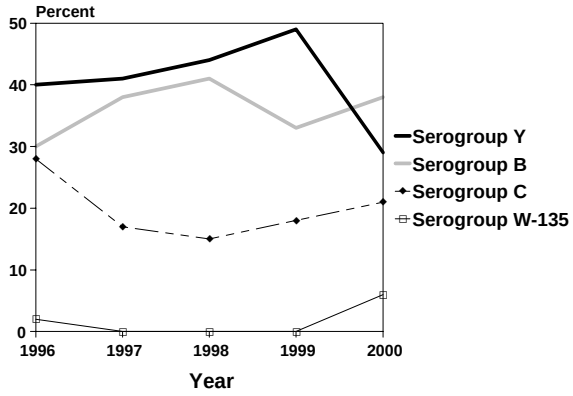


Figure 71

Meningococcal Disease by *N. meningitidis* Serotype LAC, 1996 - 2000



ADDITIONAL RESOURCES

Centers for Disease Control and Prevention. Prevention and control of meningococcal disease and college students: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR* 2000;49 (RR-7):1-20.

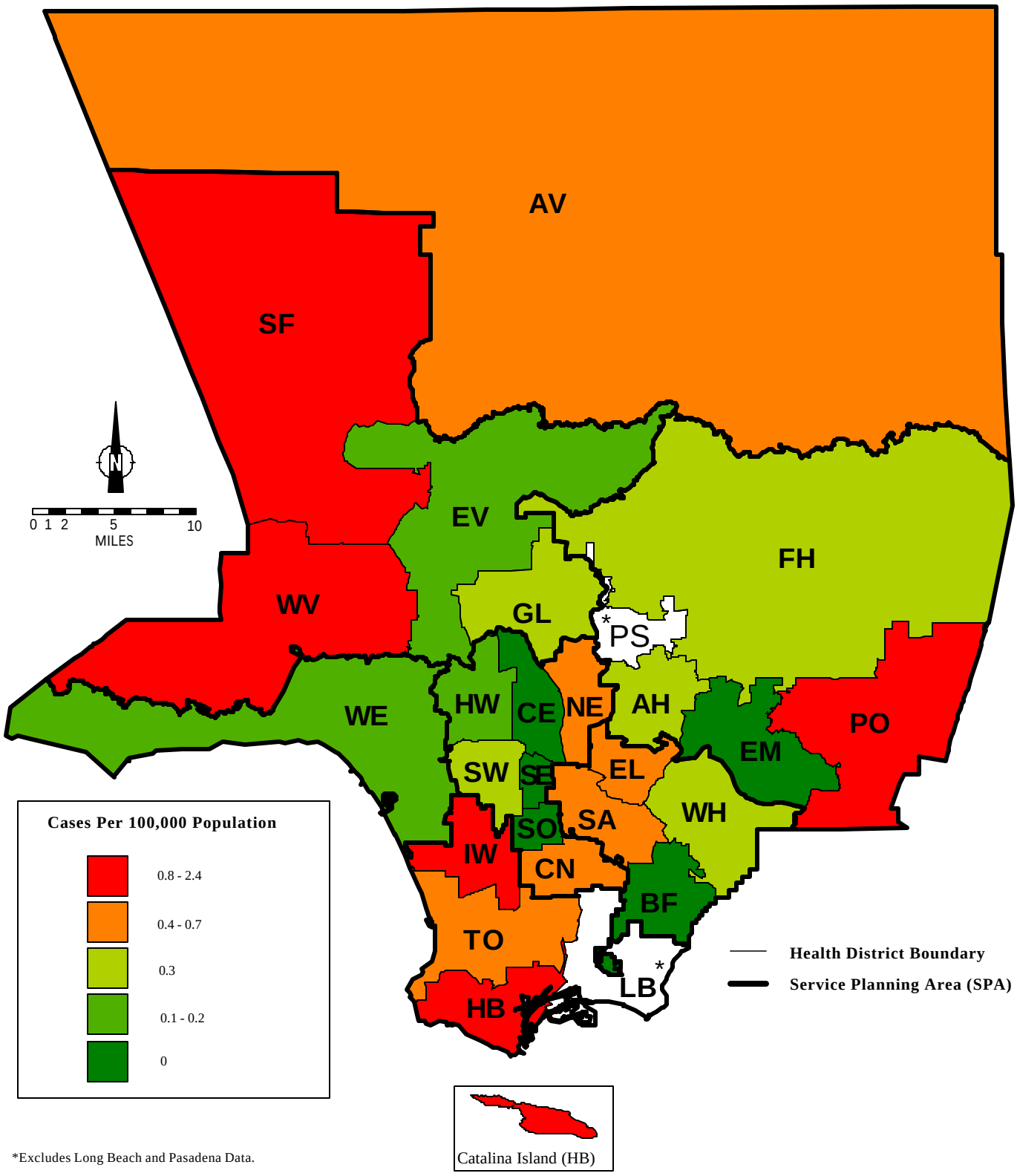
Centers for Disease Control and Prevention. Control and prevention of meningococcal disease and control and prevention of serogroup C meningococcal disease: evaluation and management of suspected outbreaks: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR* 1997;46(RR-5):1-21.

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

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

Acute Communicable Disease Control website:
http://lapublichealth.org/acd/procs/b73/b73index.htm

MAP 9. Meningococcal Disease
Rates by Health District, Los Angeles County, 2000*



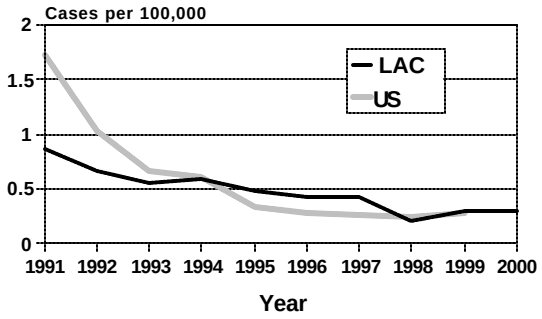
*Excludes Long Beach and Pasadena Data.

MUMPS

CRUDE DATA	
Number of Cases	29
Annual Incidence [a]	
LA County	0.3
California	0.3
United States	0.1
Age at Onset	
Mean	10 years
Median	5 years
Range	0 - 54 years
Case Fatality	
LA County	N/A
United States	N/A

Figure 72

Mumps
Incidence Rates by Year
LAC and US, 1991 - 2000



[a] Cases per 100,000 population.

ETIOLOGY

Mumps is a vaccine-preventable disease caused by an RNA paramyxovirus. Mumps is spread by direct contact with respiratory droplets or by airborne spread. Mumps is primarily characterized by salivary gland swelling, but some infected individuals may be asymptomatic. Complications of mumps include meningitis, orchitis, and deafness.

DISEASE ABSTRACT

- In 2000, the incidence of reported mumps remained similar to that of 1999.
- Most reported cases of mumps are diagnosed based on clinical symptoms and do not have supporting laboratory confirmation.
- Only outbreaks of two or more cases are investigated; individual cases of mumps are not.

COMMENTS

Case reports peaked during the first quarter of 2000 (January to March), with 48% of cases being reported during that period. The male-to-female rate ratio was 1.9 to 1. The highest incidence rate was found among Hispanics (0.4 cases per 100,000). Children aged 1 to 4 years had the highest incidence rate (2.0 cases per 100,000 population), and made up 38% of the total cases reported (n=11). The Inglewood Health District had the highest incidence in LAC (1.9 cases per 100,000).

Over 95% of those who receive the current live attenuated mumps vaccine develop immunity.

ADDITIONAL RESOURCES

Additional information is available from the National Immunization Program at:
www.cdc.gov/nip

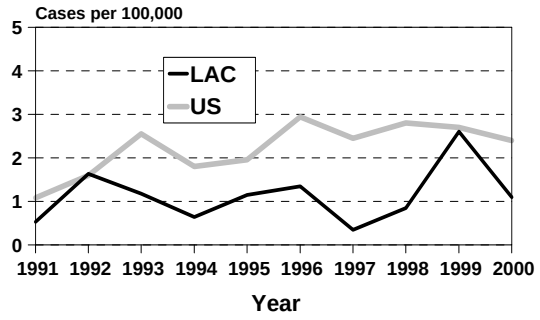
PERTUSSIS (WHOOPING COUGH)

CRUDE DATA	
Number of Cases	102
Annual Incidence [a]	
LA County	1.1
California	1.8
United States	2.4
Age at Onset	
Mean	10 years
Median	3 years
Range	1 week - 70 years
Case Fatality	
LA County	0.0%
United States	N/A

[a] Cases per 100,000 population.

Figure 73

Pertussis
Incidence Rates by Year
LAC and US, 1991 - 2000



ETIOLOGY

Pertussis, or whooping cough, is a vaccine-preventable disease spread by close contact with the respiratory secretions of infected individuals. Common symptoms include paroxysmal coughing, inspiratory whooping sound, and post-tussive vomiting. Complications from pertussis include pneumonia, seizures, and encephalopathy. Infants under 1 year of age are at highest risk for developing severe complications from pertussis.

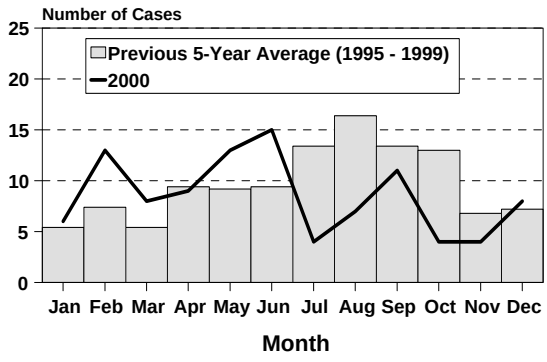
The minimum clinical criteria for pertussis is a cough lasting at least two weeks with either paroxysms of coughing, inspiratory "whoop," or post-tussive vomiting, without other apparent causes. Pertussis cases can be confirmed by either a positive *B. pertussis* culture or PCR.

DISEASE ABSTRACT

- The 102 total cases of pertussis reported in 2000 represented a 57% reduction from 1999.
- The incidence of pertussis was highest among infants under one year of age.
- The majority (59%) of reported cases for 2000 were in infants aged less than 6 months.
- Complications included pneumonia and seizures, but no deaths.
- Only 30% of reported cases were laboratory confirmed.

Figure 74

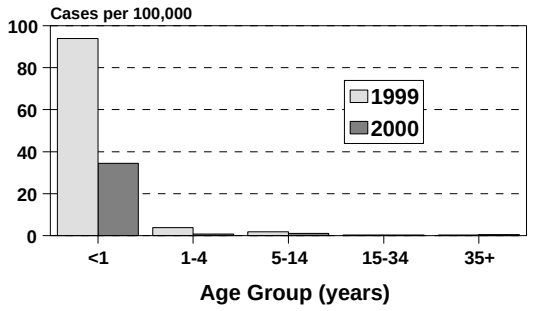
Pertussis
by Month of Onset
LAC, 2000



STRATIFIED DATA

Seasonality: There were significantly more cases reported during the first half of 2000 than the previous five years, with activity peaking in May and June. July and August are traditionally months of highest pertussis incidence in LAC, yet significantly fewer cases were reported during these months in 2000 compared with the previous five years (Figure 74). Possible reasons for this seasonal inversion are unclear.

Figure 75



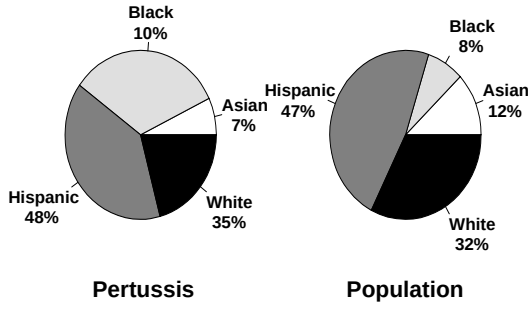
Age: The highest age-specific incidence rate was among infants less than one year of age (Figure 75). Fifty-nine percent of cases occurred in infants aged less than 6 months.

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

Race/Ethnicity: Cases of pertussis were distributed proportionally among all race/ethnic groups (Figure 76).

Location: The only SPA with enough cases (24) to calculate a stable SPA-specific incidence rate was SPA 2, at 1.3 cases per 100,000. SPAs 3 and 6 had 17 cases each, followed by SPA 4 with 16, SPA 8 with 12, SPA 5 with 8 cases, SPA 7 with 6, and SPA 1 with 2.

Figure 76



COMMENTS

Complications/Hospitalization: Sixty-two cases (61%) were hospitalized, with an average hospital stay of 9 days (range 1-42 days). Ninety percent (n=56) of hospitalized cases were less than one year of age. Of the seven cases who developed pneumonia, 6 were infants aged less than six months. Two cases with seizures were reported, 1 in an infant aged less than six months. No pertussis deaths were reported in 2000.

Vaccination Status: A pertussis-containing vaccine should be given at 2 months, 4 months, 6 months, 15-18 months, and 4-6 years of age. Immunity conferred by the pertussis component of the DTP/DTaP vaccine decreases over time, with little or no protection 5-10 years following the last dose. Currently, there is no pertussis vaccine booster available for adults.

Thirty-seven cases (36%) were less than two months of age and were too young to receive the pertussis vaccine. Twenty-one cases (21%) were 15 years of age or older; so even if they were fully immunized in early childhood, they would not now have complete immunity against pertussis. Thus, 57% of the cases reported in 2000 could not have been directly prevented by vaccination.

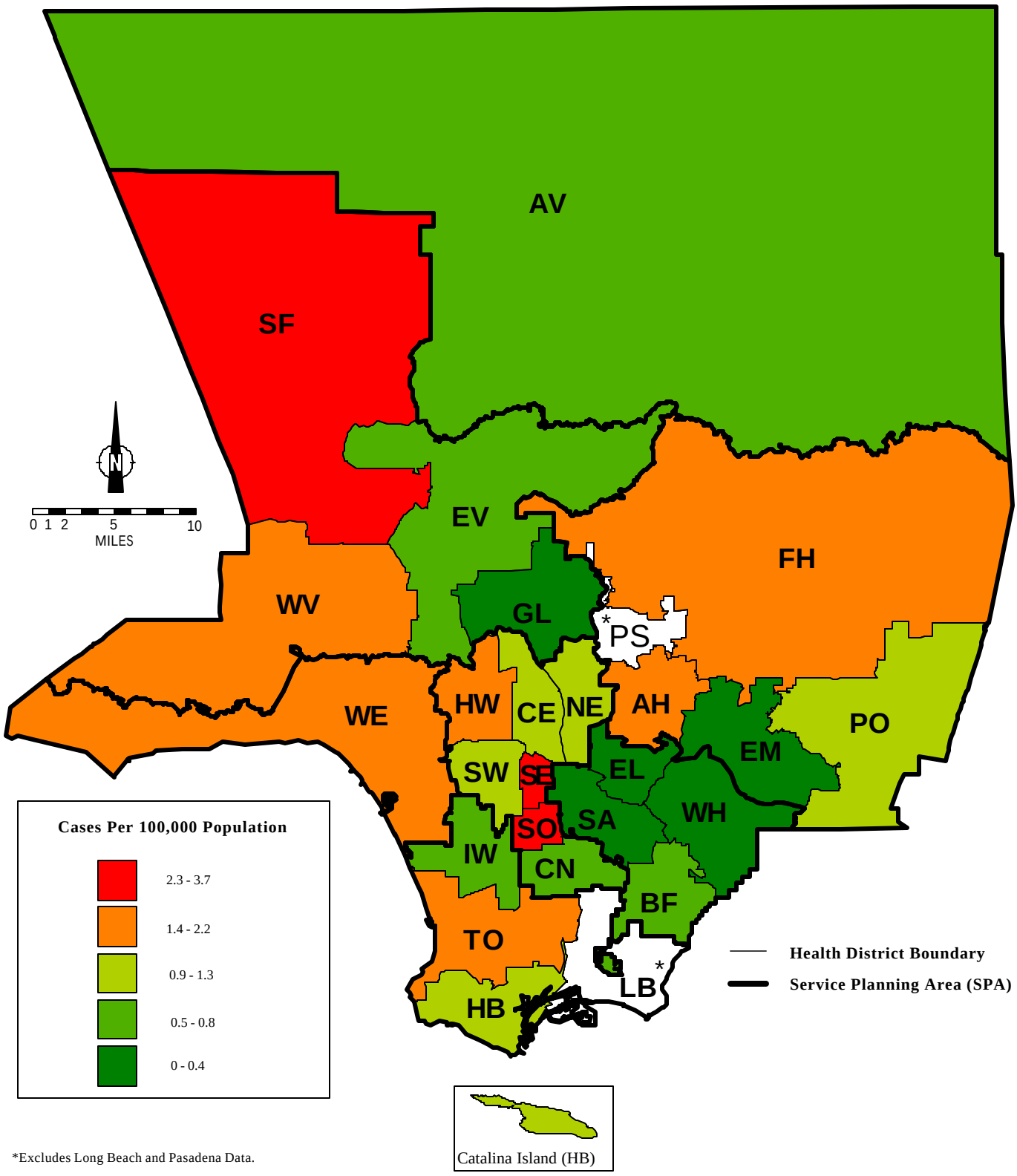
Twenty-three cases were between 2-6 months of age. Of these, 65% were up-to-date for their age, but would not have developed full immunity against pertussis. Of the children who could have had full immunity from the vaccine (7 months - 15 years old), 11 (52%) were fully up-to-date, one was underimmunized, and 8 (38%) were unimmunized. Five of these unimmunized children were not immunized because of religious/philosophical exemptions, and three for medical reasons. One child in this category had unknown immunization status.

Adolescent/Adult Cases: Adults and adolescents with pertussis are more likely to have mild or atypical disease, so they often go undiagnosed. Because immunity given by the pertussis vaccine decreases over time, adolescents and adults can serve as a source of transmission for infants who are not adequately immunized against pertussis.

ADDITIONAL RESOURCES

Additional information about pertussis is available from the National Immunization Program at www.cdc.gov/nip, the Immunization Action Coalition at www.immunize.org, and the Acute Communicable Disease Control website at http://lapublichealth.org/acd/procs/b73/b73index.htm.

MAP 10. Pertussis
Rates by Health District, Los Angeles County, 2000*



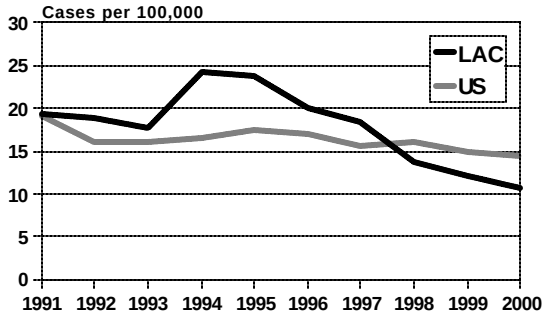
*Excludes Long Beach and Pasadena Data.

SALMONELLOSIS

CRUDE DATA	
Number of Cases	990
Annual Incidence [a]	
LA County	10.7
California [b]	13.0
United States [b]	14.5
Age at Onset	
Mean	25.5
Median	19
Range	< 1 - 90 years
Case Fatality	
LA County	0.8%
United States	N/A

Figure 77

Salmonellosis Incidence Rates by Year LAC and US, 1991 - 2000



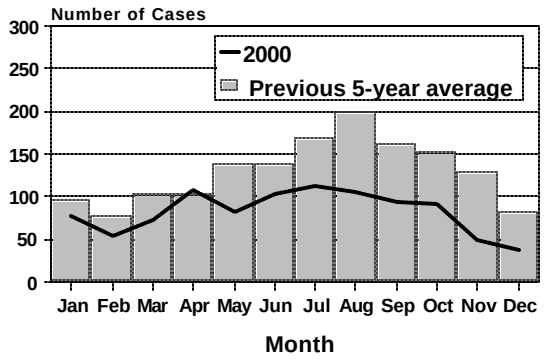
[a] Cases per 100,000 population.
[b] National Electronic Telecommunications System for Surveillance.

ETIOLOGY

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

Figure 78

Salmonellosis Cases by Month of Onset LAC, 2000



body, causing abscesses, osteomyelitis, arthritis, meningitis, endocarditis, pericarditis, pneumonia, or pyelonephritis.

DISEASE ABSTRACT

- The 2000 salmonellosis crude rate dropped 10% compared to 1999.
- *Salmonella* Enteritidis (SE) has remained the most common serotype since 1994 (accounting for 24% of cases reported in 2000), despite having decreased by 8%.
- SE was the etiologic agent identified in 4 of 8 salmonellosis outbreaks.

STRATIFIED DATA

Trends: The incidence of reported salmonellosis cases in 2000 dropped to 10.7 cases per 100,000 population, a decrease of 10%. This continues a five-year declining trend and represents the lowest rate in LAC in the past 11 years (Figure 77). Despite an 8% decrease in SE cases in 2000, SE still makes up 24% of all *Salmonella* isolates. An increase in *S*. Newport cases occurred due to an outbreak in the fall of 2000, while the reason for the increase in *S*. Berta and *S*. Agona cases is unknown (Table 6).

Seasonality: In 2000, an early peak was seen in April, due in part to a large outbreak that began in late March. A second peak occurred during mid-summer and continued through October. The peak was earlier than the usual seasonal late summer increase in reported cases due to two outbreaks occurring in July (Figure 78).

Age: As in past years, the highest age-specific rates of infection occurred among infants, aged less than 1 year (44 per 100,000 population) followed by children aged 1 - 4 years (38 per 100,000; Figure 79).

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

Figure 79

Salmonellosis
Incidence Rates by Age Group
LAC, 2000

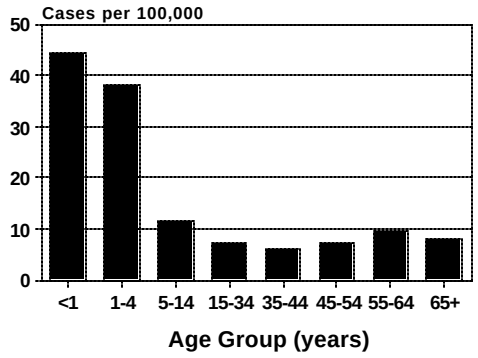


Figure 80

Salmonellosis
Age-adjusted Rates by Race/Ethnicity
LAC, 2000

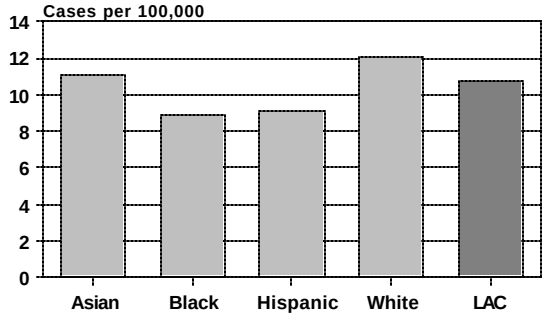
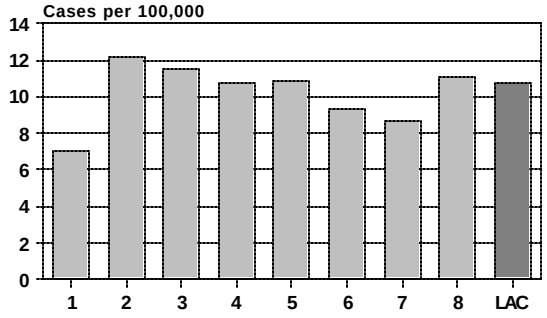


Figure 81

Salmonellosis
Rates by Service Planning Area
LAC, 2000



Race/Ethnicity: All racial/ethnic groups had similar age-adjusted rates of salmonellosis in 2000, with the highest rate among Whites (12 cases per 100,000 population). Hispanics had a rate (9 per 100,000) significantly lower than the county average (10.7 per 100,000) (Figure 80).

Location: Harbor Health District had the highest incidence rate (18 per 100,000 population), followed by Foothill and Glendale (both 16 per 100,000). By Service Planning Area, SPA 2 had the only rate significantly higher than the county average (12 cases per 100,000), while SPA 1 had the only rate significantly lower than the county average (7 per 100,000).

Table 6. Top Ten *Salmonella* serotypes, LAC, 1999 - 2000

	1999 N = 1239 *		2000 N = 963 *		Percent
Serotype	No.	Percent	No.	Percent	Change
Enteritidis	326	26	233	24	-8
Typhimurium **	169	14	175	18	+34
Newport	46	3.7	53	5.5	+49
Heidelberg	59	4.8	35	3.6	-25
Thompson	71	5.7	34	3.5	-39
Agona	26	2.1	28	2.9	+38
Montevideo	41	3.3	26	2.7	-18
Berta	21	1.7	25	2.6	+53
Hadar	46	3.7	22	2.3	-38
SaintPaul	32	2.6	20	2.1	-19

* Denominator N = only those isolates which were serotyped.
** Includes *S.* Typhimurium var. Copenhagen and degraded form.

PREVENTION

Each report 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 eggs and meats, not washing hands and/or cutting boards after handling raw poultry or meat, and not maintaining food at proper temperature to prevent bacterial growth. These investigations demonstrate a need for public education on proper handling and preparation of animal-derived foods, especially eggs. Also, health education targeted at specific racial/ethnic groups is necessary–for example, 70% of salmonellosis cases resulting from turtle contact were Hispanic. In addition, now that fresh produce has been recognized as a source of salmonellosis (2 outbreaks in LAC for 2000 were associated with fresh produce), the washing of fresh fruits and vegetables prior to consumption is advised.

COMMENTS

The reason for the declining rate of salmonellosis–as for other enteric diseases–is unknown. Outbreak-related cases accounted for 7% of all culture-confirmed salmonellosis cases in 2000.

Salmonella Enteritidis (SE) was the etiologic agent identified in half of these outbreaks, and in 2 of those investigations, the source of the outbreak was not found, in large part due to a lack of cooperation by the victims.

Decreases in sporadic (non-outbreak) cases of SE infections parallel an overall decrease in SE incidence in Southern California. Since 1995, fresh produce, most notably alfalfa sprouts, has increasingly been recognized in the US as a source of salmonellosis. In 2 of the outbreaks for 2000, fresh produce (cantaloupe and unpasteurized orange juice) was implicated as the source. Both outbreaks were multi-state outbreaks involving the Western US. In both outbreaks, the produce was imported from Mexico. These outbreaks occurred in March and April, months in which much of the available fresh produce is imported into the US.

Salmonellosis diagnosed just prior to death was reported as a contributing cause of death in 8 cases, all of whom had underlying health problems–such as cancer, renal disease, diabetes, and HIV infection. All were hospitalized with symptoms probably caused by salmonellosis: 4 had sepsis with positive blood cultures; 2 had positive urine cultures; 1 had a positive stool culture; and 1 had pneumonia with a positive sputum.

Table 7. Salmonellosis Outbreaks in Los Angeles County, 2000

Onset Month	Outbreak Setting	Total #Ill	Culture Positive	Serotype	Suspect Vehicle	Suspect Source
March*	Various	17	13	SE	Unpasteurized Orange Juice	Unpasteurized Orange Juice
April*	Various	3	3	SP	Cantaloupe	Cantaloupe
July	Office Building	35	12	ST	Hamburger Buns	Foodhandler
July*	Restaurants	11	11	ST	Hamburger Buns	Foodhandler
August	Various	23	19	SN	Birria	Goatmeat
September	Private Home	14	1	SE	Pancit (Catered Filipino pork dish)	Unknown
October	Private Home	13	4	SE	Unknown	Unknown
November	Private Home	20	3	SE	Unknown	Unknown
		136	66			

SE = *Salmonella* Enteritidis
SN =*Salmonella* Newport

* Indicates multi-state or multi-county outbreak; number represents LAC cases only.

SP = *Salmonella* Poona
ST = *Salmonella* Thompson

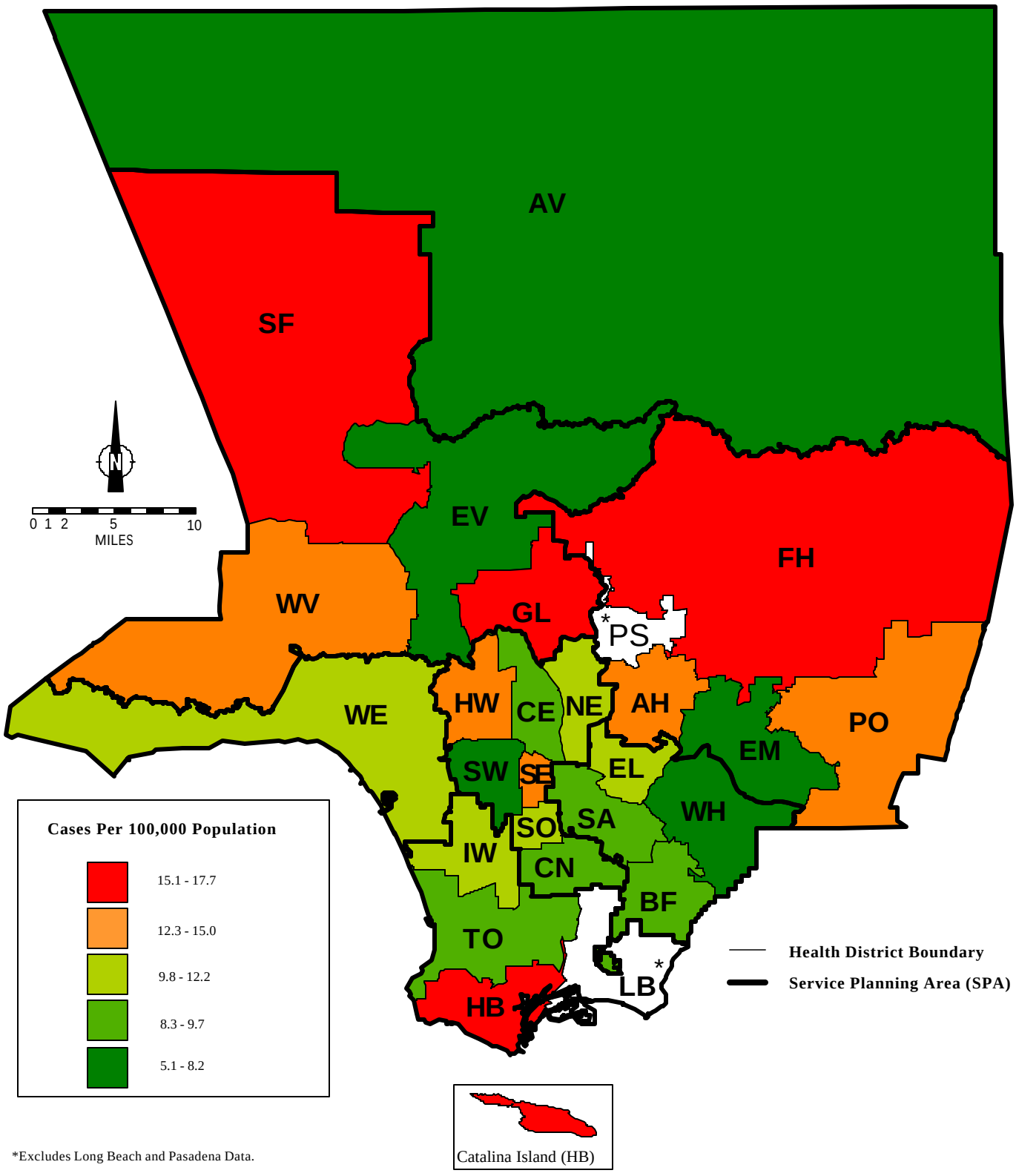
ADDITIONAL RESOURCES

Websites:
http://www.cdc.gov/ncidod/dbmd/diseaseinfo/salmonellosis_g.htm

http://:www.cdc.gov/ncidod/dbmd/diseaseinfo/salment_g.htm

http://lapublichealth.org/acd/procs/b73/b73index.htm

MAP 11. Salmonellosis
Rates by Health District, Los Angeles County, 2000*



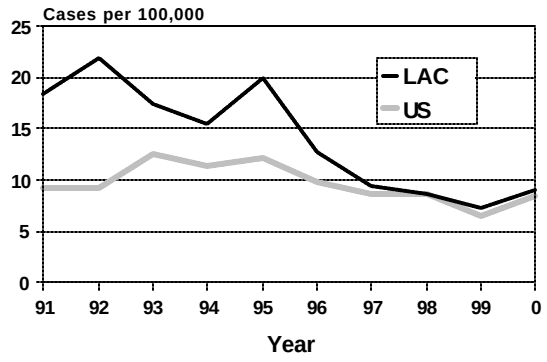
*Excludes Long Beach and Pasadena Data.

SHIGELLOSIS

CRUDE DATA	
Number of Cases	832
Annual Incidence [a]	
LA County	9
California	8.6[b]
United States	8.4[b]
Age at Onset	
Mean	21 years
Median	15 years
Range	< 1 - 96 years
Case Fatality	
LA County	0.1%
United States	N/A

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

Figure 82



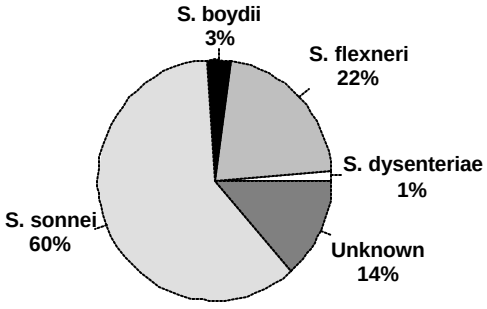
ETIOLOGY

Shigellosis is caused by a gram-negative bacillus with four serogroups: *Shigella dysenteriae* (group A), *S. flexneri* (group B), *S. boydii* (group C) and *S. sonnei* (group D). Infection may occur with ingestion of as few as 10 organisms. Transmission occurs when individuals fail to thoroughly wash their hands after defecation and spread infective particles to others, either directly by physical contact–including some forms of sexual contacts–or indirectly through contaminated food. Common symptoms include diarrhea, fever, nausea, vomiting, and tenesmus. Stool may contain blood or mucus depending on the serogroup. In general, the elderly, the debilitated, and the malnourished are more susceptible to severe disease outcomes. There is no commercial vaccine available.

DISEASE ABSTRACT

- In 2000, *S. sonnei* was the most common serogroup, followed by *S. flexneri*.
- There were 3 shigellosis outbreaks reported in 2000. All were community outbreaks (licensed day care, family picnic, and multi-state outbreak associated with a contaminated commercial product).
- *Shigella spp.* has been hyperendemic in MSM since at least 1998. There was an upsurge of *S. sonnei* among MSM in 2000, coincidental with an outbreak in San Francisco.
- Of cases in 2000, 13% were hospitalized.

Figure 83



- One death was associated with shigellosis, but the cause of death was listed as influenza.

STRATIFIED DATA

Trends: The shigellosis rate in 2000 (9.0 per 100,000) was significantly increased from 1999 (7.2 per 100,000). This rate is still significantly lower than rates seen prior to 1996 (Figure 82). The recent increase can be attributed to the large multi-state outbreak during the month of January and high rates among MSM.

Seasonality: The typical seasonal increase in shigellosis that occurs during the summer and early fall was again evident in 2000 (Figure 84).

Age: The highest rate of shigellosis in any age group, 34 per 100,000, was seen among children aged 1-4 years (Figure 85). Rates did not differ significantly from 1999-2000 for any age group, except for an increase among persons aged 35-44 years and 45-54 years. The rate for persons aged 35-44 years increased from 3.6 per 100,000 in 1999 to 7.7 per 100,000 in 2000. The rate for persons aged 45-54 years increased from 2.1 per 100,000 in 1999 to 5.4 per 100,000 in 2000.

Sex: The male-to-female rate ratio for all shigellosis was 1:1.2. The male-to-female ratio for *S. sonnei* changed from 0.9:1 in 1999 to 1.3:1 in 2000. For *S. flexneri*, no such change was seen (1.7:1 in 2000, 2:1 in 1999).

Race/Ethnicity: In 2000, the incidence of shigellosis was highest among Whites (12 cases per 100,000 population), which significantly increased from the 1999 rate of 5 per 100,000. In contrast, Hispanic cases, with the highest rate in 1999, declined to 8.5 per 100,000 (Figure 86). Blacks also experienced a significant increase from 3.6 per 100,000 in 1999 to 7.5 in 2000.

Location: SPAs 2, 4 and 6 had the highest rates. SPA 4 rates were significantly higher and

Figure 84

Shigellosis
by Month of Onset
LAC, 2000

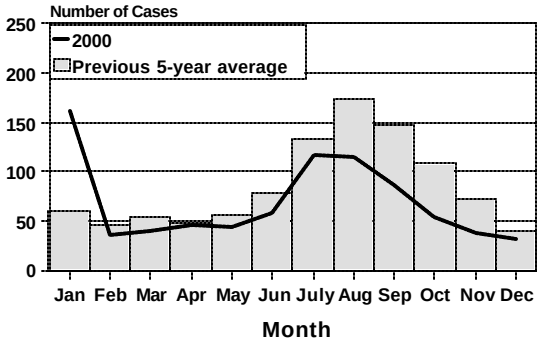
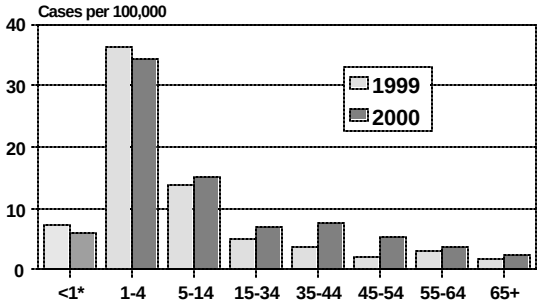


Figure 85

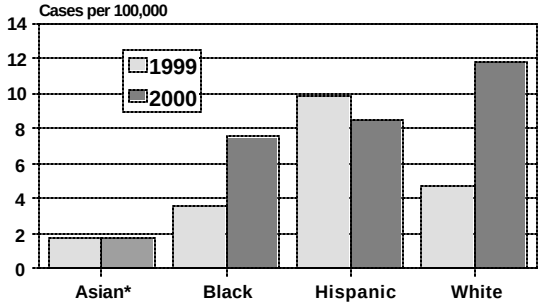
Shigellosis
Incidence Rates by Age Group
LAC, 1999 - 2000



* Rates unreliable due to small number of observations.

Figure 86

Shigellosis
Age-adjusted Rates by Race/Ethnicity
LAC, 1999 - 2000



* Year 2000 Asian rate unreliable due to small number of observations.

SPA 3 rates were significantly lower than the county average. Hollywood-Wilshire, San Fernando and Southeast Health District rates also were significantly higher than the county average.

COMMENTS

Exposure during international travel and exposure to an ill individual in the household were the most commonly reported potential sources for acquiring Shigella. Other potential exposures include contact with an ill individual outside the household, contact with a daycare center, travel within the United States, participation in an outdoor activity (e.g., hiking, camping, swimming), and drinking untreated water. Indirect exposure due to consumption of food contaminated by an ill individual is another potential source–for example, the large number of cases in January was primarily due to a large, multi-state outbreak involving a contaminated commercial food product.

The increase in rate for the Hollywood-Wilshire Health District is most likely due to increases in MSM, as are increases seen in adult men aged 35-54 years. Certain sexual practices (such as those in which there is direct contact with fecal material) are a potential source of infection, especially among MSM. The rate for shigellosis among males aged 15 and older, who admitted to having sex with men increased from 12 per 100,000 in 1999 to 35 per 100, 000 in 2000. A brochure targeting MSM will be developed by LAC-DHS in response to their increased risk.

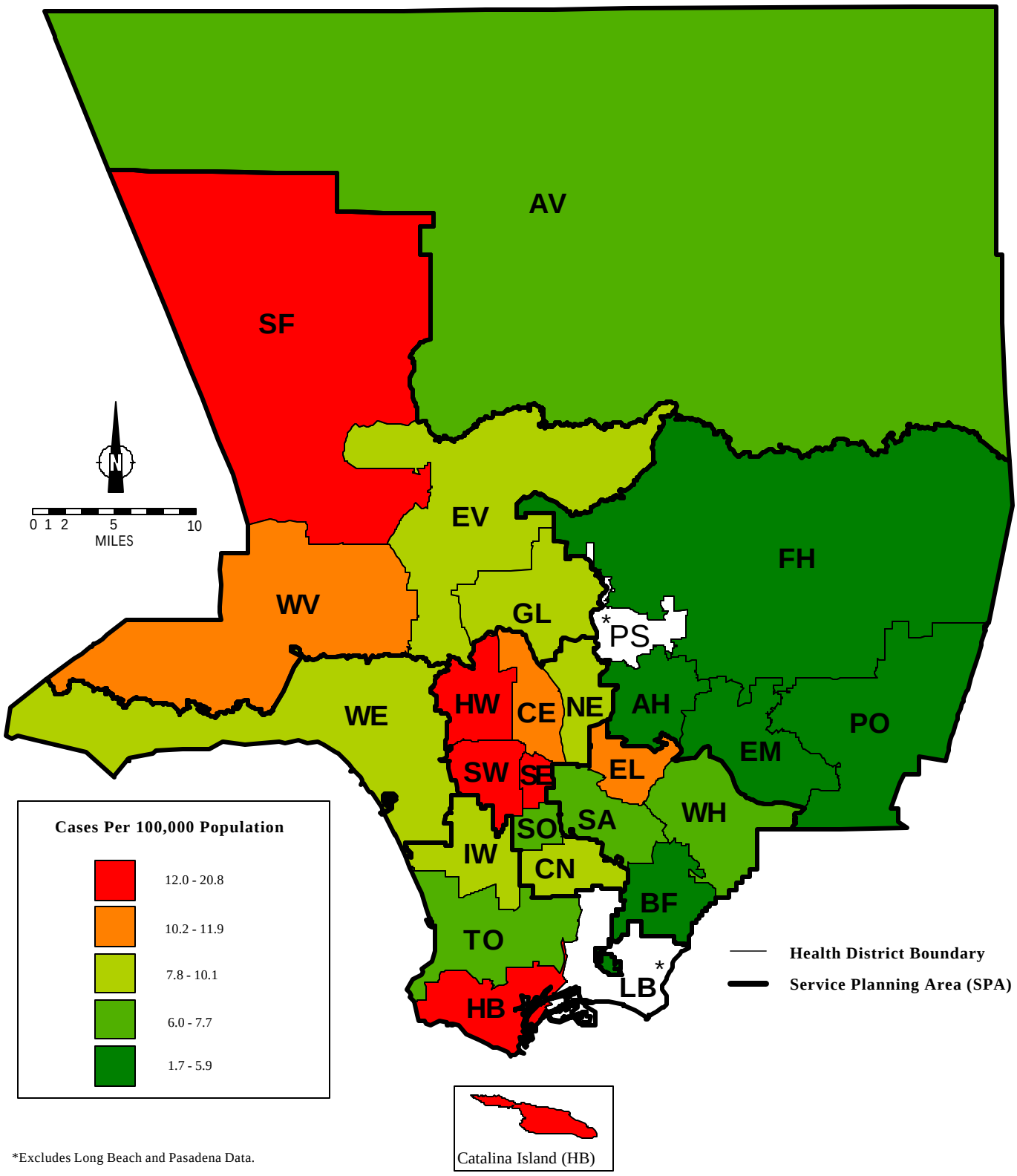
Other individuals at increased risk include those in sensitive occupations (foodhandlers and healthcare workers) or sensitive situations (e.g., daycare). They may pose a transmission risk to the community. Cases and symptomatic contacts in sensitive occupations or situations are routinely removed from work or the sensitive situation until testing by the Public Health Laboratory shows they are no longer shedding the bacterium in their stool.

ADDITIONAL RESOURCES

http://www.cdc.gov/ncidod/dbmd/diseaseinfo/shigellosis_g.htm

http://lapublichealth.org/acd/procs/b73/b73index.htm

MAP 12. Shigellosis
Rates by Health District, Los Angeles County, 2000*



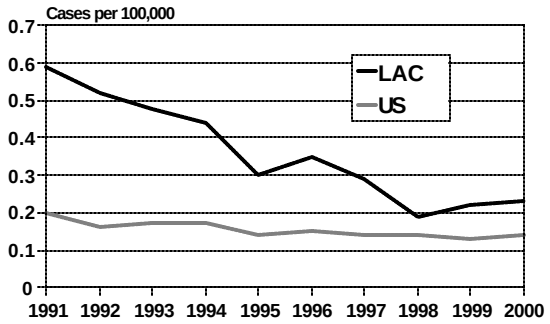
*Excludes Long Beach and Pasadena Data.

TYPHOID FEVER, ACUTE

CRUDE DATA	
Number of Cases	21
Annual Incidence[a]	
LA County	0.23
California	0.24
United States	0.14
Age at Onset	
Mean	24 years
Median	27 years
Range	17 months - 50 years
Case Fatality	
LA County	0
United States	N/A

Figure 87

Acute Typhoid Fever
Incidence Rates by Year of Onset
LAC and US, 1991 - 2000



a Cases per 100,000 population.

ETIOLOGY

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

DISEASE ABSTRACT

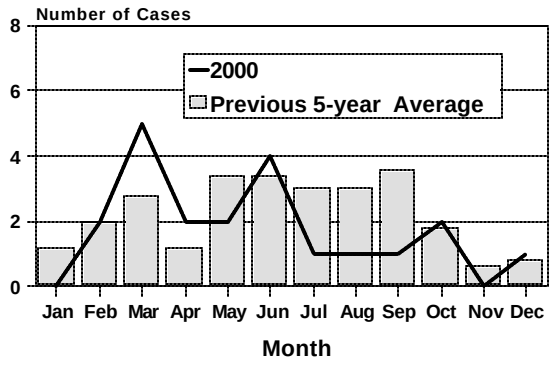
- In LAC, acute typhoid fever remains primarily a disease associated with recent immigration and foreign travel.
- Two-thirds of cases were reported among Asians.
- Three of these cases were linked to previously unknown carriers.

STRATIFIED DATA

Trends: The rate of reported typhoid fever cases remained steady after decreasing for ten years. Annual incidence had declined from 0.67 in 1990 to 0.22 in 1999; the incidence rate was 0.23 in 2000.

Figure 88

Acute Typhoid Fever
by Month of Onset
LAC, 2000



Seasonality: Late spring and summer months have the most cases, coinciding with holidays and school vacation (Figure 88).

Age: Persons aged 15-44 years had the highest incidence (Figure 89).

Sex: The male-to-female rate ratio was 1:0.6. This slight male preponderance is typical.

Race/Ethnicity: Acute typhoid fever cases continue to be seen primarily in Asians, who accounted for 14 of 21 cases (Figure 90).

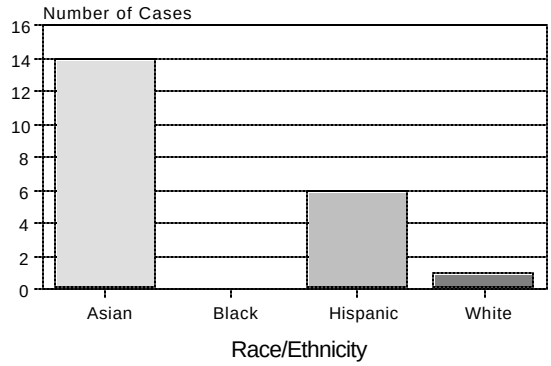
Location: Case location in LAC at the time of illness was not related to disease acquisition. Seventeen (81%) cases were associated with travel to endemic areas outside the US. Of these cases, 13 acquired disease in Asia and 4 acquired disease in Mexico or Central America.

Figure 89

Acute Typhoid Fever by Age Group LAC, 2000

Figure 90

Acute Typhoid Fever by Race/Ethnicity LAC, 2000



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 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 off the usual tourist itineraries.

COMMENTS

Four cases (19%) were not associated with foreign travel and are presumed to have become infected in LAC.

ADDITIONAL RESOURCES

CDC disease information:
http://www.cdc.gov/ncidod/dbmd/diseaseinfo/typhoidfever_g.htm

CDC traveler's health information:
http://www.cdc.gov/travel/diseases/typhoid.htm

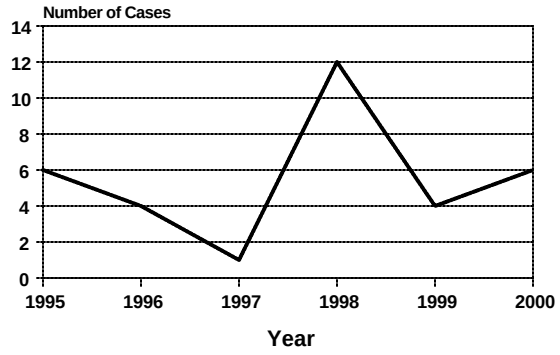
Acute Communicable Disease Control website:
http://lapublichealth.org/acd/procs/b73/b73index.htm

TYPHOID FEVER, CARRIER

CRUDE DATA	
Number of Cases	5
Annual Incidence[a]	
LA County	0.13 [b]
United States	N/A
Age at Diagnosis	
Mean	55.8
Median	44
Range	44 - 83
Case Fatality	0
LA County	0.0%
United States	N/A

Figure 91

Typhoid Fever Carriers by Year of Detection LAC, 1995 - 2000



[a] Cases per 100,000 population.
[b] Rates based on less than 19 observations are unreliable.

ETIOLOGY

A chronic typhoid carrier state can occur after acute or mild disease, or even subclinical infections. Among untreated cases, 10% will shed bacteria for three months after initial onset of symptoms and 2-5% will become chronic carriers. The chronic carrier state occurs most commonly among women in middle age.

DISEASE ABSTRACT

- Five new typhoid carriers were identified in 2000. The six- year average is 5 cases per year.
- Of the 22 total carriers who were still residing in LAC in 2000, 4 were successfully cleared with antibiotics, 2 moved away from LAC, and 1 expired. One previously known carrier moved back to LAC.

COMMENTS

All 5 newly identified cases were foreign born; 2 were men. Household contacts to each acute typhoid case are tested for *S. typhi*. Two new carriers were found as previously unknown sources for acute typhoid cases. 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.

ADDITIONAL RESOURCES

Additional information on typhoid fever is available from the CDC at:
http://www.cdc.gov/ncidod/dbmd/diseaseinfo/typhoidfever_g.htm

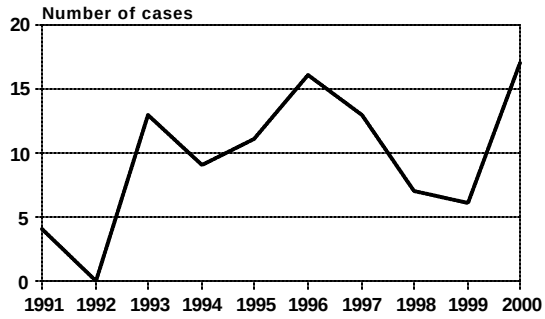
Traveler's health information at:
http://www.cdc.gov./travel/diseases/typhoid.htm

Acute Communicable Disease Control website:
http://lapublichealth.org/acd/procs/b73/b73index.htm

TYPHUS

CRUDE DATA	
Number of Cases	17
Annual Incidence [a]	
LA County	0.17 [b]
California	N/A
United States	N/A
Age at Onset	
Mean	33 years
Median	36 years
Range	1 - 57 years
Case Fatality	
LA County	0.0%
United States	N/A

Figure 92



[a] Cases per 100,000 population.
[b] Rates based on less than 19 observations are unreliable.

ETIOLOGY

Typhus (murine typhus, endemic typhus) is caused by bacteria, *Rickettsia typhi* and *R. felis*. It is transmitted through the bite, or contact with feces, of an infected flea. Reservoir animals are predominantly rats and other small mammals that live in areas with heavy foliage. Most reported cases of typhus live in the foothills of central LAC. Symptoms include fever, severe headache, chills, and myalgia. A fine, macular rash may appear 3 to 5 days after onset. Occasionally, complications such as pneumonia or hepatitis may occur. Fatalities are uncommon, occurring in less than 1% of cases. The disease is mild in young children. Typhus is not vaccine preventable, but can be treated with antibiotics.

DISEASE ABSTRACT

- ACD received few typhus reports until 1993 (Figure 92), when a fatal case may have led to increased awareness of the disease.
- In 2000, the 17 typhus cases represent the highest annual incidence ever reported in LAC.
- Cases occur more often in summer and fall; for 2000, nearly half of cases had an onset in October and November.

LOCATION

Typhus is endemic in the foothills of central LAC. Cases are reported from Silverlake, Echo Park, Eagle Rock, Glendale Hills, Pasadena and Altadena. Animal reservoirs have tested positive for *Rickettsia* in these areas. The reasons for this localized endemic area are unclear. In 2000, 7 cases were in residents of Foothill Health District, 6 were from Alhambra, 2 from Central, and 1 case each from Hollywood-Wilshire and San Fernando Health Districts. Twelve (70%) of reported cases were hospitalized for an average of 5 days.

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 adequate harborage for small mammals. Screens can be placed on windows and crawl spaces to prevent entry of animals into the house.

TRANSMISSION

Human infection most commonly occurs by introduction of infectious flea fecal matter into the bite site or into adjacent areas which have been abraded by scratching. While 30% of cases did not recall being bitten by fleas, most did observe small mammals such as rats, opossums, dogs and cat in their yards, and thus had exposure to animals that carry fleas. Typhus cannot be transmitted from person to person.

COMMENTS

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

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

ADDITIONAL RESOURCES

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

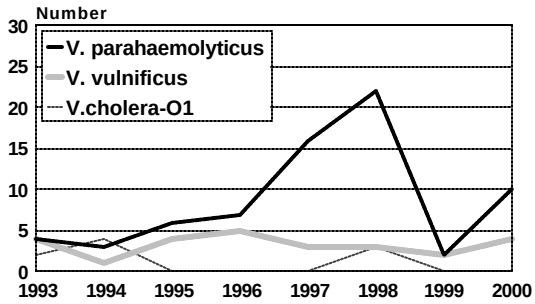
Sorvillo FJ, Gondo B, Emmons R, Ryan P, Waterman SH, Tilzer A, Andersen EM, Murray RA, and Barr AR. A suburban focus of endemic typhus in Los Angeles County: association with seropositive domestic cats and opossums. *Am J Trop Med Hyg* 1993;48:269-73.

Acute Communicable Disease Control website:
http://lapublichealth.org/acd/procs/b73/b73index.htm

VIBRIOSIS

CRUDE DATA	
Number of Cases	18
Annual Incidence [a]	
LA County	0.19
California	N/A
United States	N/A
Age at Onset	
Mean	41 years
Median	42 years
Range	29 - 55 years
Case Fatalities	
LA County	11% (n = 2)[b]
United States	N/A

Figure 93



[a] Cases per 100,000 population.
[b] Both deaths were due to *V. vulnificus*.

ETIOLOGY

The genus *Vibrio* consists of gram-negative, curved, motile rods, and contains about a dozen species known to cause illness in man. Transmission is most often through ingestion of food or water contaminated with the organism, but also from contaminated seawater coming in contact with a break in the skin. Presenting symptoms vary by infecting species and mode of transmission. *Vibrio vulnificus* present as a primary septicemia while *V. cholerae* and *V. parahaemolyticus* presents as a gastrointestinal illness. Cholera vaccine was once available in the US, but had not been recommended, due to limited protectiveness and potential for side effects. It is no longer available in the US. The vibrio species of greatest public health importance are *V. cholerae*-O1, *V. vulnificus*, and *V. parahaemolyticus*.

DISEASE ABSTRACT

- *Vibrio* species reported in LAC in 2000 included *V. vulnificus* with 4 reports and *V. parahaemolyticus* with 10.
- All 4 *V. vulnificus* cases were associated with oyster consumption; 2 died, for a 50% case-fatality rate.
- Four cases with infections by other vibrio species included 1 case of *V. alginolyticus* and 3 of *V. fluvialis*.
- No cases of *V. cholerae*-O1 or *V. cholerae* non-O1 were reported.

STRATIFIED DATA

Trends: In 2000, there were 18 cases. In the last eight years, Vibrio infection incidence peaked in 1998 with 36 reports, due mainly to an increase of *V. parahaemolyticus.*

Seasonality: Eighty-three percent (15/18) of cases occurred in May and September, which is consistent with the historical increase in cases seen during the warmer summer months.

Age, Sex, Race/Ethnicity: Vibrioses occurred predominately among Hispanic adult males (Table 8).

Location: SPA 2 had the most cases with 6, followed by SPA 3 with 4, SPA 6 with 2, and SPAs 4 and 7 with 2 cases each.

COMMENTS

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

Table 8. Vibrio Cases, by Species, Race, Age, and Sex, LAC, 2000

Species	Race/ Ethnicity	Mean Age (Range)	Sex Ratio (M:F)
V. parahaemolyticus (n = 10)	6 Hispanic, 2 Asian 1 White, 1 unknown	40 years (29 - 52)	4:1
V. vulnificus (n = 4)	4 Hispanic	45 years (31- 55)	4:0
Vibrioses, other * (n = 4)	3 Hispanic, 1 unknown	40 years (30 - 53)	3:1

* Other species = *V. alginolyticus* (1) and *V. fluvialis* (3).

ADDITIONAL RESOURCES

CDC websites:
http://www.cdc.gov/ncidod/dbmd/diseaseinfo/vibriovulnificus_g.htm

CDC vibrio cholera
http://www.cdc.gov/ncidod/dbmd/diseaseinfo/cholera_g.htm

CDC *Vibrio parahaemolyticus*
http://www.cdc.gov/ncidod/dbmd/diseaseinfo/vibrioparahaemolyticus_g.htm

Acute Communicable Disease Control website:
http://lapublichealth.org/acd/procs/b73/b73index.htm

PUBLICATIONS

1. Frederick T, Thomas P, Mascola L, Hsu H-W, Rakusan T, Mapson C, Weedon J, Bertolli J. Human immunodeficiency virus-infected adolescents: a descriptive study of older children in New York City, Los Angeles County, Massachusetts and Washington DC. *Pediatr Infect Dis J* 2000;19:551-555.

2. Buchholz U, Mouzin E, Dickey R, Moolenaar R, Sass N, Mascola L. Haff disease: from the Baltic sea to the U.S. shore. *Emerg Infect Dis* 2000;6:192-195.

3. Buchholz U, Richards C, Murthy R, Arduino M, Pon D, Schwartz W, Fontanilla E, Pegues C, Boghossian N, Peterson C, Kool J, Mascola L, Jarvis W. Pyrogenic reactions associated with single daily dosing of intravenous gentamicin. *Infect Control Hosp Epidemiol* 2000;21:771-774.

4. Hsu H-W, Pelton S, Williamson JM, Thomas P, Mascola L, Ortiz I, Rakusan T, Melville S. Bertolli J and the Pediatric Spectrum of HIV Disease Project. Survival in children with perinatal HIV infection and very low CD4 lymphocyte counts. *J Acquir Immune Defic Syndr* 2000;25:269-275.

5. Kool JL, Buchholz U, Peterson C, Brown EW, Benson RF, Pruckler JM, Fields BS, Sturgeon J, Lehnkering E, Cordova R, Mascola LM, Butler JC. Strengths and limitations of molecular subtyping in a community outbreak of Legionnaires' disease. *Epidemiol Infect* 2000;125:599-608.

COMMUNITY-ACQUIRED DISEASE OUTBREAKS

ABSTRACT

- In 2000, of 196 reported community-acquired outbreaks investigated, 40 were foodborne (see Foodborne Outbreak section). The remaining 156 community outbreaks consisted of 1,420 illnesses.
- Settings of community-acquired outbreaks primarily include schools and group homes.

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 held by either ACDC or by the district health office, with ACDC providing consultation. Figure 94 shows that, since 1997, the annual number of reported outbreaks has not varied as much as the number of cases involved in outbreaks.

Most of the reported community outbreaks in LAC were due to varicella (28%), and the ectoparasites, scabies and pediculosis (24%; (Figure 94).

Overall, pediculosis and gastroenteritis (GE) of undetermined etiology (generally defined as viral, non-laboratory confirmed) were the diseases with the highest number of cases. Also, GE illnesses of viral & undetermined etiology had the highest number of cases per outbreak (Table 9), followed by varicella and pediculosis. Pink eye, bacterial or viral conjunctivitis, received its own category this year.

The most common settings for outbreaks were elementary schools, accounting for 52%, and preschools, 30% (Figure 96).

Figure 94

Community Outbreaks
Number of Outbreaks and Persons Affected
LAC, 1997 - 2000

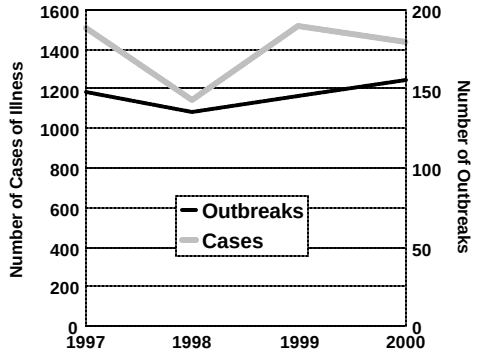
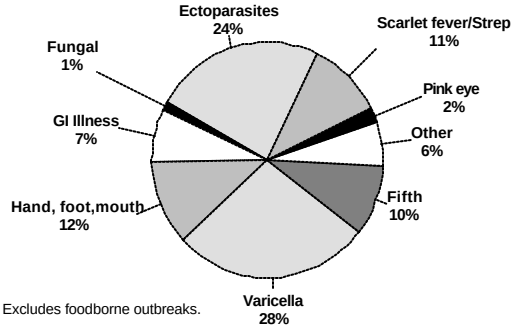


Figure 95

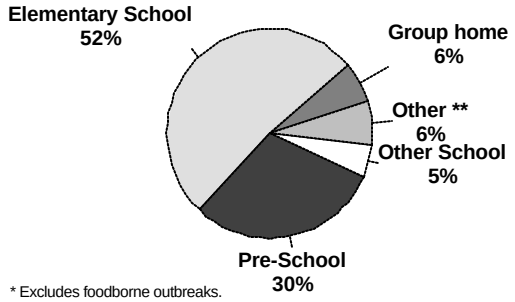
Community Outbreaks
by Type of Disease
LAC, 2000 * (N = 156)



* Excludes foodborne outbreaks.

Figure 96

Community Outbreaks
by Setting
LAC, 2000* (N = 156)



* Excludes foodborne outbreaks.
** Other includes private home, prison, travel-related, workplace, shelters, rehabilitation centers, firehouses, unknown

Table 9. Community Outbreaks by Disease Diagnosis, LAC–2000

Disease	Number of Outbreaks	Number of Cases	Avg. Cases per Outbreak	Range
Pediculosis	24	261	11	2 - 25
Scabies	13	97	7	2 - 24
Varicella	43	464	11	5 - 41
Hand, foot & mouth disease	18	166	9	2 - 47
Fungal diseases	2	6	3	2 - 4
GI illness - Viral GE [a]/undetermined	10	177	18	4 - 35
GI illness - *Shigella spp.*	2	14	7	4 - 10
Fifth disease	15	104	7	2 - 24
Scarlet Fever/Strep throat	17	77	5	2 -11
Pink eye	3	23	8	5 - 10
Other [b]	9	31	3	2 - 6
Total	**156**	**1,420**	**9**	**----**

[a] Excludes foodborne outbreaks.
[b] Other includes Hepatitis A, impetigo, leptospirosis, mumps, pertussis, unknown rash, rubella and shingles.

Table 10. Community Outbreaks: Disease Diagnosis by Setting, LAC–2000

Disease	Group Home	Elementary School	Pre-School	Other School [a]	Other [b]	TOTAL
Pediculosis	2	16	6	0	0	**24**
Scabies	5	0	1	3	4	**13**
Varicella	0	33	7	3	0	**43**
Hand, foot & mouth disease	0	5	11	1	1	**18**
Fungal diseases	0	1	1	0	0	**2**
GI illness - Viral GE	0	1	5	0	1	**7**
GI illness - bacterial etiology	0	0	2	0	0	**2**
GI illness- unknown etiology	1	1	1	0	0	**3**
Fifth disease	1	13	1	0	0	**15**
Pink eye	0	1	2	0	0	**3**
Scarlet Fever/Strep throat	0	8	8	0	1	**17**
Other	1	2	2	1	3	**9**
Total	**10**	**81**	**47**	**8**	**10**	**156**

[a] Includes senior high schools, middle schools, special ed., preschool/elementary schools, and elementary/middle schools.
[b] Includes private homes, prison, shelter, travel-related, workplace, rehabilitation center, fire house, and unknown.

COMMENTS

In previous years, ectoparasites (pediculosis and scabies) were the predominant outbreak type reported in schools (41% in 1998). Varicella accounted for 27% of school outbreaks in 1998. In 1999, varicella (32%) surpassed ectoparasites (23%) as the leading outbreak type reported among schools. This change in varicella outbreaks among schools is seen again in 2000: varicella 40%, ectoparasites 21%. This increase in varicella may be the result of a campaign in the fall of 1999 and 2000 by DHS Immunization Program in which they distributed fliers to all elementary schools in LAC requesting varicella outbreak reports and providing instructions for reporting.

FOODBORNE OUTBREAKS

ETIOLOGY

Foodborne outbreaks are caused by a variety of bacterial, viral, and parasitic pathogens and toxic substances. To be considered as a foodborne outbreak, CDC requires a minimum of "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 the Foodborne Illness Report (FBIR), which 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 of the report. When warranted, a thorough inspection of the facility and interview of the employees is conducted. In 2000, 64% of the reports resulted in investigation of the facility, which is often sufficient public health action to prevent additional foodborne illnesses.

Acute Communicable Disease Control (ACDC) Food and Water Safety Unit reviews all FBIRs. Typically an epidemiologic foodborne outbreak investigation will be initiated when there are multiple illnesses from multiple households, multiple reports from the same establishment with similar symptoms and close in time, large events, potential for others to become ill, or a need for public health intervention efforts to prevent additional illnesses.

DISEASE ABSTRACT

- This summary includes those foodborne outbreaks investigated by ACDC and reported to the California Department of Health Services.

Figure 97

Foodborne Outbreaks
Number of Persons Affected
LAC, 1997 - 2000

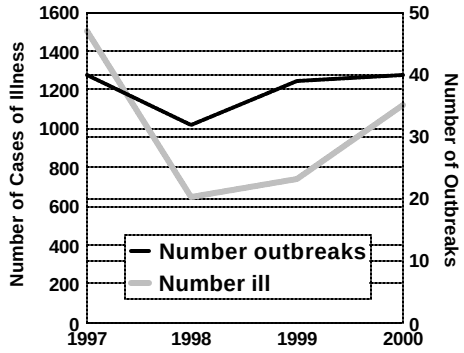


Figure 98

Foodborne Outbreaks
by Etiologic Agent Category
LAC, 1997 - 2000

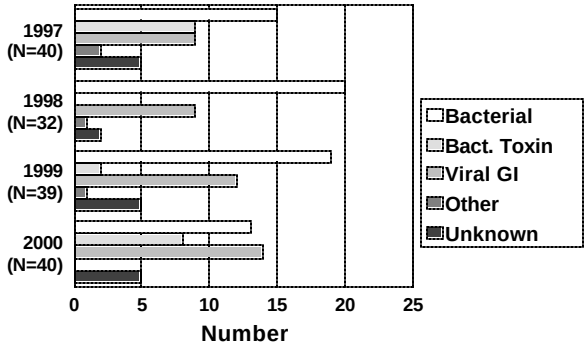
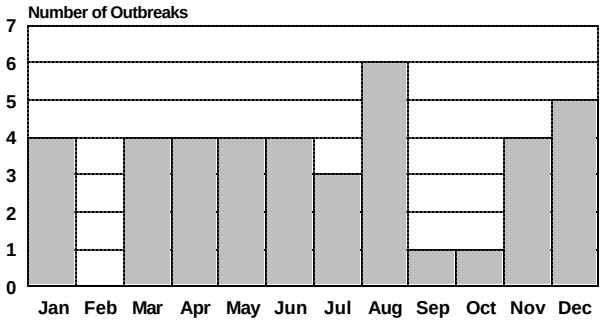


Figure 99

Foodborne Outbreaks
by Month of Onset
LAC, 2000 (N=40)



- Until 2000, bacteria had been the pathogen type most implicated in foodborne outbreaks. Viral pathogens have surpassed bacteria as etiologic agents (Figure 98).

DATA

Overview: Of the 1603 FBIR's in 2000 in consumers eating food from establishments located in LAC, F&M investigated 1023 (64%). Of the total FBIR's received in 2000, 496 were potential outbreaks: single reports of multiple illnesses within one household (382), single reports of two or more illnesses in multiple households (86), or multiple reports for same establishment (28). As always, ACDC investigates those foodborne outbreaks with the greatest public health importance. In 2000, ACDC investigated 40 outbreaks representing 1125 cases of foodborne illness (Table 11; Figure 97). These outbreaks were caused by a variety of pathogens (Figure 98). The mean number of cases per foodborne outbreak was 28 (range 2 - 188).

Seasonality: The number of foodborne outbreaks often increases in summer and during the holiday season, probably due to the increase in gatherings around these times. In 2000 there were peaks of foodborne outbreaks in August and December (Figure 99).

Agent: Typical foodborne pathogens can be categorized according to characteristics of illness they have in common. The categories used in this report includes five types of pathogens. Bacterial agents which cause infection include *Salmonella, Shigella, Campylobacter, Vibrio spp.,* and *E.coli*. Bacteria that elaborate toxins include *Staphylococcus aureus*, *Clostridium perfringens, and Bacillus cereus*. Viral gastroenteritis (Viral GE) includes the Norwalk-like viruses (NLV) of the *Calciviridae* family. The "other" category includes Hepatitis A virus, fish poisonings, and parasites.

Figure 100

Foodborne Outbreaks
Percent with Suspected/Confirmed Etiology
LAC, 1997 - 2000

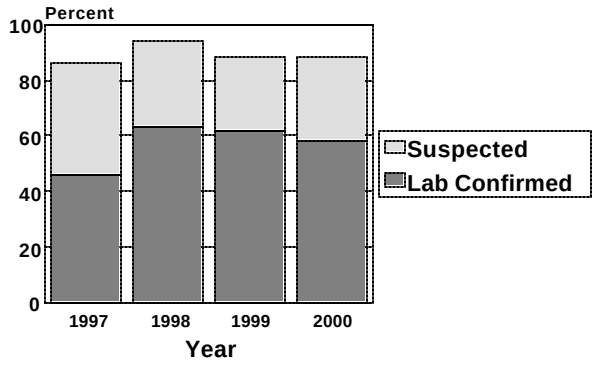


Figure 101

Foodborne Outbreaks
Percent by Etiologic Agent Category
LAC, 2000 (N = 40)

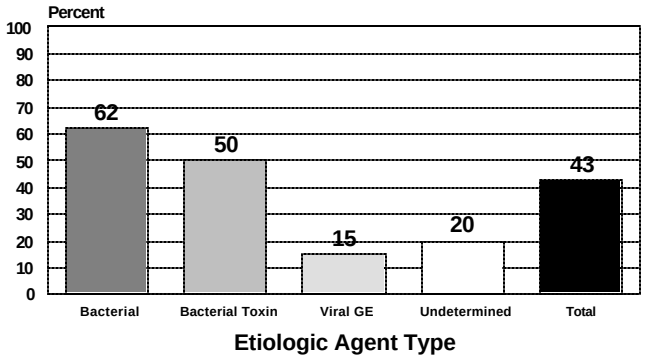
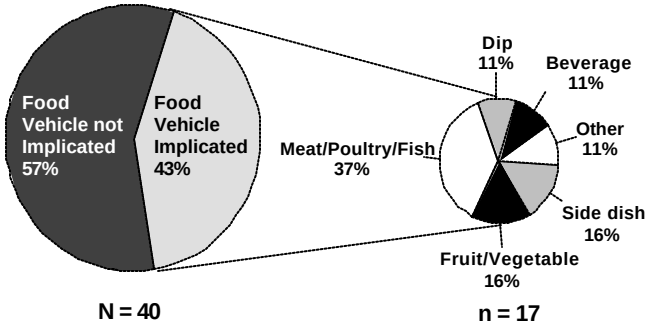


Figure 102

Foodborne Outbreaks
by Implicated Food Vehicles
LAC, 2000



Of foodborne outbreaks investigated, a specific pathogen was laboratory confirmed in 58% and epidemiologically suspected in 30% (Figure 100). Ten outbreaks, all bacterial, were identified by routine disease surveillance (Table 12). Laboratory testing was conducted in 28 of the 40 foodborne outbreaks. Some reasons for no laboratory testing include lack of cooperation (7); unclear epidemiologic picture (5); too late for testing (3); none requested by ACDC (2).

Incubation: Incubation periods vary for the many foodborne pathogens and among symptomatic individuals in the same outbreak due to dose ingested, pre-existing medical conditions, and variations in an individual host's response to the pathogen. Toxins (bacterial and other) tend to have short incubations (less than 12 hrs) while bacterial and viral infections tend to have longer incubation (≥12 hrs).

The Food: In 43% of foodborne outbreak investigations, we were able to implicate a food vehicle epidemiologically (Figure 101) and were able to isolate and confirm an organism in a food item in 3 outbreaks. In suspected bacterial outbreaks, the food vehicle was identified 62% of the time; while in viral GE suspected outbreaks, a food item was identified in only 15%. Implicated food vehicles are categorized in Figure 102. The largest proportion of outbreaks was caused by the meat/poultry/fish category (37%), followed by fruit/vegetable and side dish categories (16% each). Two outbreaks had multiple implicated food items.

Food associated with an outbreak was most often prepared by a restaurant (40%) or a caterer (20%; Figure 103).

In 21 of 40 outbreak investigations, probable contributing factors of the cause of the outbreak were found (Figure 104). More than one factor could be cited for each outbreak. The most frequent factors identified were time-temperature violations (14); cross-contamination (9); infected foodhandler (7); under-cooked/reheated foods (3); and high-risk food consumed (2). On average, 2 contributing factors were reported per outbreak.

Figure 103
Foodborne Outbreaks by Food Source LAC, 2000 (N=40)

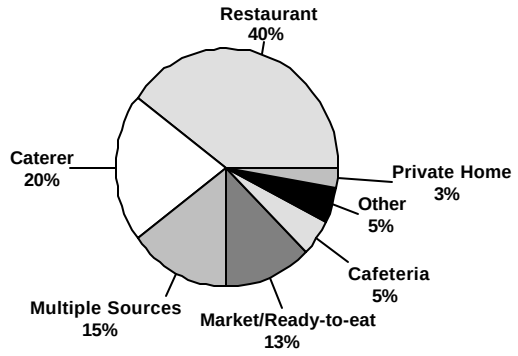


Figure 104
Foodborne Outbreaks Probable Contributing Factors LAC, 2000

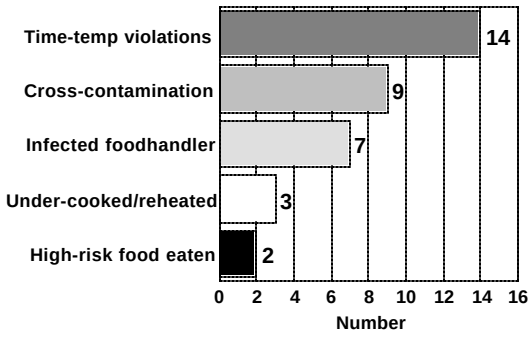
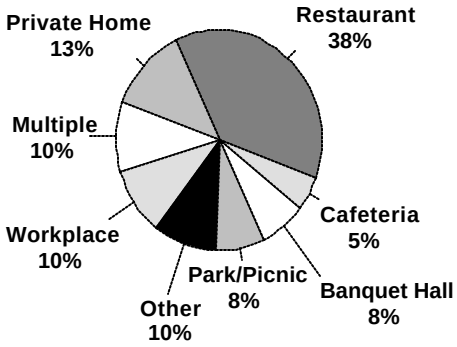


Figure 105
Foodborne Outbreaks by Place Food Eaten LAC, 2000 (N=40)



Outbreak Location: The most common eating places for foodborne outbreaks were restaurants (38%), followed by private homes (13%; Figure 105).

The geographic distribution of the outbreaks by SPA is summarized in Table 13. SPA 3 had the most foodborne outbreaks (8); SPAs 6 and 1 had the least (1 each). Three outbreaks involved multiple SPAs, 4 of which involved multiple counties and 3 of which involved multiple states.

Specific Outbreak Summaries:

OB#228 - *Clostridium perfringens* in a Juvenile Correctional Facility

On the evening, November 18, 2000, a juvenile correctional facility reported a gastrointestinal illness cluster of approximately 200 individuals. All meals are prepared and served daily at this establishment to all juveniles. Staff members have the opportunity to eat the meals during their shift. Illness was evident in juveniles throughout the facility, and in some staff members. Of approximately 570 individuals exposed, 188 reported illness. One stool specimen was collected and tested positive for *C. perfringens* at $1x10^5$ organisms per gram. The suspected meal consisted of pork, refried beans, tortillas, sour cream, salad, ranch dressing, apple, and milk. *C. perfringens* was isolated from the beans at $1x10^6$ organisms, thereby implicating this food item and agent as the cause of this outbreak. Environmental Health Services inspected the kitchen and found several violations. Recommendations were made to the juvenile hall staff to prevent future outbreaks.

OB#232-Norwalk-like Virus Associated with a Bat Mitzvah

LAC DHS received a report of an illness cluster associated with a Bat Mitzvah dinner at a commercial food establishment. There were several events that were associated with the Bat Mitzvah: a small dinner party, morning temple ceremony, kiddish/lunch, a large dinner party, and a small brunch. Environmental Health Services inspected the temple and kiddish caterer. ACDC interviewed 154 individuals, of whom 60 met the case definition (attack rate = 39%). Symptoms were nausea, fatigue, diarrhea, vomiting. The mean duration of illness was 2 days. There were 3 secondary cases. The kiddish was statistically associated with illness. No food item was implicated. Of three specimens collected, one was positive for NLV. Norwalk can be spread by aerosols, by food, person-to-person, or by fomite. One person was ill and vomited at the ceremony; those aware of the ill person had a higher risk of becoming ill (RR = 1.7; 95% CI = 1.2, 2.4).

Viral GE Summary:

Fourteen of the 40 foodborne outbreaks (35%) investigated in 2000 were caused by viral GE. Laboratory testing was completed on 11 of these viral GE outbreaks, with nine testing positive for NLV. A majority of the viral GE outbreaks (71%) occurred in spring and summer. The mean number of cases per outbreak for 2000 is 28 cases. The average of the median duration for each outbreak is 1.9 days. A majority of the viral GE outbreaks (79%) had an undetermined implicated food item. Restaurants were the most common food source for the 2000 viral GE outbreaks (71%). The most frequent contributing factor identified for viral GE outbreaks was ill foodhandlers (36%); however, many were undetermined (50%).

COMMENTS

Since 1999, the LAC Public Health Laboratory has been testing for NLV 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 NLV outbreaks since 1999. For the first time in 2000, the number of viral GE outbreaks was higher than bacterial, which had been the leading identified etiologic agent type. This could be due to one or more factors, including the confirmation of previously undiagnosed outbreaks, an increased awareness among the investigating epidemiologists, and/or the decrease in the incidence of bacterial pathogen cases in recent years.

PulseNet is a fairly new network which uses the collaboration of laboratories, health departments, and the Internet to detect outbreaks through pulsed field gel electrophoresis (PFGE) of pathogens. The PFGE results are monitored for matching pathogen strains. When a match is detected, an investigation is often initiated. In addition, a solitary case can be linked to a larger, previously identified outbreak. LAC was involved in the investigation of 4 of these foodborne outbreaks in 2000.

Mild symptoms, long incubation periods, and poor public/medical community awareness of public health procedures may contribute to under-reporting of foodborne outbreaks.

REFERENCE

1. Centers for Disease Control and Prevention: Surveillance for Foodborne-Disease Outbreaks - United States, 1988-1992. *MMWR* 1996;45(SS-5):58.

ADDITIONAL RESOURCES

LAC Communicable Disease Reporting System - Hotline: (888) 397-3993,
Faxline: (888) 397-3779, E-mail: cdrsreprt@dhs.co.la.ca.us

LAC DHS Public Health Programs and Services
http://www.lapublichealth.org

-Foodborne Disease Section in B-73 Manual
http://lapublichealth.org/acd/procs/b73/b73fh.pdf

CDC - Foodborne and Diarrheal Diseases Branch
http://www.cdc.gov/ncidod/dbmd/foodborn.htm

- Outbreak Response and Surveillance Unit
http://www.cdc.gov/ncidod/dbmd/outbreak/

- FoodNet
http://www.cdc.gov/foodnet/

FDA - Center for Food Safety and Applied Nutrition
http://vm.cfsan.fda.gov/list.html

Gateway to Government Food Safety Information
http://www.FoodSafety.gov

Table 11. Foodborne Outbreaks In Los Angeles County, 2000 (N=40)

Disease	Serotype	Cases	SPA/Jurisdictions
LAB CONFIRMED			
C. PERFRINGENS		188	7
CAMPYLOBACTER		19	8
CAMPYLOBACTER	JEJUNI	< 5	5
CAMPYLOBACTER	JEJUNI	< 5	2
NLV		8	8
NLV		45	3
NLV		10	3
NLV		22	8
NLV		6	5,2
NLV		55	5
NLV		9	3
NLV		60	2,4,5
NLV		42	3
SALMONELLA	ENTERITIDIS	12	3
SALMONELLA	ENTERITIDIS	17*	MULTI-STATE (CA,NV,CO)
SALMONELLA	ENTERITIDIS	20	1
SALMONELLA	NEWPORT	23	MULTI-COUNTY (LAC,OC)
SALMONELLA	POONA	< 5*	MULTI-STATE (CA,OR,NV,WA.NM)
SALMONELLA	THOMPSON	12*	MULTI-STATE (CA,AZ)
SALMONELLA	THOMPSON	47	7
SALMONELLA	ENTERITIDIS	14	3
SHIGELLA	SONNEI	109*	MULTI-STATE (CA,WA,OR)
SHIGELLA	SONNEI	8	4
UNCONFIRMED			
BACTERIAL TOXIN		33	7
BACTERIAL TOXIN		6	2
BACTERIAL TOXIN		25	2
BACTERIAL TOXIN		< 5	5
C PERFRINGENS		15	MULTI-COUNTY (LAC,OC)
STAPH AUREUS		16	3
STAPH AUREUS		58	8
UNKNOWN GE		69	7
UNKNOWN GE		14	3
UNKNOWN GE		6	4
UNKNOWN GE		< 5	4
UNKNOWN GE		< 5	8
VIRAL GE		37	2
VIRAL GE		19	7
VIRAL GE		19	5, PASADENA
VIRAL GE		35	2
VIRAL GE		31	2,3,7

*Cases include only the LAC cases from a larger outbreak.

Table 12. Laboratory Summary
Outbreaks by Suspect/Confirmed Etiologic Agent "Type"

	Bacterial	Bacterial Toxin	Norwalk-Like Virus	Unknown	Total
# OBs Investigated	13	8	14	5	40
#OBs Lab Tested	13	3	11	1	28
#OBs Lab Confirmed Agent	13	1	9	--	23
#OBs Identified By Surveillance	10	--	--	--	10

Table 13: 2000 - Frequency of Foodborne Outbreaks by Service Planning Area (SPA)/Jurisdictions

SPA	Frequency	Percent
1	1	3
2	5	13
3	8	20
4	3	7
5	3	7
6	1	3
7	4	10
8	5	13
Multi-SPA	3	7
Multi-County*	3	7
Multi-State	4	10
Total	**40**	**100**

*Multi-County/Multi-Jurisdiction

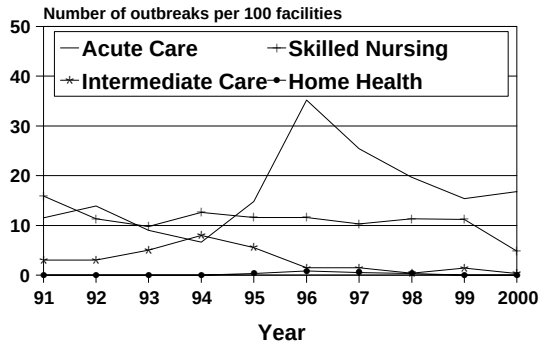
HEALTHCARE FACILITY OUTBREAKS

DEFINITION

Outbreaks in healthcare organizations are defined as clusters of nosocomial (health-facility-acquired) or home-health-care-associated infections, related in time and place or occurring above a baseline or threshold level for a facility, specific unit, or ward.

Figure 106

Healthcare Facility Outbreaks by Facility Type LAC, 1991 - 2000



ABSTRACT

- Outbreaks reported by acute care hospitals remained stable for a second year.
- Outbreaks due to antibiotic-resistant bacteria continued to predominate in the acute care setting.
- The number of reported outbreaks in skilled nursing facilities (SNFs) decreased by half in 2000.

Table 14. Number and Rates of Reported Outbreaks in Healthcare Facilities LAC, 1997 - 2000

	1997		1998		1999		2000	
	No.	Rate*	No.	Rate*	No.	Rate*	No.	Rate*
Acute Care Hospitals	31	25.4	24	19.7	18	15.4	20	16.8
Subacute Facilities:								
Home Health Agencies	2	0.5	1	0.3	0	0	0	0
Intermediate Care/Psych	3	1.5	1	0.4	4	1.4	1	0.3
Skilled Nursing Facilities	40	10.3	41	11.3	41	11.2	21	4.8
Total	**76**	**–**	**67**	**–**	**63**	**–**	**42**	**–**

*Outbreaks per 100 facilities.

Acute Care Hospitals:

In 2000, there were 119 acute care hospitals in the LAC jurisdiction, wherein 20 outbreaks were reported (rate = 16.8 per 100 facilities; Table 14); this is a slight increase from 1999. Four hospitals reported more than one outbreak. Nosocomial scabies outbreaks decreased from 3 in 1998, to 2 in 1999, to 0 outbreaks in 2000 (Table 15). In 1998, scabies caused 35% of all cases. In 2000 the etiologic agents contributing the largest number of cases in acute care outbreaks were methicillin-resistant *Staphylococcus aureus (23),* methicillin-sensitive *Staphylococcus aureus (19),* and *Pseudomonas aeruginosa (11).*

Table 15. Acute Care Hospital Outbreaks, by Disease/Condition, LAC, 2000

Disease/Condition/Etiologic Agent	Number of Outbreaks	Number of Cases
Methicillin-resistant *Staphylococcus aureus*	5	23
Methicillin-sensitive *Staphylococcus aureus*	3	19
Pseudomonas aeruginosa	2	11
Respiratory syncytial virus	1	5
Aspergillus	1	5
Candida parapsolosis	1	4
Enterobacter cloacae	1	5
Hepatitis A	1	2
Rotavirus	1	6
Staphylococcus epidermidis	1	6
Acute thrombotic events in liver transplant	1	6
Conjunctivitis	1	6
Necrotizing enterocolitis	1	5
Total	**20**	**103**

Subacute Care Facilities:

In 2000, LAC had a total of 1,093 subacute care facilities: 434 SNFs, 334 intermediate care facilities, and 325 home health agencies. During 2000, 21 outbreaks were reported in SNFs and 1 in an intermediate care/psychiatric facility (Table 14). Two SNFs reported more than one outbreak. As in previous years, scabies outbreaks were the most frequently reported in subacute care settings (11/22). The number of outbreaks and cases of reported gastroenteritis--due to Norwalk-like virus and unspecified etiology--decreased to 102 cases (4 outbreaks) in 2000 from 251 cases (9 outbreaks) in 1999. In 2000 intermediate care facilities reported only one outbreak--a skin rash of unknown etiology.

Table 16. Subacute Care Setting* Outbreaks, by Disease/Condition, LAC, 2000

Disease/Condition	Number of Outbreaks	Number of Cases
Scabies	11	55
Methicillin-resistant *S. aureus*	4	17
Gastroenteritis, unspecified	2	20
Gastroenteritis, Norwalk-like virus	2	82
Streptococcus pneumoniae	1	2
Skin rash unknown etiology	1	9
Clostridium difficile	1	8
Total	**22**	**193**

*Skilled-Nursing, Intermediate-Care/Psychiatric, Home Health.

COMMENTS

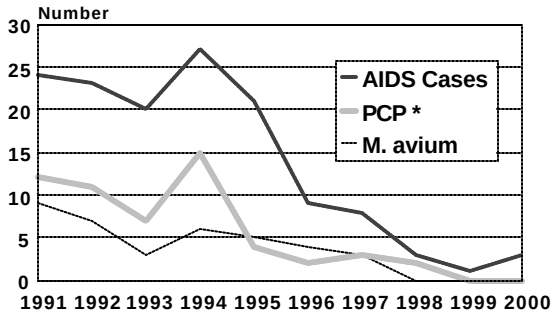
Hospital outbreaks are principally managed by hospital infection control practitioners and monitored by ACDC staff. More extensive oversight is provided for outbreaks in facilities with minimal infection control resources and for those diseases with higher morbidity or mortality potential. Community Health Services district staff have primary responsibility for disease investigations in subacute care settings.

The number of scabies outbreaks in acute care hospitals decreased from 13 outbreaks in 1996, to 11 in 1997, to 3 in 1998, to 2 in 1999, to 0 outbreaks in 2000. Distribution of ACDC's guideline for management of scabies in healthcare facilities and increased awareness of the potential for scabies transmission in the acute care setting may have contributed to this decrease. Developing strategies to prevent and control the emergence and spread of antibiotic-resistant bacteria is a priority issue in both sub-acute and acute care settings. This will require evaluating antibiotic prescribing practices as well as continued emphasis on appropriate infection control practices.

PEDIATRIC ACQUIRED IMMUNODEFICIENCY SYNDROME (AIDS)

CRUDE DATA	
Number of Cases	3
Annual Incidence [a]	
LA County	0.03
California	0.4
United States	0.4
Age at Onset	
Mean	7 years
Median	5 years
Range	2 - 12 years
Case Fatality	
LA County	0%
United States	N/A

Figure 107



* PCP = *Pneumocystic pneumonia.*

[a] Incidence rates unstable due to small number of observations.

ETIOLOGY

AIDS (acquired Immunodeficiency syndrome) is caused by the human immunodeficiency virus (HIV). HIV attacks the body's immune system until it is too weak to defend the body against diseases and tumors. Various infections called opportunistic infections develop. AIDS is the condition of the body being overwhelmed by opportunistic infections and/or tumors. A pediatric case of AIDS is defined as a child, aged less than 13 years, with a CDC surveillance case definition of AIDS. Children acquire HIV infection primarily via perinatal (mother-to-child) transmission; however, many were infected from transfusion of contaminated blood or blood products in the early 1980s before the HIV testing was available for these products. Children are diagnosed with HIV with a positive ELISA antibody test and confirmatory western blot. Since infants can passively carry maternal antibody until 18 months of age, infants are diagnosed only after the virus has been detected directly using polymerase chain reaction (PCR). Until the use of antiretroviral treatment during pregnancy, at labor and delivery, and for the newborn, mother-to-infant transmission was 20-25% for HIV-positive mothers. With treatment, transmission rates have been reduced to a little as 2-3%. Common symptoms of HIV disease are persistent fever, diarrhea, “failure to thrive,” lymphadenopathy, hepatomegaly, progressive neurologic disease, and other infectious diseases--including oral candidiasis, herpes zoster, and persistent otitis media. Severe outcomes include all opportunistic infections and cancers indicative of AIDS, as well as death.

DISEASE ABSTRACT

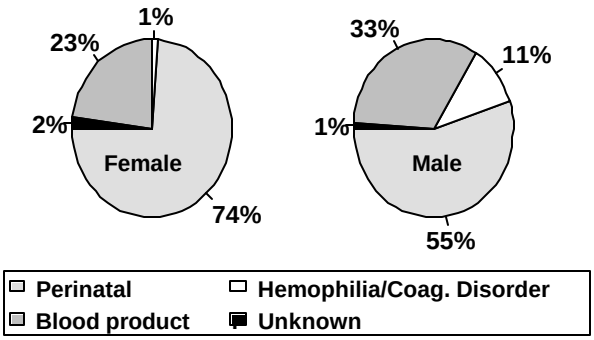
- Only 3 children were diagnosed with AIDS in 2000.
- Because HIV-infected women are now identified during their pregnancy and treated with antiretroviral medications, mother-to-infant transmission of HIV has been reduced in LAC.
- Early detection and better treatment have prevented HIV-positive children from progressing to AIDS.

DATA

Three AIDS cases were reported in 2000. Two children (aged 6 and 12 years) were identified as HIV positive at onset of AIDS, one of whom had immigrated to the US after both parents had died. The third child was identified at birth and developed lymphoid interstitial pneumonia at age 3 years despite antiretroviral treatment for the mother during labor and delivery.

From 1982 to December 2000, 235 children aged less than 13 years have been reported with AIDS in LAC. Of these, 85 (36%) were alive with follow-up through 2000. The number of children diagnosed with AIDS in LAC has declined from a peak of 27 in 1994 to 3 children in 2000.

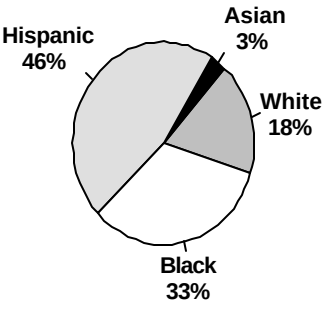
Figure 108



Trends in AIDS-defining illnesses show that between 1988 and 2000, 100 (43%) cases were diagnosed with *Pneumocystis carinii* pneumonia (PCP), and 50 (21%) were diagnosed with *Mycobacterium avium*. In 1994, 56% of AIDS cases were diagnosed with PCP; this proportion declined in 1995 to 19% and to 0% in 2000. The number of cases diagnosed with *M. avium* similarly declined between 1994 and 1997, from 19% in 1994 to 5% in 1995, and 0% in 1997 (Figure 107). Since the implementation of universal blood donor screening in 1985 and the treatment of blood products received by those with hemophilia and other blood clotting disorders, the majority of children reported with AIDS have been exposed to HIV via perinatal (mother-to-child) transmission (Figure 108). Of the 235 cumulative children diagnosed with AIDS under age 13, 69% acquired HIV from their mothers; 26% were infected through a blood transfusion; and 3% had hemophilia or a coagulation disorder. In 2%, no exposure category could be determined. The racial/ethnic distribution for children with AIDS is similar to that of adult female cases. Overall, 18% of the 235 children diagnosed with AIDS in LAC were White, 34% African-American, 46% Latino and 2% Asian (Figure 109).

Figure 109

.



COMMENTS

The decrease in the number of children with AIDS in recent years is no doubt due to the effectiveness of providing antiretroviral treatment to HIV-positive pregnant woman as well as providing treatment to infected children. The widespread use of antiretroviral therapy in HIV-infected mothers and their newborns has been a major factor in the decline in perinatal HIV infection and

AIDS among children in LAC. Providing pregnant women easy access to perinatal care early in pregnancy, routinely offering them testing and counseling for HIV infection and offering antiretroviral therapy can greatly reduce the risk of HIV transmission from an infected mother to her child. Primary prevention of HIV infection in women of childbearing age is the best way to prevent perinatal HIV transmission.

ADDITIONAL RESOURCES

Centers for Disease Control and Prevention. Public Health Service task force recommendations for the use of antiretroviral drugs in pregnant women infected with HIV-1 for maternal health and for reducing perinatal HIV-1 transmission in the United States. *MMWR* 1998;47 (RR-2):1-30.
Update guideline available at http:// www.hivatis.org

Mofenson LM and the Committee on Pediatric AIDS. Technical Report: Perinatal Human Immunodeficiency Virus testing and prevention of transmission. Pediatrics 2000;106:e88:1-12.
Available at http://www.pediatrics.org

Centers for Disease Control and Prevention. CDC Guidelines for national human immunodeficiency virus case surveillance, including monitoring for human immunodeficiency virus infection and acquired immunodeficiency syndrome. *MMWR* 1999;48 (RR-13):1-27.
Available at http://www.cdc.gov/mmwr/preview/mmwrhtml/rr4813a1.htm

CDC. Appendix: Revised Surveillance Case Definition for HIV Infection.*MMWR* 1999;48(RR13);29-31. Available at http://www.cdc.gov/epo/mmwr/preview/mmwrhtml/rr4813a2.htm

Centers for Disease Control and Prevention. HIV/AIDS Surveillance Report, 2000; 12 (1). Available at http://www.cdc.gov/hiv/stats/hasrlink.htm

Centers for Disease Control and Prevention. Success in implementing Public Health Service guidelines to reduce perinatal transmission of HIV – Louisiana, Michigan, New Jersey, and South Carolina, 1993, 1995, and 1996. *MMWR* 1998; 47:688-91.
Available at http://www.cdc.gov/mmwr/preview/mmwrhtml/00054649.htm

HIV/AIDS Reporting System.
http://www.cdc.gov/nchstp/hiv_aids/dhap.htm

2000 COMMUNICABLE DISEASE MORBIDITY REPORT CONTRIBUTORS

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

Acute Communicable Disease Control Chiefs . . . . . Laurene Mascola, MD, MPH
Immunization Program Director . . . . . Cheri Todoroff, MPH

Acute Communicable Disease Control Program Reports

Amebiasis . . . . . David E. Dassey, MD, MPH
Campylobacteriosis . . . . . Rachael Zweig, MPH
Coccidioidomycosis . . . . . Alison Itano, MS
Cryptosporidiosis . . . . . Irene Lee, MPH
Cysticercosis . . . . . David E. Dassey, MD, MPH
Encephalitis . . . . . Roshan Reporter, MD, MPH
Escherichia coli O157:H7 . . . . . Irene Lee, MPH
Giardiasis . . . . . David E. Dassey, MD, MPH
Haemophilus influenzae Invasive Disease . . . . . Lucie McCoy, MPH
Hansen's Disease (Leprosy) . . . . . Grace Run, MS
Hepatitis A . . . . . Rachael Lee, RN, BSN, PHN
Hepatitis B . . . . . Melba Veza, RN, BSN, PHN
Perinatal Hepatitis B Prevention Program . . . . . Bridget Beeman, RN, PHN, MPH
Hepatitis C . . . . . Michael Tormey, MPH
Legionellosis . . . . . Carol Peterson, MD, MPH
Listeriosis, Nonperinatal . . . . . Irene Lee, MPH
Listeriosis, Perinatal . . . . . Irene Lee, MPH
Lyme Disease . . . . . Roshan Reporter, MD, MPH
Malaria . . . . . Heather Smith, MPH
Measles . . . . . Lucie McCoy, MPH
Meningitis, Viral . . . . . Melba Veza, RN, BSN, PHN
Meningococcal Disease . . . . . Melba Veza, RN, BSN, PHN
Mumps . . . . . Lucie McCoy, MPH
Pertussis (Whooping Cough) . . . . . Lucie McCoy, MPH
Salmonellosis . . . . . Trina Pate, RN, BSN, PHN
Shigellosis . . . . . Rachael Zweig, MPH
Typhoid Fever, Acute . . . . . Rita Bagby, RN, BSN, PHN
Typhoid Fever, Carrier . . . . . Rita Bagby, RN, BSN, PHN
Typhus Fever . . . . . Heather Smith, MPH
Vibriosis . . . . . Michael Tormey, MPH

2000 COMMUNICABLE DISEASE MORBIDITY REPORT CONTRIBUTORS (cont'd.)

Disease Outbreak Summaries

Community-Acquired Outbreaks . . . . . Heather Smith, MPH
Foodborne Outbreaks . . . . . Rachelle Rohwer, MPH
Health-Care-Facility Outbreaks . . . . . Alison Itano, MS

Pediatric HIV/AIDS Reporting Project Report

Pediatric Acquired Immunodeficiency Syndrome . . . . . Getahun Aynalem, MD, MPH

Editors . . . . . Douglas Frye, MD, MPH; Sadina Reynaldo, PhD; Grace Run, MS; Marcella McMillian, MPH; Rachelle Rohwer, MPH

Copy Editor . . . . . Esther Parker

Data Services

Statistical Support and Maps . . . . . Grace Run, MS

A number of other persons not listed above have contributed their time and energy to make this report possible. Among those who deserve recognition for their supportive work are public health nurses, public health investigators, public health registrars, data analysts, administrative and clerical staff.

This report can be obtained from the following website: www.lapublichealth.org/acd.

.