MENINGOCOCCAL DISEASE

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

[a] Cases per 100,000 population

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

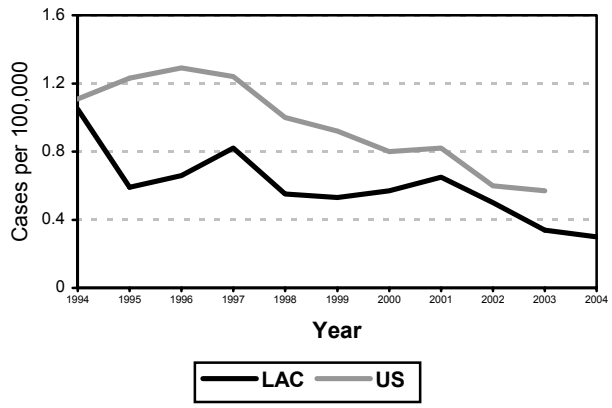
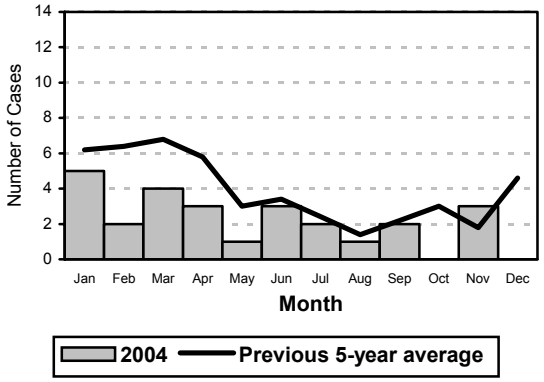


Figure 2
Meningococcal Disease
by Month of Onset
LAC, 2004 (N=28)



DESCRIPTION

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

DISEASE ABSTRACT

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

STRATIFIED DATA

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

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

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

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

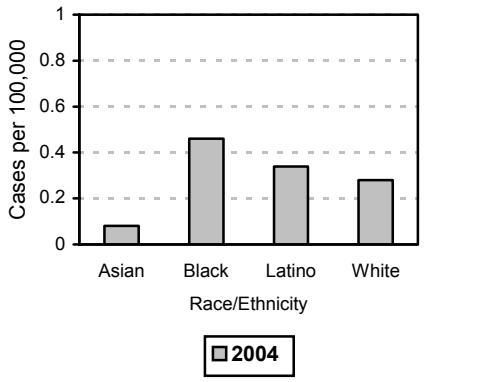
Sex: The male-to-female rate ratio was 1.2:1**.**

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

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

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

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



PREVENTION

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

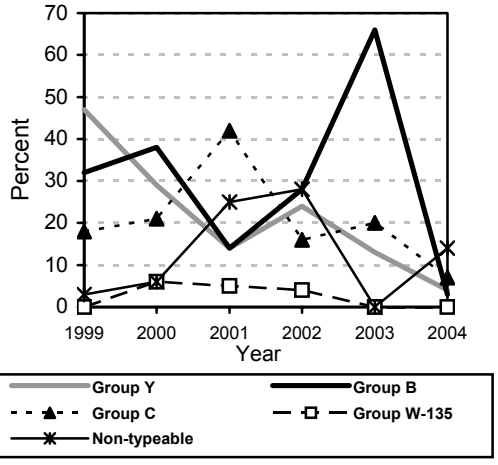
The current polysaccharide-based meningococcal vaccine (MPSV4), *Menomune*, which protects against sergroups A, C, Y, and W-135 and can only be given to persons aged 2 and older, is recommended for persons with terminal complement deficiencies, persons with anatomic or functional asplenia, research and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

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

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

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

Figure 5
Meningococcal Disease
by Serogroup
LAC, 1999–2004



COMMENTS

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

ADDITIONAL RESOURCES

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

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

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

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

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