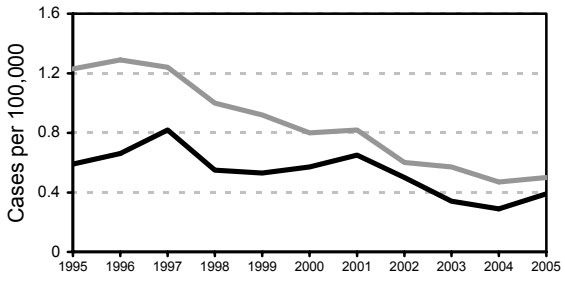
MENINGOCOCCAL DISEASE

CRUDE DATA	
Number of Cases	37
Annual Incidence[a]	
LA County	0.39
California	N/A
United States[b]	0.35
Age at Diagnosis	
Mean	25
Median	15
Range	<0–79 years
Case Fatality	
LA County	5%
United States[b]	7%

Figure 1
Meningococcal Disease
Incidence Rates by Year of Onset
LAC and US, 1995–2005



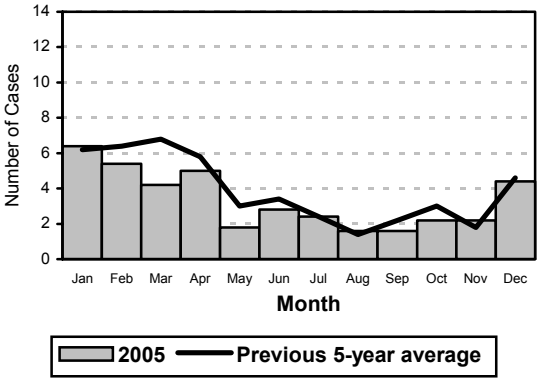
[a] Cases per 100,000 population.

[b] Based on 2005 population estimates and the Active Bacterial Core Surveillance Report [1].

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.

Figure 2
Meningococcal Disease
by Month of Onset
LAC, 2005 (N=37)



DISEASE ABSTRACT

- Reported invasive meningococcal disease cases increased by 32% in 2005 compared to 2004 with 37 and 28 cases reported, respectively.
- No outbreaks were documented in 2005.
- In 2005, *N. meningitidis* was culture-confirmed in 34 (92%) cases: 18 (49%) from cerebrospinal fluid (CSF), 15 (41%) from blood, and 1 (2%) from both blood and CSF (Figure 5). Invasive meningococcal disease was diagnosed most frequently in the serogroups B, C, and Y.

STRATIFIED DATA

Trends: A greater proportion of cases were culture-confirmed in 2005 compared to 2004. Most (n=25, 74%) culture-positive isolates were submitted for serogrouping. Serogroup Y isolates decreased from 2004 to 2005 and were outnumbered by serogroups B or C by 1:2 (Figure 5).

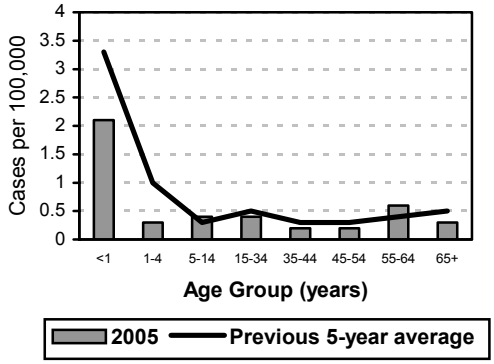
Seasonality: Most cases were reported during winter and early spring (Figure 2).

Age: The incidence rates among infants <1 year increased in 2005 (2.1 vs. 1.4 per 100,000) compared to 2004. The rate among 5-14 and 15-34 were similar to last year (0.4 vs. 0.3 per 100,000). The rate among adults 55-64 increased in 2005 (0.6 vs. 0.4 per 100,000) (Incidence data from 2004 not shown).

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

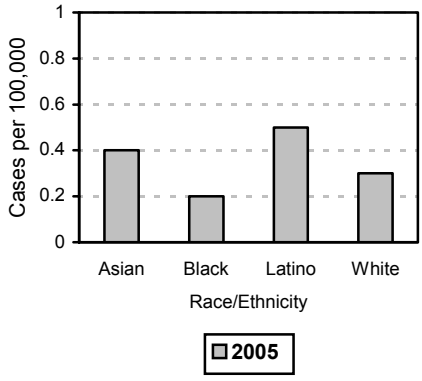
Race/Ethnicity: Invasive meningococcal cases were reported most frequently in Hispanics (n=21, 57%) followed by Whites (n=9, 24%), Asians (n=5, 14%) and 2 (5%) cases in Blacks. The number of cases in each of these groups is too low for reliable incidence rate calculation (Figure 4).

Figure 3
Meningococcal Disease
Incidence Rates by Age Group
LAC, 2005



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, 2005



PREVENTION

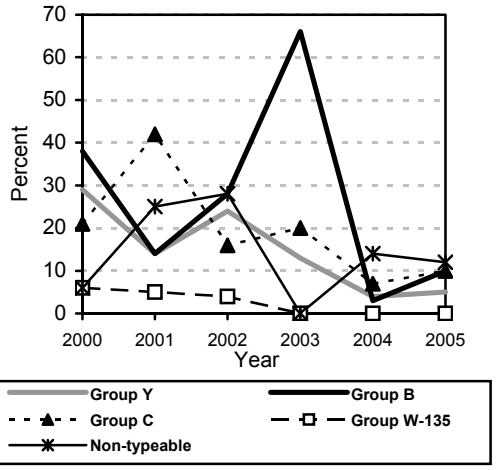
Antimicrobial chemoprophylaxis of close contacts of sporadic cases of meningococcal disease remains the primary means for prevention of meningococcal disease. Close contacts include a) household members, b) day care center contacts, and c) anyone directly exposed to the patient's oral secretions (e.g., through kissing, mouth-to-mouthresuscitation, 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 handled by the respective health district in LAC.

The polysaccharide-based meningococcal vaccine (MPSV4), Menomune®, protects against sergroups A, C, Y, and W-135 and can be given to persons aged two years and older. The vaccine is recommended for the following: persons with terminal complement deficiencies, anatomic or functional asplenia, research and clinical laboratory personnel who are routinely exposed to *N. meningitidis* in solutions that may be aerosolized, and travelers or US citizens residing in countries where *N. meningitidis* is hyperendemic or epidemic. The vaccine is also used to control serogroup C meningococcal outbreaks.

In 2004, a new quadrivalent meningococcal conjugate (MCV4), Menactra®, was approved for use in the United States. College freshman who live in dormitories are at higher risk for meningococcal disease and should be vaccinated with MCV4. This vaccine protects against the same serogroups as MPSV4 but provides longer lasting immunity. MCV4 is recommended for use in persons aged 11 to 55 years, although the use of MPSV4 is acceptable when MCV4 is not available. Generally, only a single dose of either vaccine is recommended.

Even though no noticeable changes in the distribution of invasive meningococcal cases since the introduction of MCV4 in 2004, enhanced surveillance for invasive *N. meningitidis* infections remains important. LAC DHS and the California Department of the Health (CDHS) have continued to participate in enhanced meningoccal disease surveillance with the goals of: (1) monitoring the epidemiology changes of meningococcal disease (2) assisting with identification and management of cases and outbreaks and (3) assessing vaccine effectiveness, (4) ascertaining the usefulness of polymerase chain reaction (PCR) in culture negative cases, particularly in patients treated with antibiotics prior to culture and (5) helping contribute to improvements in the overall diagnosis and management of invasive meningococcal disease.

Figure 5
Meningococcal Disease
by Serogroup
LAC, 2000–2005



COMMENTS

For every culture-confirmed case, clinical laboratories are requested to send isolates to the LAC Public Health Laboratory (PHL) for serotyping**.** In 2005, the LAC PHL received 25 case isolates (74% of all culture-confirmed cases) for serogroup identification. Of these, 10 (40%) were serogroup B; 10 (40%) serogroup C; and 5 (20%) serogroup Y (Figure 5). As in 2004, no serogroup W-135 isolates were identified. In twelve (32%) cases, serogroup information could not be determined. The race, gender, and age of non-serogrouped cases were comparable to those with identified serogroups. The mean and median ages of the vaccine preventable cases were 28 and 23 years, respectively, and ranged from 0–73, compared to non-vaccine preventable serogroup B cases with a mean age of 25.9, a median age of 18.5 and range of 0–66. With greater widespread use of the MCV4 vaccine, the incidence of serogroups C, Y, and W-135 is expected to decline. However, due to the lack of universal vaccine protection against invasive meningococcal disease, clinicians must still maintain diagnostic clinical acumen.

ADDITIONAL RESOURCES

1. CDC. Active Bacterial Core Surveillance Report, Emerging Infections Program Network, *Neisseria meningitidis*, 2005-provisional. Available at: www.cdc.gov/ncidod/dbmd/abcs/survreports/mening05.pdf
2. CDC. Prevention and Control of Meningococcal Disease Recommendations of the Advisory Committee on Immunization Practices (ACIP) MMWR 2005;54: No.RR-7.
3. 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
4. CDC. 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

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