

RESOURCES

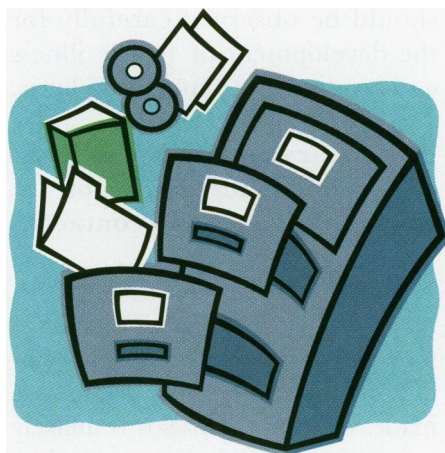
Guidelines for control of meningococcal disease

LABORATORY CENTRE
FOR DISEASE CONTROL

Meningococcal disease continues to be an important cause of morbidity and mortality across Canada. Invasive disease is caused by *Neisseria meningitidis*, a Gram-negative diplococcus with 13 serogroups of which A, B, C, Y, and W-135 most commonly cause disease.

The average annual reported incidence for this disease in Canada increased from 0.83 per 100 000 between the years 1980 and 1984 to 1.38 per 100 000 in the period 1985 to 1992 (Figure 1). This increase was accompanied by a change in the relative proportion of isolates that are serogroup B or C. In 1985, 46% of isolates grouped were serogroup B and 24% were serogroup C. In 1992, 24% were serogroup B and 56% were serogroup C.

The incidence is greatest in childhood. Age-specific incidence rates (per 100 000) during the period 1986 to 1992 show a mean incidence of 18.8 for infants younger than 1 year, 5.8 for children 1 to 4 years old, 1.9 for those aged 5 to 19 years, and 0.5 for adults 20 years or older. Beginning in 1989, the incidence in the age group 5 to 19 has more than doubled (mean incidence for 1986 to



1988 was 1.09 per 100 000 and for 1989 to 1992 was 2.45 per 100 000; $P < 0.001$).

Among the cases with known outcome, the overall case-fatality rate between 1985 and 1992 was 10.3%. In 1992, this rate was

11.4%. This compares with an average case-fatality rate of 16% in the 1970s and 10% in the early 1980s.

In February 1993, the Laboratory Centre for Disease Control held a Canadian Consensus Conference on Meningococcal Disease, attended by all provincial and territorial epidemiologists and other Canadian and international health care professionals with experience in controlling this disease. The Advisory Committee on Epidemiology has revised its 1991 guidelines to reflect the recommendations of this conference, and they have been recently published.¹ The guidelines discuss the management of sporadic cases, outbreaks and persistent elevated rates of disease, and indications for use of meningococcal vaccine. The following summarizes these guidelines, focusing on issues most affecting family practitioners. A copy of the complete 1994 guidelines can be obtained through the FaxLink service by dialing (613) 941-3900 from any fax machine and requesting Vol 20, issue 3, when asked.

Definitions of terms used in the guidelines

Sporadic case. A sporadic case of invasive meningococcal disease is a single case that occurs in a community where there is no evidence of an epidemiologic link (by person, place, or time) to another case.

Secondary case. A secondary case has had contact with a case, and illness begins at least 24 hours after that in the index case.

Coprimary cases. Cases developing within 24 hours of onset of illness in the index case are defined as coprimary cases.

Close contacts. Close contacts are the following: household contacts of the case, contacts who share sleeping arrangements, child care or nursery school contacts, and all persons with direct contamination of their nose or mouth with oral or nasal secretions from a case.

Managing contacts

When there is a strong clinical suspicion of invasive disease and laboratory confirmation of the diagnosis is delayed, a blood specimen for culture should be obtained if possible and empiric therapy started quickly. A case diagnosed using the clinical case definition should be confirmed by a laboratory test before prophylaxis is offered to contacts, if confirmation can be had within 24 hours.

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Close contacts of a case of meningococcal disease are known to be at increased risk for secondary disease. Chemoprophylaxis should be offered to all close contacts of a sporadic case regardless of the contacts' immunization status. While the secondary attack rate for untreated household members or day-care contacts of a sporadic case has been estimated to be about 300 to 400 times that of the general population, no increased risk has been shown for casual contacts of sporadic cases, including contacts in the classroom. Chemoprophylaxis is, therefore, not recommended for school contacts, transportation and workplace contacts, and social contacts who are not close contacts as defined above. In health care settings, only health care workers whose noses or mouths have been

contaminated with oral or nasal secretions from a case require prophylaxis.

Because of the increased risk of disease among close contacts, they should be observed carefully for the development of febrile illness and be given chemoprophylaxis.

Nasopharyngeal cultures have no role in identifying or managing cases and contacts.

Antimicrobials should be administered to all close contacts of a case as soon as possible and preferably within 24 hours of when the diagnosis is made. Chemoprophylaxis is unlikely to be of benefit if given more than 10 days after the most recent exposure to a case. Chemoprophylactic antimicrobials should be administered only to close contacts whose

most recent exposure to the case was within the period of communicability, that is, within the 7 days preceding the onset of symptoms and up to 24 hours following the start of appropriate treatment. The purpose of chemoprophylaxis is to eradicate nasopharyngeal colonization by *N meningitidis* and thus prevent disease and transmission among contacts. Cases and close contacts should receive prophylaxis.

Rifampin is the standard antibiotic for prophylaxis of meningococcal contacts (*Table 1*). An alternative drug that has proved to be effective is ceftriaxone, which is also recommended for contacts who are pregnant. Ciprofloxacin has been reported in several studies to eliminate the carrier state and can be used as a single oral dose of 500 mg. Sulfadiazine is no longer a first-line

Figure 1. Reported incidence of meningococcal disease in Canada, 1925 to 1992

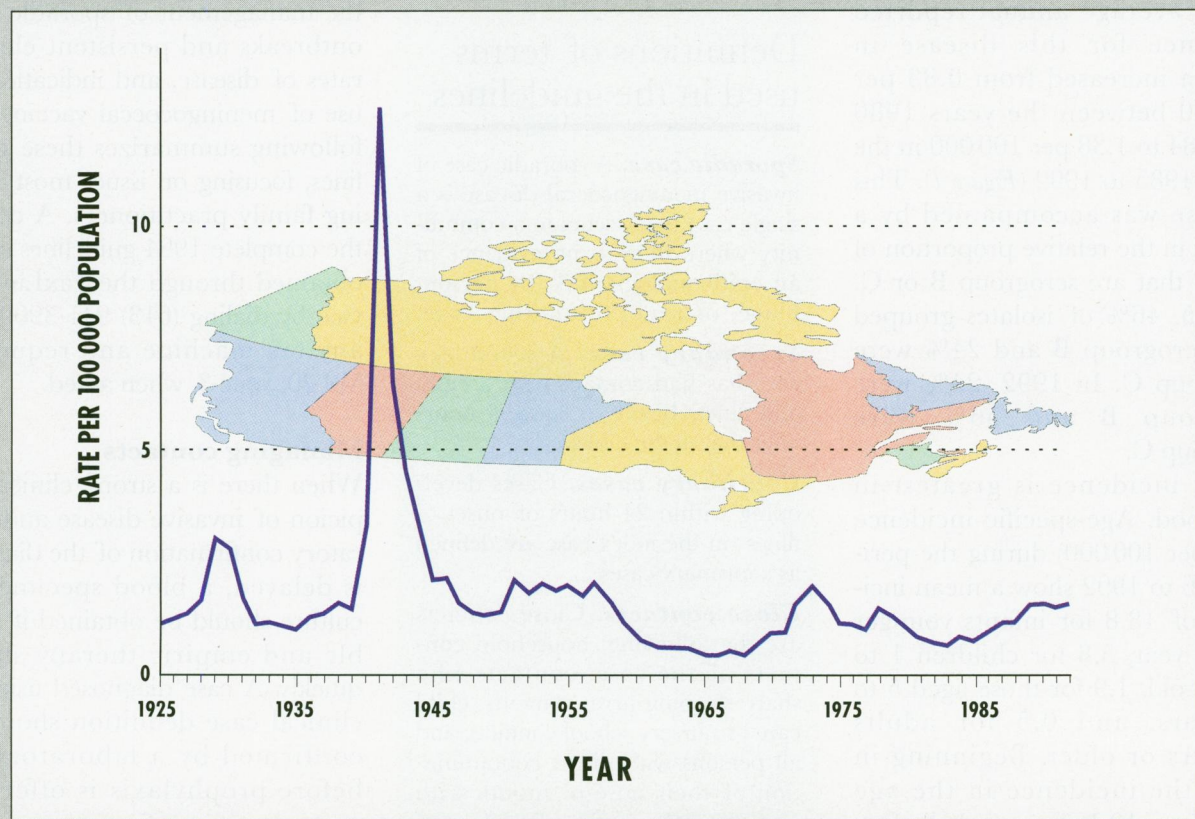


Table 1. Meningococcal chemoprophylactic regimens

DRUG	AGE GROUP	DOSAGE
Rifampin (recommended)	Adults*	600 mg orally every 12 h for 4 doses
	Children	10 mg/kg/dose orally every 12 h for 4 doses
	Infants (<1 mo)	5 mg/kg/dose orally every 12 h for 4 doses
Ceftriaxone (alternative)	Adults [†]	250 mg intramuscularly for 1 dose
	Children (<12 y)	125 mg intramuscularly for 1 dose
Ciprofloxacin (alternative for persons 9 y or older)	Adults and adolescents [‡]	500 mg orally for 1 dose

*Contraindicated during pregnancy.
[†]Safe during pregnancy.
[‡]Contraindicated during pregnancy and for children (<9 y).

agent for chemoprophylaxis and is not generally available in Canada.

Vaccines

The currently available quadrivalent vaccine contains 50 µg each of groups A, C, Y, and W-135 polysaccharides. The efficacy of meningococcal vaccine differs depending on the serogroup for which protection is sought and the age of the person being protected. A single dose of vaccine containing polysaccharides of groups A and C protects adults and children at least 2 years of age.

Serogroup A meningococcal disease. When protection against group A meningococcal disease is required, children between 18 months and 2 years of age need receive only one dose of vaccine containing 50 µg of group A polysaccharide. Children 6 to 17 months old should receive two doses of vaccine given 3 months apart. Antibody response or efficacy when the second dose is given less than 2 months after the first is unknown.

Serogroup C meningococcal disease. The use of serogroup C meningococcal vaccine for children younger than 2 years is controversial. Immune response to 30 µg of serogroup C polysaccharide has been demonstrated among children as young as 3 months of age, and the level of antibody response measured by radioimmunoassay among children aged 18 months approaches that of children 2 years old. However, there are no published vaccine efficacy data using the currently available serogroup C vaccine for children. A closely related vaccine induced a rise in antibody measurable by radioimmunoassay among children younger than 2 years, but protection was found only among children at least 2 years old. Vaccinating those younger than 6 months has been found to blunt the antibody response to booster doses. ■

Reference

1. Advisory Committee on Epidemiology. Guidelines for control of meningococcal disease. *Can Comm Dis Rep* 1994;20:17-27.



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