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Acknowledgments

We thank staff and residents at the centre for their help investigating and controlling the outbreak, particularly Aruna Sandanam, John Sullivan, Ann Miller and Susan Alexander. We also thank Anthony Cunningham, Louisa Jorm, Angela Merianos and Aileen Plant for their helpful discussions, Stephen Crone and Marea Mears for assisting with data collection, and Lee Mackay and Robert Capeski for serological testing.

INVASIVE MENINGOCOCCAL DISEASE IN AN ABORIGINAL COMMUNITY IN NORTH QUEENSLAND

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In late August 1993, a 9½ year old Aboriginal boy from a remote community (population about 1,000) in north Queensland developed fulminating septicaemia. He died two weeks later; the organism responsible was identified from blood cultures as *Neisseria meningitidis* group C. Twenty-seven extended family contacts, and seven classroom contacts were given rifampicin chemoprophylaxis and the tetravalent meningococcal vaccine. (The youngest contact was three years of age.)

On 21 December 1993 a 10 month old Aboriginal girl from the same community was clinically diagnosed as having meningitis. Although her CSF was virtually normal (upon microscopy and biochemistry), it tested positive for combined *N. meningitidis* groups A, C, Y and W135 antigens. The organism was not able to be cultured for further identification. The child responded well to antibiotic therapy. Her extended family contacts were given intramuscular ceftriaxone chemoprophlyaxis (see below); the meningococcal vaccine was administered to all contacts over one year of age.

On Boxing Day 1993 a 3½ year old Aboriginal boy from the same community was diagnosed as having bacterial meningitis; the following day the organism was identified as *N. meningitidis* with a positive latex test for combined groups A, C, Y, W135 antigens. (It was later confirmed to be group C.) The child's family contacts received ceftriaxone and vaccine as above; he responded well to treatment.

The two cases occurring almost simultaneously prompted a mass meningococcal immunisation program at the community, with the target groups being all children one to 15 years of age (inclusive), older family contacts of the two cases and several older immunocompromised adults. The vaccine was despatched from Melbourne on 27 December, arriving at the community the next day. That day 309 (94%) of the target childhood population was immunised, with all 329 children being immunised by the end of 30 December. Approximately 30 children were away from the community at the time (on Christmas holidays), but it is intended that they be immunised upon their return.

Comment

Rifampicin has long been regarded as the 'first line' antibiotic for chemoprophylaxis of meningococcal infections. However, authorities in the United Kingdom have recently recommended intramuscular ceftriaxone as an alternative to rifampicin, particularly 'when compliance is in doubt'[1]. There were two practical problems with rifampicin chemoprophylaxis at the Aboriginal community in September:

i) inadequate compliance with the four dose regimen in some of the contacts, and

ii) deliberate attention-seeking rifampicin overdosage in three young adults.

Following that experience the alternative ceftriaxone regimen was recommended for the contacts of the subsequent two patients. The ceftriaxone was easy to administer and was well accepted by the contacts; we believe that intramuscular ceftriaxone is preferable to rifampicin for chemoprophylaxis of meningococcal infections in high risk Aboriginal communities where problems with compliance are likely.

It is now recognised that even with adequate chemoprophylaxis, household contacts remain at increased risk of meningococcal disease for several months[2]. Authorities in New Zealand[3], the United Kingdom[4] and several other European countries now recommend that close contacts of an index case (with disease caused by a vaccine preventable serogroup) be given meningococcal vaccine along with chemoprophylaxis. The National Health and Medical Research Council is currently considering a policy of immunisation of close contacts. Because Aboriginal children seem to be at increased risk of not only acquiring meningococcal infection, but also of developing more severe disease, and because Aboriginal communities seem to be at increased risk of sustaining epidemic meningococcal disease[5,6,7] we chose to offer the vaccine to the close contacts of the index cases. Similarly, although it is usually recommended that school contacts of an index case should not be offered chemoprophylaxis or vaccination[8], we recognise the strong peer-group bonds between Aboriginal children, and chose to give the classroom contacts of the initial case both chemoprophylaxis and vaccine.

It is often difficult to decide when to commence mass meningococcal immunisation. As a guideline, 'two epidemiologically-linked cases (of the same vaccine preventable group) occurring within a four week period' was found to be of use during a large epidemic of meningococcal disease that occurred in central Australian Aboriginal communities in the late 1980s[5]. We used this same guideline and therefore recommended mass immunisation after two non-group B cases occurred within a week. Despite these cases occurring over the Christmas period, the vaccine was able to be obtained and administered promptly, so that the target population was virtually completely immunised before New Year's Day, 1994.

Finally, in 1991 six cases of meningococcal disease occurred in Aboriginal children (at another community in the same region) who had been immunised several months previously[6]. The cause of these apparent vaccine failures remains unknown. However, because the meningococcal vaccine is extraordinarily robust, being able to withstand 45°C for up to a month[9], they are unlikely to be due to vaccine cold-chain failures.

Obviously, ongoing surveillance for further cases of meningococcal disease at the community, and at surrounding communities with social and cultural links to the index community, will be of vital importance.

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SURVEILLANCE DATA IN *CDI*

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CDI publishes reports from several communicable diseases surveillance schemes on a regular basis. These, and other communicable diseases surveillance activities are conducted to monitor the occurrence of communicable diseases, to detect trends and to highlight needs for further investigation or for the implementation or modification of control measures.

Surveillance has been defined by the World Health Organization as the 'continuing scrutiny of all aspects of the occurrence and spread of disease that are pertinent to control'; it is characterised by 'methods distinguished by their practicability, uniformity, and frequently by their rapidity, rather than complete accuracy'[1]. All surveillance schemes encompass only a sample of all cases of the conditions under surveillance, and these samples are subject to systematic and other biases. Results generated from surveillance schemes must therefore be interpreted with caution, particularly when comparing results between schemes, between different geographical areas or jurisdictions and over time. Surveillance data may therefore also differ from data on communicable diseases which may be gathered in other settings.

The major features of the surveillance schemes for which *CDI* publishes regular reports are described below. Surveillance schemes which are not covered but for which *CDI* also publishes or reproduces reports include the National Tuberculosis Reporting Scheme, the Australian Malaria Register (both conducted under the auspices of the Communicable Diseases Network Australia New Zealand), the Australian Gonococcal Surveillance Programme (soon to be expanded to surveillance for all *Neisseria* species), the Victorian Influenza Surveillance Scheme and the National Salmonella Surveillance Scheme (human isolates).

Operators of other communicable disease surveillance schemes and/or registers who would like to contribute