

Using the national guidelines to manage a meningococcal group C outbreak in a Brisbane boarding school – some discretionary judgements are needed

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Abstract

The management of an organisational outbreak of meningococcal disease using the national *Guidelines for the early clinical and public health management of meningococcal disease in Australia*¹ (the Guidelines), could be considered a relatively straightforward task. Nevertheless, discretionary judgements are often still required by the outbreak control team, as no guidelines can fully cover every eventuality. The greatest challenges generated by this outbreak did not result from the magnitude of the intervention, but from the difficulties in defining the margins of the intervention in the face of heightened community and professional concern. Also Public Health decisions and communication strategies needed to be responsive to these concerns. *Commun Dis Intell* 2003;27:520–523.

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Introduction

School-based clusters of meningococcal disease are uncommon. A United States of America study found that such clusters had been infrequently reported and risk factors for transmission in school settings were unclear.² In Australia, meningococcal serogroup C outbreaks have been reported in a university residential college in Sydney in 1997,³ a Victorian school in 1999⁴ and there have been five other clusters in north Queensland during 1990–1994⁵ and one in Western Sydney in 1996.⁶

The Communicable Diseases Network Australia (CDNA) Guidelines¹ were developed to assist public health practitioners with the management of sporadic cases as well as outbreaks of invasive meningococcal disease. They also include excellent supporting material such as meningococcal fact sheets and sample letters. The Guidelines¹ were used extensively in defining and managing this outbreak, but the Outbreak Control Team (OCT) was required to make and defend discretionary judgements and develop new and amended resources, at several points in the process.

Description of the outbreak

On 5 August 2001, a 13-year-old student who attended a Brisbane boarding school, developed meningococcal septicaemia. The case died shortly after admission to hospital. The organism was later reported as a meningococcus serogroup C. All boarding students had individual bedrooms. As per the Guidelines,¹ the case was managed as a sporadic case and the Public Health Unit organised rifampicin chemoprophylaxis for identified close contacts, which consisted of the case's parents and 23 boarding school contacts who had spent time with the case in the school infirmary. In addition, all parents at the school were provided with a letter of advice and a meningococcal fact sheet.

On 15 August 2001, 10 days after the onset of symptoms in the first case, another case of meningococcal septicaemia occurred in a 16-year-old student who attended the same boarding school. The case deteriorated rapidly after admission to hospital and died. Although both cases had been boarders at the college, there was no evidence of social contact between the two students. One student was in the

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junior school and the other in the senior school. The boarding houses attended by both students were separate buildings with separate facilities such as dining rooms and recreation rooms. Therefore initially, until the availability of laboratory results, this case was also managed as a sporadic case. The Public Health Unit offered chemoprophylaxis to six household contacts and one identified close contact. Once again, all parents at the school received a letter informing them of the situation.

On 16 August 2001, the Queensland Health Scientific Services (QHSS) laboratory determined, by nucleic acid amplification of the cerebrospinal fluid sample from the second case, that the meningococcal organism from the second case, was a serogroup C. Restriction digestion of the amplified Por A gene, using Alu I, Hinf I, Hpa II, Rsa I and Hae III enzymes, showed that the subtypes were identical between the first and second cases. This result was available on 17 August 2001. The culture from the second case was not available until 20 August, when typing using Pulsed Field Gel Electrophoresis (enzymes Spe I, Bgl II and Nhe I) showed that the cultures were genetically indistinguishable from each other. The isolates were serosubtyped as C:NT:P1.15.

Outbreak management

An Outbreak Control Team was convened on 16 August 2001 to assist in the planning and management of the outbreak. Two serogroup C meningococcal cases in the school boarding population within a two week period, fitted the CDNA Guidelines¹ definition of an organisational outbreak. The Guidelines¹ recommend that members of the same group as the cases, should receive chemoprophylaxis and vaccination. In this situation the 'same group' would be defined as only the boarding school population. There were 450 boarders, 1,000 day students and approximately 380 staff, some of whom lived with their families on the college grounds. The OCT decided that restricting the chemoprophylaxis/vaccination intervention to just the boarding school community would increase the existing intense levels of anxiety in the remaining school community, caused by the sudden death of two students, to unmanageable levels. The second case had played in three football games in two different codes on the weekend prior to his illness and had also trained with a State representative team on the day prior to his illness. The football coaches had reported that it was common practice for team players to share saliva via water bottles and other means. The OCT decided that the program would be extended to members of all seven football teams who played with or against the case in the previous week. This issue is not addressed in the Guidelines.

The OCT declared an organisational outbreak and implemented the following actions:

- polyvalent ACWY meningococcal polysaccharide vaccine would be provided (the conjugated vaccine was not yet available in Australia);
- the antibiotic ciprofloxacin would be used for chemoprophylaxis. This decision was based on the fact that there were no known contraindications, all of the intervention group were over 12 years of age and a single 500 mg ciprofloxacin tablet given to each person prior to vaccination made it easy to supervise administration and to ensure compliance;
- laboratory surveillance would be strengthened; and
- increased clinical surveillance would be encouraged by informing every general practitioner, Emergency Department and Community Health Service on the Northside of Brisbane, requesting early notification of suspected cases and seeking their support for the proposed intervention.

The vaccination and chemoprophylaxis program commenced on Friday 16 August, with clinics being conducted on Saturday 17 August and Monday 19 August. Thirty-six Queensland Health staff from various public health service units and hospital districts throughout South East Queensland were brought in for the intervention. The school provided five nursing staff and three teaching staff to assist. A total of 1,840 persons were vaccinated and 1,768 persons were provided with chemoprophylaxis. Funding required for the vaccines, antibiotics and disposables (but not including labour costs) was in excess of \$70,000.

School community acceptance of the outbreak intervention

No parents or person withheld their consent for vaccination, although a small number chose not to have the antibiotic. Recorded reactions to the vaccination/chemoprophylaxis were minor. There were two students who fainted and two staff members who developed an itchy rash that resolved with antihistamines. In addition, the School Health Centre reviewed approximately 10 students/staff who presented with a range of symptoms such as headaches, fevers and rashes. One febrile student was admitted to hospital for observation and later discharged.

Managing the media and public concerns

From the beginning of the outbreak it was obvious that managing the media and public concerns would require substantial time and resources. The manager of the Queensland Health Communicable Diseases Unit took sole responsibility for media management during the intervention with the ongoing support of the Public Health Services Senior Marketing and Communications Officer. From 6 to 25 August, communications officers responded to 166 media inquiries. There were approximately 530 electronic media reports in Queensland and approximately 150 stories in Queensland newspapers during this period. On 22 August, the 'outbreak' was number five in the National top ten of media issues with 241 stories being published. In response, Queensland Health set up an information hotline staffed by at least four officers full time over a one week period. There were over 3,300 calls to the hotline.

Enhanced surveillance

During the intervention the enhanced clinical and laboratory surveillance that had been initiated by the OCT identified two further cases.

On 18 August, three days after onset of illness in the second case, and after outbreak management had been implemented at the boarding school, a 13-year-old girl from an associated girls school developed meningococcal meningitis. A decision was made to continue to manage this as a sporadic case. Some time later the Public Health Unit was informed that the case was serogroup C, genetically indistinguishable from the other cases.

On 4 September, 17 days after the third case, an 8-year-old girl presented to a local hospital with a febrile illness. Blood cultures were collected and she was sent home. The blood cultures grew meningococcus, which was later confirmed as serogroup C, genetically indistinguishable from the other cases. Her parents worked at the boarding school and both had received antibiotics and vaccination 15 days earlier. This case was also managed as a sporadic case.

The guidelines do not specify how to respond to cases with genetically identical organisms occurring in cases in the same community, but outside the immediate contacts of the cases. The OCT decided not to extend the campaign as a result of these cases. No further cases of the outbreak genotype meningococcal group C disease were notified in the following months.

General discussion and difficulties experienced

The logistics of implementing such a large intervention required considerable planning and organisation of human and material resources. Nevertheless, the greatest challenges generated by this outbreak did not result from the magnitude of the intervention, but from the difficulties in defining the margins of the intervention in the face of heightened community and professional concern and pressure, and the occurrence of further cases with the same meningococcal genotype in the community. Specifically, there was intense pressure on the OCT to widen the intervention and to provide chemoprophylaxis and/or vaccination to many other associated individuals and groups. These issues were addressed by extensive use of the Guidelines,¹ consultation with the highest levels of expertise from across Queensland and Australia, establishing tight definitions of the eligible population and holding to those definitions.

General practitioners and hospital doctors greatly appreciated the early information about the outbreak, the intervention and the reasons for the public health decisions. As the intervention progressed, followup briefings to enable them to respond to emerging issues from their patients and the general community were provided. Providing such early and comprehensive information benefited all parties and ultimately reduced the workload on the public health staff.

Although the Public Health Unit had comprehensive information sheets on the disease and the chemoprophylaxis regimens (some from the National Guidelines), over time it became obvious that most of the questions from the general public were about why they too should not have the vaccine. The early availability of a fact sheet addressing this issue would have alleviated much of the community concern, and saved considerable time for the public health workforce. A fact sheet addressing this issue was developed during the intervention.

It is anticipated that the lessons learnt will assist us and others if similar situations occur in the future.

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