This Operational Circular is designed to advise Department of Health staff on Department of Health policies and procedures and complements the GP guidelines, see http://www.public.health.wa.gov.au/3/584/1/communicable_di.pm


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DIRECTOR GENERAL
DEPARTMENT OF HEALTH WA

This information is available in alternative formats upon a request from a person with a disability.
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1. PURPOSE

The purpose of this document is to outline the Department of Health’s (DOH) recommended procedures for the public health management of cases of invasive meningococcal disease (IMD). Information provided in this document is a summary of the CDNA Guidelines for the early clinical and public health management of meningococcal disease in Australia (2007)¹ and the current Australian Immunisation Handbook.²

2. PRINCIPLES

The primary objective of public health management of IMD cases is to:

- ensure that public health practitioners are aware of the recommendations on the course of action to be taken in response to an IMD and the follow up action to be taken to prevent further cases of IMD.

2.1 Public Health action recommendations include:

- confirming the diagnosis of IMD with appropriate clinical and laboratory tests (e.g. microscopy, PCR, culture, serology),
- following up case contacts and providing them with appropriate information about the disease, including information on symptoms and action to be taken if symptoms occur,
- provision of clearance antibiotics to selected contacts, and/or vaccination of high risk contacts to reduce the transmission of pathogenic strains of Neisseria meningitidis and the risk of secondary cases of IMD,
- increasing public awareness and knowledge about IMD appropriately.

3. EPIDEMIOLOGY

Meningococci cause both sporadic and epidemic disease throughout the world. Serogroup A disease occurs predominantly in developing populations such as those in Africa and Asia, while serogroup B is the major cause of sporadic meningococcal disease in most developed countries. Serogroup C disease has a more cyclical pattern of occurrence, and increased in incidence in the 1990s in some developed countries, such as Australia and the United Kingdom. Serogroup C meningococci have also been occasionally associated with small clusters of meningococcal disease cases in schools, universities and nightclubs in Australia over the past 10 years.

Meningococcal disease is an endemic infection with cyclical peaks in incidence in Australia. As in other temperate climates, meningococcal disease cases occurring in Australia tend to follow a seasonal trend with the majority of cases reported during late winter and early spring.

While meningococcal disease affects all age groups there is a bimodal age distribution, with the highest rates in the 0-5 year age group and a second peak in the 15-24 year age group. Since the 2003 introduction of routine meningococcal C vaccination and catch-up programs, persons aged 35 years or over now comprise approximately 18% of all notifications, and there is a slight male preponderance.
The average annual notification rate for invasive meningococcal disease in Western Australia for the years 1990 to 2011 was 2.4 cases per 100,000 population, with the highest rate of 4.6 per 100,000 population reported in the years 1999 and 2000, and the lowest rate of 0.93 per 100,000 population reported in 2011.

4. CLINICAL FEATURES OF IMD

4.1 Meningococcal Meningitis

Meningococcal meningitis usually has a sudden onset and is typically characterised by fever, intense headache, stiff neck, nausea and vomiting, and altered consciousness. An associated late sign is a petechial rash, but this is not always present. A less distinctive maculopapular rash may also be observed in the early phase of the illness. Medical officers are encouraged not to wait for a rash before diagnosing and treating suspected meningococcal disease.

A recent study in children under 16 years of age has shown that leg pain, cold extremities, and abnormal skin colour are frequently seen in the first 12 hours of meningococcal disease (median onset 7-12 hours) whereas the classic features (haemorrhagic rash, meningism, and impaired consciousness) are relatively late signs (median onset 13-22 hours). As the early features of meningococcal disease are non-specific and may also be present with other bacterial and viral infections, including self-limiting viral illnesses seen in primary care, doctors are encouraged to schedule a clinical review of the case within 4-6 hours if early meningococcal disease cannot be excluded at the first assessment.

Infants may not develop signs of meningism. The most common symptoms and signs for infants include fever, tachypnoea, rash, vomiting, irritability, drowsiness, and pallor. However, not all these signs and symptoms may be present and clinical review of infants is especially important. A change in the child’s behaviour e.g. unwillingness to interact, or make eye contact, and/or an altered alertness are some of the most important early signs of disease in infants.

4.2 Meningococcal Septicaemia

Invasive meningococcal infection may result in septicaemia with or without meningitis. In septicaemic cases, the patient usually presents with an acute febrile illness, profound malaise, myalgia or arthralgia, nausea and vomiting, altered consciousness, and a maculopapular/petechial rash (50% of cases).

Meningococcal septicaemia is more often misdiagnosed than meningococcal meningitis at first presentation and has a higher fatality rate.

4.3 Meningococcal Conjunctivitis

Primary meningococcal conjunctivitis may be associated with invasive disease and therefore treated systemically. The public health management of meningococcal conjunctivitis is identical to that of invasive disease, so PHN should follow up contacts as per meningococcal guidelines 2007.
4.4 Meningococci isolated from other sites

Meningococci coincidentally isolated from other superficial sites (e.g. oropharyngeal, genital or anal swabs) are of no public health consequence, and do not require any public health response.

4.5 Transmission of meningococci

The disease is transmitted via respiratory droplets with an incubation period of between 1 and 10 days, but commonly 3 to 4 days.

5. DIAGNOSIS

5.1 Laboratory tests

<table>
<thead>
<tr>
<th>Specimens used for the diagnosis of meningococcal disease</th>
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</thead>
<tbody>
<tr>
<td>• Blood for culture and PCR</td>
</tr>
<tr>
<td>• Aspirate from sterile site for microscopy, culture, PCR as appropriate</td>
</tr>
<tr>
<td>• Aspirate from skin lesion for microscopy, culture and PCR (though this is not validated)</td>
</tr>
<tr>
<td>• CSF for microscopy, culture, PCR</td>
</tr>
</tbody>
</table>

5.2 Laboratory evidence of IMD

The following results are considered presumptive evidence of IMD:

<table>
<thead>
<tr>
<th>Summary of tests available to diagnose meningococcal disease</th>
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<tbody>
<tr>
<td><strong>TEST</strong></td>
</tr>
<tr>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>Gram stain</td>
</tr>
<tr>
<td>Culture</td>
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<tr>
<td>PCR test</td>
</tr>
</tbody>
</table>

6. PUBLIC HEALTH UNIT’S ROLE

The metropolitan and regional Public Health Units (PHU) are responsible for contact tracing of notified IMD case contacts and provision of prophylaxis as per guidelines and/or information to identified specific groups.

No Longer Applicable
Withdrawn June 2016
### 6.1 Case definitions

#### CONFIRMED CASE

A confirmed case requires either:

1. Laboratory definitive evidence
   
   OR

2. Laboratory suggestive evidence AND clinical evidence.

**Laboratory definitive evidence**

1. Isolation of *Neisseria meningitidis* from a normally sterile site.
   
   OR

2. Detection of specific meningococcal DNA sequences in a specimen from a normally sterile site by nucleic acid amplification testing.

**Laboratory suggestive evidence**

1. Detection of Gram-negative diplococci in Gram stain of specimen from a normally sterile site or from a suspicious skin lesion.
   
   OR

2. High titre IgM or significant rise in IgM or IgG titres to outer membrane protein antigens of *N meningitidis*.

**Clinical evidence (for a confirmed case):**

Disease which in the opinion of the treating clinician is compatible with invasive meningococcal disease.

#### PROBABLE CASE

A probable case requires clinical evidence only.

**Clinical evidence (for a probable case)**

A probable case requires:

1. The absence of evidence for other causes of clinical symptoms.
   
   AND EITHER

2. Clinically compatible disease including haemorrhagic rash
   
   OR

3. Clinically compatible disease AND close contact with a confirmed case within the previous 60 days.

Suspected or confirmed cases of IMD are usually notified by telephone to the Communicable Disease Control Directorate (CDCD) or Regional PHU by microbiologists, hospital doctors, and GPs. Reports of IMD cases from other sources, including Health Care Workers (HCWs), parents, teachers and child care workers, should be investigated by the relevant PHU staff to determine their validity. Before contacting the CDCD or PHU regarding a suspected case of IMD, HCWs should obtain sufficient data about the case to enable tracing. These data include the first and last names and date of birth of the suspected IMD case, the name of the relevant hospital and date of admission to that hospital.

### 6.2 On receipt of an IMD notification, the CDCD will alert the PHU staff to interview the relevant doctor or microbiologist and index case/parent-guardian/close contacts (e.g. the patient or patient’s relatives using the meningococcal disease case questionnaire Appendix 1) to obtain the following surveillance information:

- the time and date of admission,
- the clinical features of the patient’s illness, including any antibiotic treatment the patient received immediately prior to hospitalisation, and if blood was taken before antibiotics,
• whether or not this patient was seen by a GP or district hospital prior to admission to a tertiary hospital,

• the results of IMD diagnostic tests (i.e. microscopy, PCR, culture),

• the names of high risk contacts that require antibiotic prophylaxis for IMD and information and advice about IMD, and

• the names of lower risk contacts that only require information and advice about IMD.

In the event that the patient is discharged, the Public Health Nurse (PHN) should ensure that this information is obtained from the treating hospital and recorded in the patient record and in the enhanced surveillance form case questionnaire which is forwarded to CDCD.

6.3 Asymptomatic respiratory tract carriage

Asymptomatic respiratory tract carriage of meningococci is present in about 10% of the population and the prevalence may be high when groups of people occupy small areas of living space.

6.4 Public health action

A public health response is required as soon as possible following a diagnosis of a probable or confirmed case of invasive meningococcal disease, or of severe confirmed meningococcal conjunctivitis. In a suspected case, a judgement needs to be made by the public health physician in conjunction with the responsible clinician about whether to proceed with a public health response immediately.

Probable and confirmed cases of meningococcal disease should be notified to CDCD or the regional public health unit as a matter of urgency.

PHU staff should immediately request additional IMD confirmatory diagnostic tests with the patient's doctors or the relevant microbiologist if these have not been undertaken at the time of notification. Usually this involves requesting a PCR test for \textit{N meningitidis} on a previously taken blood specimen for a full blood count or culture. A PCR test for \textit{N meningitidis} should be routinely requested where systemic antibiotic treatment (including pre-hospital empirical antibiotic treatment) was commenced before blood or CSF specimens were taken. PCR tests may increase the laboratory diagnosis of cases of meningococcal disease by more than 30% and meningococcal DNA in CSF samples has been detected up to 72 hours after commencement of antibiotic treatment. The timeliness of an IgM serology response is not always helpful in planning early public health action as the IgM does not reach diagnostic levels until approximately 5-7 days after the onset of disease.

An increased or decreased white cell count (WCC) in the blood or CSF is not laboratory evidence of IMD, but an increased lymphocyte or leucocyte count may indicate a systemic viral or bacterial infection.
The public health response to sporadic cases of meningococcal disease is a matter of urgency for PHU staff. While secondary cases are rare, but if present, will usually occur in the first 48 hours, it is essential that high risk contacts are identified and contacted to be provided with information (Meningococcal Disease Fact Sheet) about the symptoms of disease and chemoprophylaxis as appropriate.

The PHU staff should liaise with hospital staff attending the IMD patient to discuss provision of antibiotic prophylaxis to all high risk contacts. Usually the hospital provides antibiotic prophylaxis to immediate family (parents/partner) while the PHU staff provides antibiotic prophylaxis to extended family and community contacts (e.g. childcare contacts). See attached Appendix 1: DOH Meningococcal Contact Prophylaxis Forms.

High risk contacts should receive chemoprophylaxis and instructions to seek immediate medical attention if signs or symptoms of invasive meningococcal infection appear.

Lower risk contacts should only receive instructions (Meningococcal Disease Fact Sheet) to seek immediate medical attention if signs or symptoms of invasive meningococcal infection appear.

Chemoprophylaxis is effective in eliminating carriage of N meningitides, but it may not prevent meningococcal infections that are already incubating. The primary aim of chemoprophylaxis is to eliminate meningococcal bacteria from any carrier who may be in the network of contacts close to each index case. This reduces the risk to other susceptible individuals in the network, protecting them from acquiring the meningococcal strain and possibly the invasive disease from the carrier. Chemoprophylaxis is not recommended if more than 4 weeks have lapsed following most recent contact with case.

Verbal or written consent for antibiotic prophylaxis should be obtained from each high risk contact or from that contact’s parent or guardian. These contacts or parents or guardians should be given information (Meningococcal Disease Fact Sheet) about the disease and the benefits and risks of the antibiotics they are offered before they give their consent to treatment. See attached Appendix 2: DOH Rifampicin, Ciprofloxacin, and Ceftriaxone Fact Sheets. Refusal of antibiotic prophylaxis by a contact or parent or guardian should be recorded. Antibiotic prophylaxis and distribution of information and advice should be completed within 24 hours of notification of the IMD case.

7.2 Nasopharyngeal swabbing and culture

Nasopharyngeal swabbing and culture is of no value in contact management.

7.3 Contact management of high risk contacts (CHEMOPROPHYLAXIS RECOMMENDED)

Persons who have had close, prolonged contact with the patient within 7 days preceding the onset of disease in the patient, including:
1. Household contacts, especially children.
2. Sexual and intimate kissing contacts.
3. Children and staff contacts who attended the same child care (in the same room) or playgroup session for more than 4 continuous hours.
4. Contacts who slept in the same household, including dormitory contacts.
5. Contacts who sat in seats adjacent to a case during long flight travel (> 8 hours).
6. Medical/HCW/paramedic staff contacts who performed mouth-to-mouth resuscitation or were <1 meter from the case during endotracheal intubation/extubation.

7.4 Management of lower risk contacts
   (CHEMOPROPHYLAXIS NOT RECOMMENDED)
   1. Casual contacts — non-high risk contacts with no history of prolonged close exposure, e.g. school or work contacts, contacts who attended different child care or playgroup sessions to the case.
   2. Indirect contacts — any contacts of a high risk contact, e.g. household or family contacts of a high risk contact.
   3. Saliva contacts — non-high risk contacts are those who engaged in non-intimate kissing on the cheek or lips, shared drink containers, took cigarettes, smoking implements, and instruments, etc. with the case.
   4. Medical staff contacts without direct exposure to patient’s respiratory secretions (see 6. above).

If IMD high risk/low risk contacts are identified as attending a child care facility or school, additional resources may be required to assist the PHU staff with contact tracing. PHU staff should negotiate and request assistance from the Primary Health Service Manager/(or delegate) Children and Adolescent Health Service (CACHS) in the metropolitan area, for community health nurse support and/or the relevant child care or education facility manager for additional support to undertake contact tracing of high risk groups. The distribution of information and advice should usually be completed within 24 hours of notification of the IMD case.

7.5 Chemoprophylaxis of Contacts

Either ceftriaxone, ciprofloxacin or rifampicin are suitable for this purpose, penicillin is not recommended. PHU staff are responsible for identifying those high risk contacts (as per meningococcal guidelines 2007) and providing/arranging for the provision of chemoprophylaxis to those people as rifampicin is not easily available from most community pharmacies, and ciprofloxacin is very expensive and not given out in single doses.

- Oral Rifampicin

The recommended schedule for rifampicin is 600 mg every 12 hours for 2 days for adults; 10 mg/kg/dose for children over one month of age every 12 hours for 2 days; and 5 mg/kg/dose for children aged less than one month every 12 hours for 2 days.
This can be simplified as below in the table without losing effectiveness.

<table>
<thead>
<tr>
<th>Aged</th>
<th>Dose</th>
<th>Duration</th>
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<tr>
<td>0-2 months</td>
<td>1ml syrup* (20 mg)</td>
<td>Twice daily for 2 days</td>
</tr>
<tr>
<td>3-11 months</td>
<td>2ml syrup* (40 mg)</td>
<td></td>
</tr>
<tr>
<td>1-2 years</td>
<td>5ml syrup* (100mg)</td>
<td></td>
</tr>
<tr>
<td>3-4 years</td>
<td>7.5 ml syrup (150 mg)</td>
<td></td>
</tr>
<tr>
<td>5-6 years</td>
<td>10 ml syrup (200 mg)</td>
<td></td>
</tr>
<tr>
<td>7-12 years</td>
<td>300mg capsule</td>
<td>Twice daily for 2 days</td>
</tr>
<tr>
<td>&gt; 12 years</td>
<td>600mg capsule</td>
<td>Twice daily for 2 days</td>
</tr>
</tbody>
</table>

*Rifampicin syrup contains 100mg/5ml

**Note:** The Product Information recommends a once-daily four-day regimen of rifampicin for clearance antibiotics of meningococcal disease. The two-day regimen above is recommended by the Communicable Diseases Network Australia (CDNA) in accordance with the Cochrane review.

Rifampicin should not be given during pregnancy or to people with active liver disease and should be given with caution to people taking anticoagulants, anticonvulsants, or oral contraceptive medication. These contacts should be discussed with the Public Health Physician or referred to their local GP. However, PHU staff should advise the GP that these persons have been referred to them for chemoprophylaxis. In rural areas where there is no local GP, PHU staff should seek expert advice and treat accordingly.

PHU staff should advise the contacts of common side effects to rifampicin, which include headache, diarrhoea, and gastrointestinal symptoms. The medication can cause orange colouration of urine, orange staining of contact lenses, and, because it induces liver microsomal enzymes, it can reduce the efficacy of the oral contraceptive pill. Rifampicin can also reduce the efficacy of phenytoin, warfarin, corticosteroids, cyclosporine, dapsone, diltiazem, quinidine, sulfonylureas, theophylline, tricyclic antidepressants, verapamil, beta-blockers, and methadone.

- **Intramuscular Ceftriaxone**
  
  A recommended single dose is:
  - 250 mg IM for adults
  - 125 mg IM < 12 years.

  Ceftriaxone should not be given to infants less than four weeks of age, but it is safe to administer during pregnancy.

  Ceftriaxone should be diluted with 1% lignocaine without adrenaline to reduce pain at the injection site.

- **Oral Ciprofloxacin**
  
  A single dose of 500 mg: > 12 years.

  Ciprofloxacin should not be given during pregnancy, but it is the preferred antibiotic for women on the contraceptive pill.

  Ciprofloxacin is contraindicated in children less than 12 years of age.
8. **MONITORING OF CONTACTS**

Parents and childcare or school staff should be advised to monitor high or low risk contacts for symptoms and signs of IMD (fever, intense headache, stiff neck, nausea and vomiting, and altered consciousness) for four weeks following the contact's last contact with the IMD patient and to seek immediate medical advice if symptoms or signs of IMD occur in the contact. After four weeks, the risk of IMD in contacts decreases to the background risk of IMD in the general population.

9. **VACCINATION OF IMD CASES**

Confirmed cases of serogroup C disease including those who have been previously vaccinated with MenCCV or a polysaccharide meningococcal vaccine should be offered Meningococcal C conjugate vaccine (MenCCV) as immunisation with conjugate vaccines appears to induce better sustained immunity than natural infection.

9.1 **Vaccination of contacts**

Due to the prolonged risk of secondary cases in household settings, vaccination is indicated for unimmunised household and sexual contacts of cases of serogroup C disease.

For household contacts of confirmed cases of meningococcal disease, public health staff should confirm the meningococcal serogroup. If the case is serogroup C, all unvaccinated household contacts should be referred to their immunisation provider for MenCCV. If the case is a non-B non-C serogroup, all household contacts > 2 years of age should be immunised with Meningococcal Polysaccharide Vaccine (4VMenPV (page 42 national guidelines for meningococcal disease in Australia).

In addition, if a household contact of a confirmed case of any meningococcal serogroup is aged 12 months or over, and was born after 1 January 2002, ensure that he/she has received one dose of MenCCV. If unvaccinated, promote vaccination through the contact's usual immunisation provider (page 43 national guidelines for meningococcal disease in Australia).

No serogroup B vaccine is currently available.

10. **INFORMING THE CASE’S COMMUNITY**

Where a case of IMD occurs in a childcare or educational facility, CDCD or PHU staff should make immediate contact with the manager, principal, or appropriate administration officer to organise the distribution of written information to parents about the symptoms and signs of IMD. This activity helps to prevent unnecessary confusion and anxiety amongst staff, the lower risk contacts, or their parents.

The distribution of written information about IMD to individuals or parents outside the group of high and lower risk contacts is not routinely recommended, and should be done carefully to avoid provoking unnecessary confusion and anxiety among people who are not at an increased risk of IMD. If a childcare or educational facility wishes to distribute written information about IMD to parents or students immediately after a case of IMD occurs at that facility, then this should be done with a covering letter that clearly explains that the purpose of distributing the information is to educate the recipients about IMD and that they or their children are not at an increased risk of IMD. See attached Appendix 7 DOH Meningococcal Disease Advisory Letter.
Invasive Meningococcal Disease Guidelines for Public Health Staff – 2012

Table 1: Public health responses in defined settings in which a case of invasive meningococcal disease has occurred.

<table>
<thead>
<tr>
<th>Settings</th>
<th>Information(^a) and Chemoprophylaxis(^b) for contacts</th>
<th>Information(^a) only</th>
<th>Vaccinate as per Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household(^a) of a case and sexual contact</td>
<td>All</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Child-care facilities</td>
<td>Children and staff in the same room for 4 or more hours at one time in the 7 days prior to the onset of the case’s illness</td>
<td>All other children and staff at the facility</td>
<td></td>
</tr>
<tr>
<td>Education facilities</td>
<td>Very close contacts (essentially those who have been ‘household-like’ contacts)</td>
<td>All other students in the same classroom (schools) or tutorial groups (universities)</td>
<td></td>
</tr>
<tr>
<td>Those exposed to a case after the onset of symptoms</td>
<td>Very close household-like contacts; health careers who have either intubated the case without a face mask or done mouth-to-mouth resuscitation</td>
<td>All others concerned that they may have had contact with the case after the onset of symptoms</td>
<td></td>
</tr>
<tr>
<td>Those in seats adjacent to a case during long duration (&gt;8 hours) travel</td>
<td>Very close contacts;</td>
<td>All others concerned that they may have had contact with the case after the onset of symptoms</td>
<td></td>
</tr>
</tbody>
</table>

1. Adapted from “Communicable Diseases Network Australia. Guidelines for the early clinical and public health management of meningococcal disease in Australia. 2007.”

\(^a\) The disease, including the common signs and symptoms and the mode of transmission, should be described, as well as the appropriate action for symptoms of meningococcal infection (see Appendix 7).

\(^b\) Only those in close and prolonged contact with a case in the 7 days prior to the onset of symptoms, and only very close contacts after the onset of the case’s symptoms require chemoprophylaxis. The possible adverse reactions and drug interactions should be described. It should be emphasised that meningococcal disease can occur (rarely) despite chemoprophylaxis. It should be explained that contacts taking chemoprophylaxis need neither to be quarantined nor to adopt any specific behaviours.

\(^c\) ‘Households’ include those in the same house, dormitory, military barracks or hostel bunkroom in the seven days prior to the onset of the case’s symptoms. Sexual contacts (intimate kissing) should be managed as household contacts.

11. PREPAREDNESS

PHU staff should when appropriate, contact child care centre managers and primary and secondary school principals within their jurisdiction to ensure that they understand the recommended protocol for managing cases of IMD among their students and staff. See attached Appendix 10: DOH Meningococcal Disease Guideline for School Principals.

11.1 On completion of contact tracing PHU staff should ensure that the surveillance form and contact lists including those contacts given chemoprophylaxis is completed and forwarded to CDCD.

12. IDENTIFICATION AND MANAGEMENT OF OUTBREAKS

PHU staff should review their surveillance data on a continuous basis to identify cases and to identify outbreaks of cases. The following changes in epidemiology of meningococcal disease are suggestive of an outbreak:

- An increased rate of disease;
- Clustering of cases in an age group or a shift in the age distribution of cases; and,
• Phenotypic and genetic similarity among strains causing disease in the population.

Suspected changes noted by PHU staff should be discussed with the CDCD medical epidemiologist and action initiated as appropriate in line with the recommendations outlined in the national guidelines.

13. REFERENCES


No Longer Applicable
Withdrawn
June 2016
# Meningococcal Contact Prophylaxis Form

## Rifampicin

**Name of facility:**

**Facility contact person:**

**Name of Index Case:**

<table>
<thead>
<tr>
<th>Full name</th>
<th>Phone No.</th>
<th>Advice given/ Consent received</th>
<th>Prophylaxis refused</th>
<th>Rifampicin Syrup (100 mg / 5 mL)</th>
<th>Rifampicin Capsules (150 or 300 mg)</th>
<th>Referred to GP</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2 months</td>
<td>1 mL (20 mg)</td>
<td>7-12 years</td>
<td>300 mg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-11 months</td>
<td>2 mL (40 mg)</td>
<td>12 years</td>
<td>600 mg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-2 years</td>
<td>5 mL (100 mg)</td>
<td>&gt; 12 years</td>
<td>600 mg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-6 years</td>
<td>7.5 mL (150 mg)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>5-6 years</td>
<td>10 mL (200 mg)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dosage = twice daily for two days

**Community/PHU Nurse:**

**Community Health Centre/PHU:**

**COMMENTS:**

---

Invasive Meningococcal Disease Guidelines for Public Health Staff – 2012

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APPENDIX 1

Page 1 of 14

Government of Western Australia
Department of Health
Communicable Disease Control Directorate

Meningococcal Contact Prophylaxis Form

Rifampicin

Name of facility: .................................................................................................................................

Facility contact person: ....................................................................................................................

Name of Index Case: ...........................................................................................................................

Table:

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<th>Capsule Dose</th>
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<tr>
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<td>1 mL (20 mg)</td>
<td></td>
</tr>
<tr>
<td>3-11 months</td>
<td>2 mL (40 mg)</td>
<td></td>
</tr>
<tr>
<td>1-2 years</td>
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</tr>
<tr>
<td>5-6 years</td>
<td>10 mL (200 mg)</td>
<td></td>
</tr>
</tbody>
</table>

Dosage = twice daily for two days

---

No Longer Applicable
Withdrawn June 2016
# Meningococcal Contact Prophylaxis Form

**Ciprofloxacin** or **Ceftriaxone**

**Name of facility:** ....................................................................................................................

**Facility contact person:** ...........................................................................................................

**Phone:** .................................................................................................................................

**Name of Index Case:** ..............................................................................................................

**Hospital:** ..............................................................................................................................

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<thead>
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<th>Full name</th>
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<th>Consent received</th>
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<th>Ceftriaxone IM Dose</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&lt;12 years 500 mg</td>
<td>&gt;12 years 125 mg</td>
<td>Unwell</td>
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<td></td>
<td></td>
<td>&lt;12 years 250 mg</td>
<td>&gt;12 years 250 mg</td>
<td>Prophylaxis given</td>
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</tbody>
</table>

**Community/PHU Nurse:** ........................................................................................................

**Community Health Centre/PHU:** ...........................................................................................

**Comments:** ........................................................................................................................

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**APPENDIX 2**

**Page .......... of ..............**

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**No Longer Applicable**

**Withdrawn**

**June 2016**
Rifampicin is an antibiotic that is used to eliminate meningococcal bacteria that a person may be “carrying” in their nose or throat.

Rifampicin is usually offered to people who have had “high risk” contact with a person who developed meningococcal disease. The reason for giving clearance antibiotics is to eliminate meningococci from any carrier who may have picked this bacteria up. Meningococcal bacteria are usually spread from person-to-person by respiratory secretions after prolonged contact.

“High risk” contacts include adults or children who, within 7 days prior to the onset of meningococcal disease in the person:

- lived or slept in the same household as the person (refer to page 8), or
- attended the same child care group as the person for 4 or more hours at one time (refer to page 9).

The risk of meningococcal disease for “high risk” contacts of a person with meningococcal disease is relatively low. There is no benefit in giving rifampicin to a “high risk” contact if more than 4 weeks have elapsed since that person last had contact with the infected person.

**INDICATIONS**

Rifampicin is the preferred antibiotic for the treatment of children less than 12 years of age. It is available as an easy-to-swallow syrup. An alternative antibiotic is ceftriaxone, given as IM injection.

**CONTRAINDICATIONS**

Rifampicin should not be taken by persons with severe liver disease or pregnant women, but it is compatible with breast feeding. Ceftriaxone is the preferred antibiotic for pregnant women. Where possible, rifampicin should also be avoided in persons receiving drug therapy for epilepsy.

**DOSAGE**

Rifampicin is given as four oral doses (one dose twice daily for two days) for the treatment of “high risk” meningococcal contacts.

<table>
<thead>
<tr>
<th>Aged</th>
<th>Dose</th>
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<tbody>
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</tr>
<tr>
<td>3-11 months</td>
<td>2ml syrup&quot; (40 mg)</td>
</tr>
<tr>
<td>1-2 years</td>
<td>5ml syrup&quot; (100 mg)</td>
</tr>
<tr>
<td>3-4 years</td>
<td>7.5 ml syrup (150 mg)</td>
</tr>
<tr>
<td>5-6 years</td>
<td>10 ml syrup (200 mg)</td>
</tr>
<tr>
<td>7-12 years</td>
<td>300mg capsule</td>
</tr>
<tr>
<td>&gt; 12 years</td>
<td>600mg capsule</td>
</tr>
</tbody>
</table>

**Note:** The Product Information recommends a once-daily four-day regimen of rifampicin for clearance antibiotics of meningococcal disease. The two-day regimen above is recommended by the Communicable Diseases Network Australia (CDNA) in accordance with the Cochrane review.
SIDE EFFECTS

Rifampicin is well-tolerated usually, but it can have some temporary short-term side effects, including:

- harmless pink-orange staining of the urine and tears (rifampicin can permanently stain soft contact lenses, so these should not be used during treatment),

- decreased levels of some medications including warfarin, steroid drugs, some heart drugs, some epilepsy drugs, some diabetes drugs.

- decreased levels of the oral contraceptive “pill” (women taking rifampicin while taking the “pill” should continue to take it, omitting any “pill”-free or sugar “pill” interval, and for seven days after the last dose of rifampicin. They should also use additional barrier contraception, such as condoms, while taking rifampicin and for 4 weeks after the last dose of rifampicin). **Ciprofloxacin is the preferred** antibiotic for women taking the “pill”.

If you think you are developing a side effect from rifampicin, then you should immediately seek medical advice from your doctor.
Ciprofloxacin is usually offered to people who have had “high risk” contact with a person who developed meningococcal disease and who may be “carrying” the same strain of meningococcal bacteria as the infected person. Ciprofloxacin treatment is given to clear carriage from the nose/throat to prevent the contact from developing meningococcal disease and to prevent them from spreading the meningococcal bacteria to other people should they have this bacteria in their nose/throat. Meningococcal bacteria are usually spread from person-to-person by respiratory secretions during coughing or sneezing.

“High risk” contacts include adults or children who, within 7 days prior to the onset of meningococcal disease in the infected person:

- lived or slept in the same household (refer to page 8), or
- attended the same child care group for 4 or more hours at one time (refer to page 9).

The risk of meningococcal disease for “high risk” contacts of a patient with meningococcal disease is relatively low.

There is no benefit in giving ciprofloxacin to a “high risk” contact if more than 4 weeks have elapsed since that person last had contact with the patient.

**INDICATIONS**

Ciprofloxacin is the preferred antibiotic for the treatment of “high risk” meningococcal contacts 12 years of age and older and for women taking the oral contraceptive pill. Alternative antibiotics to ciprofloxacin are rifampicin or ceftriaxone.

**CONTRAINdications**

Ciprofloxacin should not be taken by pregnant or breast feeding women. Ceftriaxone is the preferred antibiotic for pregnant women.

**DOSAGE**

Ciprofloxacin is given as a single oral dose. The dose is:

- 500 mg for persons 12 years of age or older.

**SIDE EFFECTS**

Ciprofloxacin is well-tolerated but it can have some side effects, including allergic reactions. If you think you are developing a side effect from ciprofloxacin (e.g. generalised itching, facial swelling) then you should immediately seek medical attention.
Ceftriaxone is an antibiotic that is used to eliminate carriage of meningococcal bacteria in high risk contacts who may be “carrying” this bacteria in his/her nose or throat.

“High risk” contacts include adults or children who, within 7 days prior to the onset of meningococcal disease in the infected person:

- lived or slept in the same household (refer to page 8), or
- attended the same child care group as the patient for 4 or more hours at one time (refer to page 9).

There is no benefit in giving ceftriaxone to a “high risk” contact if more than 4 weeks have elapsed since that person last had contact with the patient.

**INDICATIONS**

Ceftriaxone is the preferred antibiotic for the treatment of “high risk” meningococcal contacts who are pregnant. It is compatible with breast feeding. It should not be given to children less than 4 weeks of age without discussing the potential side effects in neonates.

**CONTRAINDICATIONS**

Ceftriaxone is usually very well tolerated and there are no adverse reactions or drug interactions of particular importance.

**DOSAGE**

Ceftriaxone is given as a single intravenous or intramuscular injection for the treatment of “high risk” meningococcal contacts. This is a single dose:

- 250 mg IM for adults;
- 125 mg IM for children younger than 12 years. Ceftriaxone should not be used for clearance antibiotics in infants less than 4 weeks of life.

To reduce pain, ceftriaxone should be dissolved in 1% lignocaine without adrenaline for intramuscular injections.
Dear <<Parent>>

A <<child>> who attends <<NAME OF CLASS/YEAR/COURSE>> at <<NAME OF CHILD CARE CENTRE/SCHOOL/COLLEGE/UNIVERSITY>> with <<your child/you>> has been diagnosed with meningococcal disease.

Although it is very unlikely that another <<child/student or staff member>> at <<NAME OF SCHOOL/COLLEGE/UNIVERSITY>> will develop meningococcal disease in the next few weeks, this letter is to inform you about meningococcal disease and to advise you to immediately seek medical attention if <<your child/you>> or someone you know ever develops symptoms or signs consistent with meningococcal disease.

It is not necessary for <<your child/you>>:

- to take any antibiotics for meningococcal disease,
- to avoid contact with family members or anyone else,
- to be isolated or excluded from school or work,
- to restrict your normal activities in any way.

Meningococcal disease is an uncommon, life-threatening infection caused by bacteria that invade the bloodstream, usually causing septicemia (infection of the blood) and/or meningitis (infection of the lining of the brain). These bacteria normally live harmlessly in the nose and throat and are slowly passed from person-to-person (about 10% of the population carry meningococcal bacteria in their nose and throat at any one time).

Common symptoms of meningococcal disease in children and adults include fever, rash, headache, neck stiffness, vomiting, chills, muscle and joint pains, and abdominal pain. Common symptoms in babies include fever, rapid breathing, rash, vomiting, irritability, drowsiness, and pallor.

For more information about meningococcal disease, read the accompanying Meningococcal Disease Fact Sheet, which is also available on the Internet at www.public.health.wa.gov.au/cproot/476/2/Fact%20Sheet%20Meningococcal%20Disease%20Jan%202009.pdf

For more information about this case contact <<your child’s/your<><<child care centre/school/college/university>> or the <<NAME>> Population Health Unit (Phone: <<PHONE NUMBER>>>)

Yours sincerely

<<NAME>>
<<TITLE>>
<<DATE>>
Dear Student/Teacher/Parent

A student who attends <<NAME OF CLASS/YEAR/COURSE>> at <<NAME OF SCHOOL/COLLEGE/UNIVERSITY>> has been diagnosed with meningococcal disease.

This letter is to you inform you about meningococcal disease and to advise you that you or your child is not at an increased risk of meningococcal disease. Contacts of this student who are at an increased risk of meningococcal disease are being contacted individually by Public Health staff.

It is not necessary for you or your child:

- to take any antibiotics for meningococcal disease,
- to avoid contact with family members or anyone else,
- to be isolated or excluded from school or work, or
- to restrict your normal activities in any way.

Meningococcal disease is an uncommon, life-threatening infection caused by bacteria that invade the bloodstream, usually causing septicaemia (infection of the blood) and/or meningitis (infection of the lining of the brain). These bacteria normally live harmlessly in the nose and throat and are slowly passed from person-to-person (about 1% of the population carry meningococcal bacteria in their nose and throat at any one time). These bacteria can invade the bloodstream, causing septicaemia and/or meningitis.

Common symptoms of meningococcal disease in children and adults include fever, rash, headache, neck stiffness, vomiting, chills, muscle and joint pains, and abdominal pain. Common symptoms in babies include fever, rapid breathing, rash, vomiting, irritability, drowsiness, and pallor.

For more information about meningococcal disease, read the Department of Health’s Meningococcal Disease Fact Sheet, which is available on the Internet at www.public.health.wa.gov.au/cproot/476/2/fact%20sheet%20meningococcal%20Disease%20Jan%202009.pdf

Yours sincerely

<<NAME>>
<<TITLE>>
<<DATE>>
Dear Parent/Contact

RIFAMPICIN PROPHYLAXIS
FOR CONTACTS OF MENINGOCOCCAL DISEASE

If you, or your child has been identified as a close contact of another child who has been diagnosed with meningococcal infection. Antibiotics are being offered to close contacts who may be at increased risk of meningococcal infection.

Meningococcal infection may cause meningitis (infection of the lining of the brain or spinal cord), and/or septicaemia (infection of the blood). The bacteria are spread by close personal contact, especially where there is transfer of secretions from the nose and mouth. Close contacts include those who live or sleep in the same house, mouth-to-mouth kissing.

To help prevent further infections your child has been given an antibiotic called rifampicin which eliminates the meningococcal bacteria from the nose and throat. Your child will need to take four doses of rifampicin — one dose twice a day (morning and evening) for two days. The recommended dose of rifampicin is shown on the label of the antibiotic container. Please make sure that your child takes all four doses.

Rifampicin is a very safe antibiotic. The most common side-effect is pink-orange coloured urine and tears, which is harmless and indicates that the antibiotic is being absorbed. However, soft contact lenses may be stained and should not be worn while receiving rifampicin. Other uncommon side-effects include nausea, vomiting, diarrhoea, dizziness, drowsiness and headache. Rifampicin may also reduce the effectiveness of other drugs such as anticonvulsants and anticoagulants. If you are taking these, talk to your doctor. Rifampicin should not be taken by people with active liver disease.

Even though rifampicin is greater than 90% effective in eliminating meningococcal bacteria, you should monitor your child’s health carefully for the next four weeks for symptoms of meningococcal infection. These include fever, headache, neck stiffness, muscle or joint pains, prostration, confusion, nausea and vomiting and a rash of red-purple spots or bruise. Consult your family doctor or the Emergency Department of the closest hospital immediately if you are worried. You should take this letter with you if you visit a doctor.

For more information contact your Local Public Health Unit.

<table>
<thead>
<tr>
<th>Public Health Unit</th>
<th>Telephone/Fax No.</th>
<th>Public Health Unit</th>
<th>Telephone/Fax No.</th>
</tr>
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<tr>
<td>North Metropolitan</td>
<td>Tel: 9380 7700</td>
<td>Kimberley</td>
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</table>

or Health Direct on 1800 022 222.

Yours sincerely

Dr Paul Armstrong
DIRECTOR
COMMUNICABLE DISEASE CONTROL DIRECTORATE

Invasive Meningococcal Disease Guidelines for Public Health Staff – 2012
Dear Contact

CIPROFLOXIN PROPHYLAXIS
FOR CONTACTS OF MENINGOCOCCAL DISEASE

You have been identified as a close contact of a person who has been diagnosed with meningococcal infection. The Department of Health offers antibiotics to high risk close contacts who may be at increased risk of infection.

Meningococcal infection may cause meningitis (infection of the lining of the brain or spinal cord), and/or septicaemia (infection of the blood). The bacteria are spread by close personal contact, especially where there is transfer of secretions from the nose and mouth. Close contact include those who live or sleep in the same house, kissing.

To help prevent further infections you have been given an antibiotic called ciprofloxacin which eliminates any bacteria from the nose and throat. Ciprofloxacin is given as a single oral dose.

Ciprofloxacin is a very safe antibiotic. The uncommon side-effects include nausea, vomiting, diarrhoea, rash, dizziness, headache, sweating or tremor. Ciprofloxacin is not recommended for pregnant women or children less than 12 years of age or children less than 40 kg body weight. Ciprofloxacin may enhance the effects of caffeine.

Even though ciprofloxacin is greater than 90% effective in eliminating meningococcal bacteria, you should monitor your health or your child’s health carefully for the next four weeks for symptoms of meningococcal infection. These include fever, headache, neck stiffness, muscle or joint pains, drowsiness, confusion, nausea and vomiting and a rash of red-purple spots or bruises. Consult your family doctor or the Emergency Department of the closest hospital immediately if you are worried. You should take this letter with you if you visit your doctor.

For more information contact your Local Public Health Unit.

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</tbody>
</table>

Yours sincerely

Dr Paul Armstrong
DIRECTOR
COMMUNICABLE DISEASE CONTROL DIRECTORATE
MANAGEMENT OF SCHOOL CONTACTS OF A PERSON WITH MENINGOCOCCAL DISEASE

Introduction
This guideline has been produced by the Department of Health to facilitate the provision of information about meningococcal disease to parents of students who are either contacts of, or who belong to the same school community as a student or staff member with meningococcal disease.

The recommendations in this protocol are derived from the Guidelines for the early clinical and public health management of meningococcal disease in Australia, Communicable Diseases Network Australia, 2007, which is available at http://www.health.gov.au/internet/wcms/publishing.nsf/Content/cda-pubs-other-mening-2007.htm

Protocol
The following actions are recommended when a principal is notified of a case of meningococcal disease in one of their students:

1. If the principal is informed about a suspected case of meningococcal disease in a student (e.g. by a parent) then the principal should obtain the full name and date of birth of the student and the name of the admitting hospital and immediately telephone the local Public Health Unit (PHU) to establish the validity of the report. The PHU staff will then contact the admitting hospital and verify if this is a suspected or confirmed case of meningococcal disease.

2. Principals should not issue any information about a suspected case of meningococcal disease in a student or staff member to other staff, parents, or students unless they are advised to do so by PHU staff. Any information on this matter that is issued by the principal should preferably be in consultation with the local PHU. In most cases, the PHU staff will provide the written information to be distributed. The confidentiality of the individual case should be considered at all times.

Contacts
The PHU will assess student/teacher contacts level of risk and based on this level of risk will either provide information only or arrange for student/teachers to have chemoprophylaxis (antibiotics).

“High risk” school contacts include those students who, within 7 days prior to the onset of meningococcal disease in the infected student, slept in the same household (or dormitory) as the student with meningococcal disease.

A Meningococcal Fact Sheet is available for staff and parents at: www.public.health.wa.gov.au/cproot/476/2/Fact%20sheet%20meningococcal%20Disease%20Jan%202009.pdf. The information provides an outline of disease symptoms, and the recommended action to be taken. Contacts of a confirmed case do not pose a risk to others, and do not need to be excluded from school.

Principals should discuss distributing information about meningococcal disease to parents of “other” school staff and students with the PHU staff. The decision to distribute information about meningococcal disease to parents of “other” school contacts should be carefully weighed against the need to inform the whole school community and the risk of stimulating unnecessary anxiety.

For more information about meningococcal disease or this protocol phone your local Public Health Unit (see below).

For more information contact your Local Public Health Unit.

<table>
<thead>
<tr>
<th>Public Health Unit</th>
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<td>Tel: 9781 2350</td>
<td>Wheatbelt</td>
<td>Tel: 9622 4320</td>
</tr>
<tr>
<td>(Bunbury)</td>
<td>Fax: 9781 2382</td>
<td>(Northam)</td>
<td>Fax: 9622 4342</td>
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<tr>
<td>Pilbara</td>
<td>Tel: 9158 9222</td>
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<tr>
<td>(Port Hedland)</td>
<td>Fax: 99158 9253</td>
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Meningococcal Disease

What is meningococcal disease?

- Meningococcal disease results from an infection with a bacterium known as the meningococcus.
- At any one time, approximately 10% of healthy people carry these bacteria harmlessly in their nose or throat, and do not become ill.
- There are 13 serogroups (different types) of meningococcal bacteria. In WA, around 90% of all cases are caused by serogroup B organisms.
- Rarely, the meningococcus causes serious invasive infections, including septicaemia (infection of the blood), meningitis (infection of the membranes that cover the brain and spinal cord) and other illnesses.

How common is it?

- On average, there are between 20 and 30 cases of meningococcal disease in WA each year, mainly in winter and spring.
- This disease can occur at any age but is most common in children aged less than 5 years and in teenagers and young adults between 15 to 24 years.
- Nearly all cases of meningococcal disease are “sporadic” and have no association with other cases. Rarely, there may be a linked case more commonly in a close contact, such as a household member.

How is it spread?

- Meningococcal bacteria are not easily spread, but are present in droplets discharged from the nose and throat when coughing or sneezing. It is not spread by saliva.
- The meningococcus does not survive more than a few seconds in the environment, so it cannot be picked up from surfaces or objects (e.g. a drink bottle).
- If spread occurs it is most likely to be to very close contacts, such as people who live in the same household.
- Most people will harmlessly carry meningococcal bacteria in their nose or throat for periods of weeks to months at different times during their life.
- If a carrier passes the bacterium to another person who develops meningococcal disease, this will usually occur within days.

What are the symptoms?

Symptoms in infants:
- Febrile
- Rapid breathing or panting
- Vomiting or difficulty feeding
- Inability to take milk
- Unusual crying or moaning
- Rash of red spots or bruises (does not always occur)

Symptoms in older children and adults:
- Fever
- Headache
- Vomiting
- Neck stiffness
- Muscle or joint pains
- Sensation of pins and needles
- Rash (red spots or blisters) does not always occur

What action should you take?

- It is important that people with symptoms of meningococcal disease seek medical advice early. The disease is serious and life threatening, but most people recover completely with early antibiotic treatment.
- Diagnosis can be difficult at the start of meningococcal illness. If the person is sent home by the doctor or hospital, it is important to return promptly for further assessment if symptoms get worse or do not improve.
What is the treatment?

- Antibiotic treatment in hospital is essential for anyone with meningococcal disease.
- The earlier treatment is started the greater the likelihood of a full recovery.

What about contacts?

- **Very close contacts** – are those who have had prolonged close contact (e.g. household members, sexual contacts, those in the same childcare group) with the person who has the disease within the 7 days before the onset of symptoms.

- **Very close contacts** are followed up by Department of Health staff and offered an antibiotic to clear meningococcal bacteria from the nose and throat, should they be a carrier. The antibiotics will NOT prevent the disease occurring if the person is already incubating infection.

- **“Low risk” social contacts** (e.g. school friends and work associates) are usually provided with information about the signs and symptoms of illness, but antibiotics are not necessary.

- All contacts of a case should observe carefully for signs and symptoms of meningococcal disease for around two weeks after their last contact with the infected person before treatment commenced, and should seek medical advice if concerned.

Is there a vaccine?

- Yes, vaccines are available against some of the serogroups of the meningococcus.

- A vaccine is not available against serogroup B meningococcus, which causes most cases of disease in WA.

- A vaccine against serogroup C meningococcal disease is provided free to all children at 1 year of age. Only one dose is required for long-term protection in people 12 months of age or older.

- A different type of meningococcal vaccine that protects against serogroups A, C, W and Y, is recommended for **people who travel** to high risk areas (e.g. sub-Saharan Africa, the Middle East, Nepal). These vaccines require a booster dose every 3 years.

- People considering vaccination should seek advice from their local doctor or a travel doctor.

Further information?

For urgent health advice, contact HEALTH DIRECT on 1800 022 222 (24 hours).

For advice about case and contact management, call your regional Public Health Unit (see below):

<table>
<thead>
<tr>
<th>Public Health</th>
<th>Telephone</th>
<th>Public Health Unit</th>
<th>Telephone</th>
</tr>
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<tbody>
<tr>
<td>Kimberley</td>
<td>9153 1600</td>
<td>Great Southern</td>
<td>9842 7500</td>
</tr>
<tr>
<td>Midwest</td>
<td>9540 1985</td>
<td>Pilbara</td>
<td>9156 2222</td>
</tr>
<tr>
<td>Southwest</td>
<td>9481 2350</td>
<td>Wheatbelt</td>
<td>9229 4320</td>
</tr>
<tr>
<td>Goldfields</td>
<td>9000 8200</td>
<td>North Metro</td>
<td>9380 7700</td>
</tr>
<tr>
<td>South West</td>
<td>9431 0200</td>
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</tbody>
</table>

Support and information for people with meningococcal disease and their families is available from:

- The Amanda Young Foundation: 08 9339 4255 or 9227 4237
- The Meningitis Centre: 1800 250 223

Internet

- [Department of Health](http://www.public.health.wa.gov.au/)
- The Amanda Young Foundation: [www.amandayoungfoundation.org.au](http://www.amandayoungfoundation.org.au)

Last updated 23 March 2012

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No Longer Applicable
Withdrawn June 2016
Introduction

The purpose of these guidelines is to provide advice to medical practitioners about the early clinical and public health management of meningococcal disease. Information provided is a summary of the recommendations outlined in the Communicable Diseases Network Australia (CDNA) Meningococcal Guidelines 2007.

Meningococcal infection is caused by the Gram negative diplococcus *Neisseria meningitidis*.

About 8 of the 13 serogroups of *N meningitidis* can cause disease, but serogroups A, B, and C are responsible for over 90% of invasive infections. Typically, serogroups A and C are associated with outbreaks or clusters of cases and serogroups B and C are associated with sporadic cases. Less common groups include W-135, and Y.

Number of Cases and Serogroups

Between 2009 and 2011, WA had 72 cases of meningococcal infection notified to the Department of Health. Of these, 63 were serogroup B (88%), 3 were serogroup C, and 5 were unknown.

Incubation Period and Transmission

The incubation period for invasive meningococcal disease is usually 3-4 days (range 1 to 7 days).

Meningococcal bacteria are most readily transmitted by prolonged respiratory contact (e.g. living in the same household). There is little evidence to support that salivary transmission (e.g. sharing drink containers, food, cigarettes, smoking implements, wind instruments, etc) is a means of transmission, are no longer considered significant.

Nasopharyngeal carriage of meningococci is common – about 10% of the population carry *N meningitidis* bacteria, not all of which are virulent strains at any given time. Nasopharyngeal carriage induces serogroup-specific immunity of variable duration.

In susceptible individuals, meningococcal infection may become invasive and cause a range of clinical syndromes, most commonly a combination of septicaemia and meningitis, septicaemia alone, or meningitis alone.

Meningococcal Meningitis

Meningococcal meningitis usually has a sudden onset and is typically characterised by fever, intense headache, stiff neck, nausea and vomiting, and altered consciousness. An associated late sign is a petechial rash, but this is not always present. A less distinctive maculopapular rash may also be observed in the early phase of the illness. It is important not to wait for a rash before diagnosing and treating suspected meningococcal disease.

A recent study in children under 16 years of age has shown that leg pain, cold extremities, and abnormal skin colour are frequently seen in the first 12 hours of meningococcal disease (median onset 7-12 hours), whereas the classic features (haemorrhagic rash, meningism, and impaired consciousness) are relatively late signs (median onset 13-22 hours). As the early features of meningococcal disease are non-specific and may also be present with other bacterial and viral infections including self-limiting viral illnesses seen in primary care, doctors should be encouraged to schedule clinical review within 4-6 hours if early meningococcal disease cannot be excluded at the first assessment.
Infants may not develop signs of meningism. The most common symptoms and signs for infants include fever, tachypnoea, rash, vomiting, irritability, drowsiness, and pallor. However, not all these signs and symptoms may be present and clinical review of infants is especially important. A change in a child’s behaviour e.g. unwillingness to interact, or make eye contact, or an altered mental state are some of the most important early signs in infants.

**Meningococcal Septicaemia**

Invasive meningococcal infection may result in septicaemia with or without meningitis. In septicaemic cases, the patient usually presents with an acute febrile illness, profound malaise, myalgia or arthralgia, nausea and vomiting, altered consciousness, and a maculopapular/petechial rash (50% of cases).

Meningococcal septicaemia is more often misdiagnosed than meningococcal meningitis at first presentation and has a high fatality rate.

**Meningococcal Conjunctivitis**

Primary meningococcal conjunctivitis may be associated with invasive disease and should be treated systemically. The public health management of meningococcal conjunctivitis is identical to that of invasive disease.

**Meningococci isolated from other sites**

Meningococci coincidently isolated from other superficial sites (e.g. oropharyngeal, genital or anal swabs) are of no public health consequence and do not require any public health response.

**PRE-HOSPITAL EMPIRICAL THERAPY**

As soon as invasive meningococcal infection is suspected, intravenous access should be attempted and, if possible, a blood culture specimen obtained prior to antibiotic administration and immediate transfer to hospital. If intravenous access cannot be obtained then intramuscular antibiotic injection is recommended. Pre-hospital antibiotic therapy can halve the case fatality rate.

The recommended antibiotics for immediate empirical therapy are either:

1. **Benzylpenicillin**
   - <1 year: 300 mg,
   - 1-9 years: 600 mg,
   - ≥10 years: 1200 mg IV!

   For optimal benefit, benzylpenicillin should be given intravenously. However if general practitioners are unable to access the intravenous route, it is appropriate to administer benzylpenicillin by the intramuscular route.

2. **Ceftriaxone (50 mg/kg to a maximum of 2 g) IM or IV.**

   Benzylpenicillin is available as a PBS Emergency (Doctor’s Bag) Drug. Ceftriaxone is the preferred empirical therapy for patients with penicillin allergy or for patients in remote areas where further parenteral therapy may be delayed more than 6 hours.

   In cases where penicillin allergy is suspected or known and ceftriaxone is unavailable, contact a microbiologist or medical specialist for information and advice.
Antibiotic Treatment of Cases

For those patients who were given Benzylpenicillin as the main course of treatment, an appropriate antibiotic should also be given to eliminate nasopharyngeal carriage of *N meningitidis*. Ceftriaxone and ciprofloxacin are suitable for this purpose, but penicillin is not.

Vaccination of Cases

Confirmed cases of serogroup C disease including those who have been previously vaccinated with meningococcal C conjugate vaccine (MenCCV) or a polysaccharide meningococcal vaccine (4vMenPV), should be offered meningococcal C conjugate vaccine (MenCCV) at the time of discharge, as immunisation with conjugate vaccines appears to induce better sustained immunity than natural infection.

NOTIFICATION

Every case of suspected invasive meningococcal disease should be notified urgently by telephone to the local Public Health Unit or to the Communicable Disease Control Directorate (metropolitan area – phone 9388 4999 or, after hours, 9328 0553). Do not wait for laboratory confirmation before notifying, to prevent time delays in following up contacts.

CONTACT MANAGEMENT

High Risk Contacts
(CHEMOPROPHYLAXIS RECOMMENDED)

Persons who have had close, prolonged contact with the patient within 7 days preceding the onset of disease in the patient, including:

1. Household contacts, especially children.
2. Sexual and intimate kissing contacts.
3. Children and staff contacts who attended the same child care (same room) or playgroup session for more than 4 continuous hours.
4. Contacts who slept in the same household including dormitory contacts.
5. Contacts who sat in seats adjacent to a case during long flight travel (> 8 hours).
6. Medical/HCW staff contacts who performed mouth-to-mouth resuscitation or were <1 meter from the case during endotracheal intubation/extubation.

Lower Risk Contacts
(CHEMOPROPHYLAXIS NOT RECOMMENDED)

1. Casual contacts — *non*-high risk contacts with no history of prolonged close exposure, e.g. school or work contacts, contacts who attended different child care or playgroup sessions to the case.
2. Indirect contacts — any contacts of a high risk contact, e.g. household or family contacts of a high risk contact.
3. Saliva contacts — *non*-high risk contacts are those who engaged in non-intimate kissing on the cheek or lips, shared drink containers, food, cigarettes, smoking implements, wind instruments, etc, with the case.
4. Medical staff contacts without direct exposure to patient’s respiratory secretions (see 6. above).
Treatment of Index Case’s Contacts

Chemoprophylaxis is not recommended if the last contact was more than 4 weeks ago. Ideally, antibiotics should be given as soon as possible (within 24 hours) after the diagnosis of the index case.

High risk contacts should receive chemoprophylaxis and instructions to seek immediate medical attention if signs or symptoms of invasive meningococcal infection appear.

Lower risk contacts should only receive instructions (Fact Sheet) to seek immediate medical attention if signs or symptoms of invasive meningococcal infection appear.

If there is uncertainty whether an individual is a high risk or lower risk contact, Public Health staff should be consulted.

Chemoprophylaxis is effective in eliminating carriage of *N. meningitidis*, but it may not prevent meningococcal infections that are already incubating. The primary aim of chemoprophylaxis is to eliminate meningococci from any carrier who may be in the network of contacts close to each index case, to reduce the risk to other susceptible individuals in the network.

Chemoprophylaxis of Contacts

Either ceftriaxone, ciprofloxacin or rifampicin are suitable for this purpose, penicillin is not recommended.

**Oral Rifampicin**

The recommended schedule for rifampicin is 600 mg every 12 hours for 2 days for adults; 10 mg/kg/dose for children over one month of age every 12 hours for 3 days; and 5 mg/kg/dose for children aged less than one month every 12 hours for 2 days. This can be simplified as below in the table without losing effectiveness.

<table>
<thead>
<tr>
<th>Aged (months)</th>
<th>Dose</th>
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<tbody>
<tr>
<td>0-2 months</td>
<td>1ml syrup* (20 mg)</td>
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</tr>
<tr>
<td>3-11 months</td>
<td>2ml syrup* (40 mg)</td>
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</tr>
<tr>
<td>1-2 years</td>
<td>5ml syrup* (100 mg)</td>
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<tr>
<td>2-5 years</td>
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</tr>
<tr>
<td>5-6 years</td>
<td>10 ml syrup (200 mg)</td>
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</tr>
<tr>
<td>7-12 years</td>
<td>300 mg capsule</td>
<td>Twice daily for 2 days</td>
</tr>
<tr>
<td>&gt; 12 years</td>
<td>600 mg capsule</td>
<td>Twice daily for 2 days</td>
</tr>
</tbody>
</table>

*Rifampicin syrup contains 100mg/5ml

Note: The Product Information recommends a once-daily four-day regimen of rifampicin for clearance antibiotics of meningococcal disease. The two-day regimen above is recommended by the Communicable Diseases Network Australia (CDNA) in accordance with the Cochrane review.

Rifampicin should not be given during pregnancy or to people with active liver disease and should be given with caution to people taking anticoagulants, anticonvulsants, or oral contraceptive medication.

Common side effects of rifampicin include headache, dizziness and gastrointestinal symptoms. It can cause orange colouration of urine, orange staining of contact lenses and, because it induces liver microsomal enzymes, it can reduce the efficacy of the oral contraceptive pill. Rifampicin can also reduce the efficacy of phenytoin, warfarin, corticosteroids, cyclosporine, dapsone, diltiazem, quinidine, sulphonylureas, theophylline,
tricyclic antidepressants, verapamil, beta-blockers, and methadone.

Rifampicin is not available from most community pharmacies. Contact your local Public Health Unit or public hospital if you need rifampicin for meningococcal chemoprophylaxis.

**Intramuscular Ceftriaxone**

Recommended dose is 250 mg/dose, or 125 mg: < 12 years, 250 mg: ≥ 12 years IM.

Ceftriaxone should not be given to infants less than 4 weeks of age, but it is safe to administer during pregnancy.

Ceftriaxone should be diluted with 1% lignocaine **without adrenaline** to reduce pain at the injection site.

**Oral Ciprofloxacin**

A single dose of 500 mg: ≥ 12 years.

Systemic allergic reactions may occur in up to 1 per 1,000 first doses.

Ciprofloxacin should not be given during pregnancy, but it is the preferred antibiotic for women on the contraceptive pill.

Ciprofloxacin is contraindicated in children less than 12 years of age.

**Nasopharyngeal swabbing and culture is of no value in contact management.**

**Vaccination of contacts**

Due to the prolonged risk of secondary cases in household settings, vaccination is indicated for unimmunised household and sexual contacts of cases of serogroup C disease.

For household contacts of confirmed cases of meningococcal disease, public health staff should confirm the meningococcal serogroup. If the case is serogroup C, all unvaccinated household contacts should be immunised with MenCCV. If the case is a non-B non-C serogroup, all household contacts should be immunised with 4vMenPPV (page 42 national guidelines for management of meningococcal disease).

In addition, if a household contact of a confirmed case of any meningococcal serogroup is aged 12 months or over, and was born after 1 January 2002, ensure that he/she has received one dose of MenCCV. If unvaccinated, promote vaccination through the contact’s usual immunisation provider (Page 43).

**Public Health Response**

On receipt of the notification of suspected or confirmed cases of meningococcal infection, Public Health Staff (PHS) will initiate follow up action as outlined in this document and the Communicable Disease Network Australia (CDNA) management of meningococcal disease guidelines 2007, see [www.public.health.wa.gov.au/cproot/476/2/Fact%20sheet%20meningococcal%20Disease%20Jan%202009.pdf](http://www.public.health.wa.gov.au/cproot/476/2/Fact%20sheet%20meningococcal%20Disease%20Jan%202009.pdf)