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Appendix 15  Standards for the Meningococcal Disease Audit
Appendix 16  Data collection form
Appendix 17  Clinical management flow chart
Appendix 18  Patient Group Directions for Rifampicin
Appendix 19  Patient Group Directions for Ciprofloxacin
1. INTRODUCTION

These guidelines have been developed for the use of all healthcare staff involved in the management of meningococcal disease in accordance with guidelines issued by Health Protection Agency (PHLS before April 2003) Meningococcus Forum, and endorsed by Public Health Medicine Environmental Group and the Scottish Centre for Infection and Environmental Health.

The objectives of this policy are to outline

- the roles of key individuals and services in responding to a case or cluster of meningococcal disease
- what emergency actions are reasonable to reduce the risk of morbidity and mortality from meningococcal disease
- what is required to confirm the diagnosis
- what steps should be taken to minimize the likelihood of further linked cases
- what should be done to disseminate information after a case
- how to manage a cluster of cases.

2. EPIDEMIOLOGY

The annual incidence of invasive meningococcal disease in England and Wales rose in the mid-80s and remained high during the 90s. The reported incidence of meningococcal disease rose to historically high levels during 1998/99 particularly associated with serogroup C strains of the electrophoretic type 37 clonal complex. Following the introduction of the UK meningococcal C conjugate vaccination programme in November 1999, there was a marked fall in disease caused by serogroup C strains. Two national outbreaks of disease due to W135 strains, previously rare in the UK, followed the Hajj pilgrimages in 2000 and 2001.

Meningococcal disease can affect any age group, but the young are the most vulnerable. The highest age specific attack rates are seen in infancy. Rates decline with age during childhood but a secondary peak has been observed at 15-19 years in England and Wales. Cases occur in all months of the year but the incidence is higher in winter.

The three common syndromes of meningococcal disease are meningitis alone, septicaemia alone and a combination of the two. Septicaemia without meningitis has the highest case fatality rate of 20% or more, whereas in meningitis alone the fatality rate is around 5%. Most cases are a combination of septicaemia and meningitis.

3. TRANSMISSION AND CARRIAGE OF MENINGOCOCCI

Neisseria meningitidis is transmitted from one person to another by droplets spread from the upper respiratory tract. There is no reservoir other than humans and the organism dies quickly outside the host.
Nasopharyngeal carriage of meningococci is common in the general population, about 10% normally carry one of a number of meningococcal strains, many of which are non-pathogenic.

Acquisition of meningococci is followed by a variable period of carriage. The mean duration of carriage has been estimated in some community studies at about 9 months. Systemic immunity or (rarely) invasive disease develops within a week of acquisition.

4. EMERGENCY ACTION TO REDUCE THE MORTALITY RATE

In view of the potentially rapid clinical progression of meningococcal disease, early treatment of suspected cases with benzylpenicillin is recommended and may save lives. There is no evidence to support the use of corticosteroids before admission. Anaphylaxis following injection of penicillin is rare. Cross reactivity between penicillin and cephalosporin allergy occurs in between 2% and 10% of cases.

Recommendations:

- Rapid admission to hospital is a priority when meningococcal disease is suspected

- The HPA Meningococcal Forum confirms the recommendations that an injection of benzylpenicillin should be given urgently to cases of suspected meningococcal disease unless there is a history of immediate allergic reactions after previous penicillin administration.

- Anaphylactic reactions after giving penicillin are rare, occurring in 1 in 7000 to 1 in 25,000 of treated patients. Anaphylaxis is more likely if there is a history of immediate allergic reactions (such as difficulty breathing, collapse, generalised itchy rash) after previous penicillin administration. In these patients, giving penicillin or an alternative antibiotic may carry an increased risk of anaphylactic reactions and therefore it is considered that urgent transfer to hospital is the most important measure.

- The HPA Meningococcus Forum considers that general practitioners do not need to carry an additional antibiotic in their emergency bags. However, if other antibiotics are available, a 3rd generation cephalosporin may be used. If there is a history of immediate allergic reactions to penicillin or cephalosporins, chloramphenicol may be used.

### Immediate dose of Benzylpenicillin for suspected Meningococcal Infections

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults and children 10 years and over</td>
<td>1200mg</td>
</tr>
<tr>
<td>Children aged 1 to 9 years</td>
<td>600mg</td>
</tr>
<tr>
<td>Children under 1 year</td>
<td>300mg</td>
</tr>
</tbody>
</table>
This dose should be given as soon as possible, ideally by intravenous injection. Intramuscular injection is likely to be less effective in shocked patients, due to reduced tissue perfusion, but should be used if a vein cannot be found.

Systemic antibiotic treatment (benzylpenicillin or a suitable alternative) should be started immediately on arrival at hospital and blood should be taken for culture.

A flow chart on clinical management of meningococcal disease is given in Appendix 17.

5. CONFIRMING THE DIAGNOSIS

The definitions for confirmed, probable and possible cases are included in Appendix 1.

Whilst microbiological techniques remain an important part of investigating suspected cases, molecular methods have been developed that assist diagnosis from cases where isolates have not been obtained.

Recommendations for laboratory diagnosis

The following specimens should be collected on or soon after, admission to hospital from all patients when meningococcal infection is included in the differential diagnosis:

- Blood for culture
- Blood for PCR (EDTA or other unclotted blood specimen)
- Serum (on admission and 2-6 weeks later)
- *CSF for microscopy, culture, PCR
- Aspirate from other sterile sites suspected of being infected (e.g. joints) for microscopy, culture, PCR
- Nasopharyngeal throat swab normally taken through mouth (per-nasal if patient unable to cooperate)

*Lumbar puncture should not be done until the patient’s condition has been stabilised and assessment made to rule out raised intracranial pressure. Typical changes in the CSF in various neurological diseases are given in Appendix 12.

NB It is important that the doctor who takes the specimens informs the microbiologist of a possible case of meningococcal disease prior to sending the specimens to the laboratory. This will ensure that the appropriate tests are carried out promptly.

Cases due to rare serogroups or recurrent infection

In children and young adults with meningococcal disease caused by rare serogroups (i.e. not A, B, or C) or recurrent infection due to any serogroup, the CCDC/CPHM should discuss immunological investigation with the physician.
6. REDUCING THE RISK OF LINKED CASES

Only confirmed or probable meningococcal disease cases will need public health intervention.

All information and actions should be clearly and legibly recorded by the public health officer on the standard meningococcal disease case record form (Appendix 2) and continued onto standard continuation sheets as necessary. The original version needs to be kept by the department while a copy should be retained securely by the public health officer for their own records.

Possible cases will not routinely require public health action. However, basic information will be retained on possible cases to aid public health intervention if the ‘level of suspicion’ increases.

Liaison between clinicians, microbiology labs and the public health team is the key to the successful control and management of invasive disease. The relevant CCDC/public health officer on duty should be notified by telephone (followed by written notification) by the attending clinician as soon as a case of meningococcal disease is suspected. Out of hours the duty public health officer on call should be notified via ambulance control. Notification is a legal requirement.

About 97% of cases are sporadic. Although the risk to contacts is low, the highest documented risk is to people who live in the same household as a case of meningococcal disease. The Office for National Statistics defines a household as one person living alone or a group of people who share common housekeeping or a living room. The risk is highest in the first seven days after a case and falls rapidly during the following weeks. If prophylaxis is not given, the absolute risk to an individual in the same household 1-30 days after an index case is about 1 in 300. Beyond this 4 week period the risk is probably close to background levels.

The case is likely to have acquired the invasive strain from a close contact, typically in the same household, who is an asymptomatic carrier. The incubation period is usually 3-5 days and cases do not usually have detectable carriage until admission to hospital or shortly beforehand. As the highest risk of illness in untreated households is observed in the first 48 hours after onset of disease in the index case, the source of infection in these further cases is most likely to be from the same (or another) carrier and not from the case.

Chemoprophylaxis aims to reduce the risk of invasive disease by eradicating carriage in the group of close contacts at highest risk. It may act in two ways:

- by eradicating carriage from established carriers who pose a risk of infection to others
- by eradicating carriage in those who have newly acquired the invasive strain and who may themselves be at risk. The short and medium term reductions in risk among household contacts that are given antibiotics suggest that both mechanisms may operate.
The incubation period is quoted as two to ten days, but for practical purposes, a one-week period is considered sufficient to identify close contacts for prophylaxis.

After a single case of meningococcal disease, the risk of further linked cases outside the household is low, this is presumably linked to lower intensity of exposure.

A systematic review of the effectiveness of antibiotics in preventing meningococcal disease following a case supports the use of chemoprophylaxis in household contacts. Though the evidence base was limited to retrospective observational studies and one small trial, it concluded that chemoprophylaxis reduces the risk of further cases of meningococcal disease during the first month by 89% and in order to prevent one case approximately 220 household contacts need to be treated.

The further prophylaxis is extended outside the household the less chance there is of clearing a virulent strain and the greater the chance of eradicating potentially protective organisms.

The CCDC, Health Protection nurse or on call public health officer must be informed by the medical team caring for the index case as soon as a diagnosis of a probable or confirmed case is made.

**Contact tracing**

It is the responsibility of the public health team to identify the close contacts. This is usually done by speaking to a family member by telephone (usually on the ward) who is most likely to be able to supply contact and activity details during the 7 days prior to onset of the illness. If there has been bereavement or the next of kin is very distressed, it may be necessary to attend the hospital or home in person. The possible contacts outside the household will be telephoned to establish the level of contact and decide who to offer prophylaxis to. For further information they could be referred to the various meningitis charities (Appendix 7).

Details should be taken on childminder, nursery, school or workplace attended and contact with any other groups who may need advice.

In consultation with the Ward Sister/Charge Nurse, staff (including ambulance staff) needs to be identified who may have performed mouth-to-mouth resuscitation or been directly exposed to respiratory droplets (see below- category 5).

The contact details should be entered on the reverse of the case record (Appendix 2).

**Recommendations for chemoprophylaxis:**

Antibiotic chemoprophylaxis should be given as soon as possible (within 24 hours) after diagnosis of the index case.

In deciding who to treat, it is necessary to exercise some judgement according to individual circumstances.
Chemoprophylaxis should be offered to contacts of cases, irrespective of vaccination status, in the following categories:

1. Those who have had **prolonged close contact** with the case in a **household type setting** during the seven days before onset of illness including:
   - Household contacts within 7 days of onset
   - Any overnight guests at the same house as the index case within 7 days
   - Any members of other households in which the index case stayed overnight within 7 days
   - boy/girlfriends
   - pupils in the same dormitory within 7 days
   - university students sharing a kitchen in a hall of residence
   - Kissing contacts of the index case (i.e., exchange of saliva – not kissing on cheek or mouth)

2. Those who have had **transient close contact** with a case only if they have been directly exposed to large particle droplet/secretions from the respiratory tract of a case around the time of admission to hospital.

3. The **index case** as soon as able to take oral antibiotics unless they have been treated with ceftriaxone.

4. There will be few **wider contacts**, who require chemoprophylaxis but it may be considered for the following:
   - A childminder looking after the index case for many hours daily, and the other children in her care, if after assessment this is considered to be equivalent to a household setting.
   - Close **prolonged** contact e.g., granny
   - A boarding school may be considered as a household situation, after assessment and discussion with the school staff

5. **Health care workers** looking after a case should be advised to have prophylaxis if they have given mouth-to-mouth resuscitation or if they have been directly exposed to respiratory secretions/droplets from a case of meningococcal disease around the time of hospital admission. The PHLS Meningococcus Forum\(^3\) recommends chemoprophylaxis only for those staff whose nose or mouth is directly exposed to infectious respiratory droplets/secretions within a distance of 3 ft from a probable or confirmed case of meningococcal disease. This type of exposure is likely to occur in staff who undertakes airway management during resuscitation without wearing a mask or other mechanical protection. In most cases this would be accompanied by a clear perception of physical contact with droplets/secretions. Droplets and facial secretions are considered to be infectious from the onset of acute illness until completion of 24 hours of systemic antibiotics. **Chemoprophylaxis is not recommended without a clear history of exposure.** General medical or nursing care of cases should not be regarded as an indication for giving prophylaxis.
Who should not receive chemoprophylaxis

- When one case occurs in a school, playgroup or nursery, prophylaxis would not normally be advised for other children or staff, but it is important to provide information.

- Those who have attended a celebratory party should not routinely be offered chemoprophylaxis unless other reasons are identified, eg overnight stays.

- Kissing on cheek or mouth (Intimate kissing contact would normally be in close prolonged contact category)

- Sharing food or drink or similar low level of salivary contact

- Travelling in the next seat on same plane, train, bus or car

Cases in contacts who have received prophylaxis

If further cases occur within a group of close contacts in the 4 weeks after receiving rifampicin prophylaxis, ciprofloxacin (or ceftriaxone) should be used for repeat prophylaxis.

Arranging chemoprophylaxis

It is often most practicable for household contacts to receive chemoprophylaxis directly by the medical team caring for the index case from the hospital ward or pharmacy (eg, parents staying with their sick child). The respective GPs must be notified if chemoprophylaxis has been arranged via the hospital (Appendix 4). Arrangements must be in place through hospital pharmacies and paediatric/medical wards to have 24 hour access to supplies of rifampicin tablets and syrup. If contacts cannot be reached in hospital, prophylaxis should be arranged through general practitioners, health visitors and community nursing staff by the public health team (Appendix 3).

It is the responsibility of the public health team to arrange prophylaxis for the wider contacts via the GP. The GP will be contacted either by telephone or fax with the names of those contacts requiring prophylaxis. Contacts will be advised to contact their GP directly after allowing time for the public health officer to inform the GP.

All contacts need advice and information. It is important to remind close contacts that chemoprophylaxis will not necessarily prevent disease in a contact who is already incubating invasive meningococcal disease nor will it prevent a person being re-colonised after the chemoprophylaxis is completed.
Choice of antibiotic

Rifampicin, ciprofloxacin, and ceftriaxone are all recommended for use in preventing secondary cases of meningococcal disease but rifampicin is the only antibacterial agent that is licensed for this purpose. Ceftriaxone must be given by injection.

Rifampicin

Rifampicin is normally used for household contacts.

<table>
<thead>
<tr>
<th>Group</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults and children over 12 years</td>
<td>600mg BD for 2 days</td>
</tr>
<tr>
<td>Children 1-12 years</td>
<td>10mg/kg BD for 2 days</td>
</tr>
<tr>
<td>Infants (under 12 months)</td>
<td>5 mg/kg BD for 2 days</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Dose</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2 months</td>
<td>20mg</td>
<td>(1ml syrup*) Twice daily for two days</td>
</tr>
<tr>
<td>3-11 months</td>
<td>40mg</td>
<td>(2ml syrup*) Twice daily for two days</td>
</tr>
<tr>
<td>1-2 years</td>
<td>100mg</td>
<td>(5 ml syrup*) Twice daily for two days</td>
</tr>
<tr>
<td>3-4 years</td>
<td>150mg</td>
<td>(7.5ml syrup*) Twice daily for two days</td>
</tr>
<tr>
<td>5-6 years</td>
<td>200mg</td>
<td>(10ml syrup*) Twice daily for two days</td>
</tr>
<tr>
<td>7-12 years</td>
<td>300mg (capsule or 15ml Syrup)</td>
<td>Twice daily for two days</td>
</tr>
</tbody>
</table>

*Rifampicin syrup contains 100mg/5ml

Rifampicin is contraindicated in the presence of jaundice or known hypersensitivity to rifampicin. Interaction with other drugs such as anticoagulants, anticonvulsants and hormonal contraceptives should be considered. Side effects should be explained including reduction in the efficacy of hormonal contraceptives and staining of contact lenses and body fluids. Information for patients should be supplied with the prescription (Appendix 11).

Ciprofloxacin

Ciprofloxacin is recommended as an alternative agent to rifampicin for chemoprophylaxis in adults and children over the age of two (*ciprofloxacin suspension is currently licensed for other indications in children above two years*) and also when large number of contacts needs prophylaxis. Although it is not licensed for this use, ciprofloxacin has a number of advantages over rifampicin: it is given as a single dose (500mg in adults and children over 12 years, 250mg in children aged 5-12 years and 125mg for children 2-4 years), it does not interact with oral contraceptives and it is more readily available in community pharmacies.

- Ciprofloxacin may cause serious allergic reactions. When used as a chemoprophylactic agent for meningococcal disease, anaphylactoid reactions have been reported in 1 in 1000 treated individuals none of which have been fatal.
Meningococcal infection National Public Health Service for Wales

- The PHLS Meningococcal Forum considers that ciprofloxacin should remain as an alternative to rifampicin for chemoprophylaxis of meningococcal disease.
- Health care staff should be aware of the potential for allergic reactions after giving ciprofloxacin which include facial swelling, tightness in throat or breathing difficulties.
- Contacts receiving ciprofloxacin should be given written information and advised of the need to seek medical help if these occur. (Appendix 10)

The patient group directions (PGDs) for supply of rifampicin/ciprofloxacin by health protection nurses of NPHS have been developed and given in Appendixes 18 & 19. Under the new On–call arrangements they would only be needed in the management of outbreaks.

Ceftriaxone

Ceftriaxone is given by deep intramuscular single dose 250 mg for adults and 125mg for children 12months to 12 years. Please note this is not a licensed product for this indication.

Chemoprophylaxis in pregnancy and breastfeeding

Rifampicin and ceftriaxone can be used in pregnancy and in breastfeeding mothers, but ciprofloxacin is not recommended. The Working Group considered on balance that chemoprophylaxis should now be recommended in pregnancy (stronger evidence for benefit from prophylaxis to close contacts and expected benefit to the whole close contact group by treating all members of that group).

In pregnancy or when breastfeeding, mothers should be offered chemoprophylaxis with rifampicin (600mg twice daily for 2 days) or ceftriaxone (250mg single dose by intramuscular injection reconstituted with 2 ml 1% lignocaine).

Post mortem contact with a case

No prophylaxis is indicated for those who physically touch or even kiss the body. There is no risk associated with the transportation of body to other countries for burial or cremation. Body bags are not necessary. There is no restriction on embalming.

Swabbing after prophylaxis

Swabbing of the nasopharynx and throat after prophylaxis is regarded as unnecessary except for epidemiological research.

Vaccination

Close contacts of cases due to vaccine preventable strains of *N. meningitidis* who received chemoprophylaxis should be offered (by the Health Protection Team) an appropriate vaccine (to be administered by the GP) once diagnosis has been confirmed and up to four weeks after onset of illness.
If the strain is confirmed as Group C, MenC vaccine should be offered to all close contacts (of all ages) previously unimmunised with MenC vaccine. Close contacts who are not, or partially, immunised should complete a course of MenC vaccination. Those who completed a course more than a year before should be offered a booster. Although the MenC vaccine is only licensed from 2 months of age, an additional dose is advised for babies below this age.

If the strain is confirmed as Group A, vaccination with polysaccharide vaccine (either bivalent or quadrivalent preparations) should be offered to all close contacts over two months of age (2 doses if aged under 2 years).

If the strain is confirmed a Group W135 or Y, vaccination with quadrivalent polysaccharide vaccine should be offered to all close contacts over two years of age.

For probable cases where serogroup A,C,Y, or W135 is cultured from a nasopharyngeal swab, quadrivalent vaccine should be offered to close contacts.

For all cases the opportunity could be taken to recommend MenC vaccination to unimmunised contacts under the age of 25 years.

Quadrivalent vaccine (Mencevax ACWY) for those cases of A, W135 or Y is available from SmithKline Beecham and can be acquired through usual vaccine ordering routes. ACWY vaccine does not provide reliable or long lived protection against meningococcal disease due to serogroups W135 & Y in children < 2 years of age or due to serogroup A in children < 2 months of age.

**Vaccination of the index case**

Previous serogroup C disease is not a contraindication to MenC vaccination. As the immune response to natural infection may be inferior to that observed after conjugate vaccines, particularly in young children, MenC vaccine should also be offered to any unimmunised index cases under the age of 25 years. Although recurrent serogroup C disease is rare, this policy ensures that persons in this age group are given equivalent protection to their age-matched immunized peers.

Following the above rationale, cases of confirmed serogroup C disease who have previously been immunized with MenC (or polysaccharide) vaccines should be offered MenC vaccine around the time of discharge from hospital. Vaccine failure implies an inadequate response to the vaccine and may reflect host factors or sub-optimal storage or administration of the vaccine. A sample of convalescent serum should be taken and sent to the PHLS Meningococcal Reference Unit. Immunological investigation of the case and review of vaccine storage and administration procedures should be considered.

If/when conjugate quadrivalent vaccine is licensed in the UK, it should be offered (i) to cases of serogroup A, W135, Y infection and their close contacts (ii) to cases of recurrent infection due to any serogroup (iii) in other situations in place of polysaccharide vaccine, in line with DH recommendations.
Delayed diagnosis or notification

If the CCDC receives a delayed report of a case, household contacts should be offered chemoprophylaxis, and vaccine if appropriate, up to four weeks after the index case became ill.

Follow up of the case

HPT will follow up the case both in short term and long term. Short term follow up includes gathering information on the clinical condition of the case and requested laboratory investigations, and date of discharge/death. It is also expected that HPT/Duty Officer (on weekend & bank holiday) will speak to the informant family member of the case on the following day to make sure that all the close contacts have received the prescribed chemoprophylaxis. Long term follow up includes vaccination of the index case and close contacts (if indicated), and referral of the case to the audiology clinic and outcome.
### 7. ACTION SHEET FOR SINGLE CASE OF MENINGOCOCCAL DISEASE

<table>
<thead>
<tr>
<th>Action</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The doctor who makes the diagnosis must inform the HPT/Duty Officer on call immediately, by telephone</td>
<td>Clinician/GP</td>
</tr>
<tr>
<td>2. Appropriate tests must be carried out and the microbiologist must be informed</td>
<td>Doctor who makes the diagnosis</td>
</tr>
<tr>
<td>3. Household contacts of index case to be given Rifampicin on the ward</td>
<td>HPT/Duty Officer (through hospital Doctor) Hospital pharmacy to supply Rifampicin</td>
</tr>
<tr>
<td>4. HPT/Duty Officer to conduct detailed contact tracing to include</td>
<td>HPT/Duty Officer</td>
</tr>
<tr>
<td>- Family contacts</td>
<td></td>
</tr>
<tr>
<td>- “sleep overs”</td>
<td></td>
</tr>
<tr>
<td>- School/nursery attended</td>
<td></td>
</tr>
<tr>
<td>- For teenagers – close friends</td>
<td></td>
</tr>
<tr>
<td>- Recent travel to holiday camps etc.</td>
<td></td>
</tr>
<tr>
<td>5. Chemoprophylaxis (and vaccination if indicated) to be arranged for wider community contacts via Primary Care (other than household contacts)</td>
<td>HPT/Duty Officer</td>
</tr>
<tr>
<td>6. NPHS Meningococcal Case Form to be completed (Appendix 2)</td>
<td>HPT/Duty Officer</td>
</tr>
<tr>
<td>7. General Practitioners of those who received Rifampicin on the ward, to be faxed details of same for information (on the next working day if case is dealt out of hours) as per example Appendix 4</td>
<td>HPT/Duty Officer</td>
</tr>
<tr>
<td>8. Confirmation of case</td>
<td>Microbiologist</td>
</tr>
<tr>
<td>9. Index case to be given chemoprophylaxis as soon as can take oral medication, and advise vaccination if indicated</td>
<td>Consultant in charge of case</td>
</tr>
<tr>
<td>10. Media management</td>
<td>HPT/NPHS PR Agency</td>
</tr>
</tbody>
</table>
11. Inform GPs in the area/NHS Direct/Voluntary agencies

12. Referral to audiology clinic

13. Case follow up

If the child attends a school or nursery, the following will take place (on the next working day if the case is dealt out of hours)

1. Local Education Authority to be informed (school child), Social Services (Local Authority Nursery) or independent nurseries

2. To liaise with Head Teacher/Manager of nursery to arrange for the dissemination of letter and leaflet to all parents of children who attend the school or nursery.

3. To be available by telephone to talk to parents who may have concerns

8. DISSEMINATING INFORMATION

- Information about Meningococcal disease should be widely and quickly distributed after a case has occurred. Leaflets or other printed material should be given by the staff on the ward to household or other contacts whether or not they have received prophylaxis. This may also be helpful after a possible case depending on the levels of concern, and is a matter for local judgement.

- Close contacts of meningococcal meningitis and septicaemia should be informed of the signs and symptoms of meningococcal disease and advised to seek medical advice if concerned. Early diagnosis saves lives.

- After a case has arisen in a nursery, play group or school, the HPT/Duty officer should liaise closely with the manager or head teacher to inform parents (Appendix 5) that:
  
  * A case has occurred
  * The chance of another case is very small
  * Antibiotics are not normally given to pupils after a single case, as there is no evidence that further cases will be prevented: antibiotics may do more harm by eradicating protective strains and sometimes cause side effects
It is important to know the signs and symptoms of meningococcal disease
* If concerned about the health of their child to contact their general practitioner

- General practitioners of the index case and close contacts who have been given chemoprophylaxis should be informed.

- General practitioners in the area of the case (Appendix 6) and NHS Direct should be informed that a case has occurred, describing the public health action taken, without breaching patient confidentiality.

- If all contacts have been informed there is no need to inform the mass media, but it is not unknown for the press to know of case before the public health department. It is advisable to have a press statement ready (Appendix 7).

9. MANAGEMENT OF CLUSTERS

The principal of managing clusters is to attempt to define a group at high risk of acquiring meningococcal infection and disease, and to target that group for public health action. This is achieved through epidemiological investigation of the cases and their various social networks. The target group should be a discreet group that contains the cases and makes sense to parents and staff, for example, children and staff of the same pre-school group, children of the same school year, children who share a common social activity, or a group of close friends.

If cases are separated by more than four weeks or the denominator population is large, for example, in a university without links between cases, there may not be a readily defined target population.

The management of clusters is difficult because there may be insufficient evidence to guide decision making. Decisions are likely to depend on:

- The attack rate in the organization/community
- Whether organisms have been identified from the cases
- Whether the strains isolated from the cases are the same
- Whether the cases are caused by vaccine preventable strains
- The level of public concern, for example, if a death has occurred
- What links can be established between the cases
- The feasibility of taking action
The closer the interval between the case and the smaller the contact group, the more likely that high carriage rates of outbreak strains will be found within the group and that chemoprophylaxis will be of benefit.

**National guidance**

- If two possible cases or one possible and one confirmed/probable case (see Appendix 1), whatever the interval or link between them, occur in an institution, prophylaxis is not necessary\(^2\), and only household contacts of each case (confirmed/probable) should be given prophylaxis.

- If two confirmed cases caused by different serogroups/types, whatever the interval between them, occur in an institution, OR two confirmed/probable cases with no evidence of any common links in spite of intensive inquiry (e.g. no social contact, different halls of residence, different courses), whatever the interval between them, they should be regarded as two sporadic cases, and only household contacts of each case given prophylaxis.

- If two confirmed or probable cases who attend the same preschool group or school arise within a four week period and are, or could be caused by the same serogroup/type, wider public health action is usually indicated.

**Recommended action to be taken urgently:**

- Ask advice of the CCDC, regional epidemiologist, the Meningococcal Reference Unit

- Consider convening an Outbreak Control Team as per Appendix 8.

- Cascade information to all relevant partners as per the Action Sheet

- Offer antibiotics (rifampicin or ciprofloxacin ) to the defined target group. Obtain consent (implied, verbal or written) for children from parents (Appendix 9)

- If the serogroup in one or both cases is C ensure that all children have received the MCC vaccine and offer vaccine to those who have not. All adults in the target group should be offered the MCC vaccine

- Search for other potential cases

- Distribute information about meningococcal disease and prepare a Press Release in consultation with the NPHS PR agency

- Consider taking throat swabs. This will not usually influence the management of such clusters, because the public health response is needed urgently. Swabbing may help, however, in decisions about the management of clusters with longer intervals between cases.
The Health Protection Team will be responsible for managing the media.

The Local Public Health Director (LPHD) of the relevant LHB will be responsible for briefing and updating the LHB. The LHPD will be a member of the Outbreak Control team. Clinical information will only be made available to the LPHD who will receive this information from the Health Protection Team.

10. ACTION SHEET FOR MANAGEMENT OF CLUSTERS OF MENINGOCOCCAL DISEASE

1. Outbreak Control Team to be convened CCDC (membership Appendix 8)

2. Agree whether or not true cluster Outbreak team

3. In the event of a true cluster and where further action needs to be taken to minimize spread of the disease the following will take place.

Information Cascade

Community Trust Managers → CCDC → Welsh Assembly
Government (WAG)
NPHS Regional Director
ICDS Director
Regional Epidemiologist
LHB LPHD

Community Paediatrician

School Nurses
Health Visitors

GP Services
NHS Direct
Health Visitors (if under 5)
School Nurses (if in school)
NPHS PR Agency
Meningitis Charities
3.2 The Outbreak Control team will agree:

- Venue for antibiotics/vaccination
- Timescale for provision of antibiotics+/- vaccine
- Letter to all general practitioners & community clinics
- Letter for parents or cohort at risk
- Press release

3.3 The following resources will be made available

1) Rifampicin, Ciprofloxacin/vaccine Hospital Pharmacies
2) Needles/syringes, swabs etc Trust Supplies Department
3) Anaphylactic shock packs Trust/Hospital Pharmacies
4) Consent form (Appendix7) CCDC
5) Emergency telephone lines Question & Answer Sheets NPHS/LHB/NHS Direct
   Question & Answer Sheets Meningitis Trust
6) Accurate recording of all Trust Community Services/NPHS
   those given antibiotics or vaccine

11. Management for cross border cases

Sometimes, meningococcal cases (in critical condition) are referred to England from various Welsh towns close to the English border. In that situation, HPT/Duty Officer will contact his/her counterpart in the English area. The HPT/Duty Officer for that area in England will arrange the chemoprophylaxis for close household contacts. Chemoprophylaxis for the wider community contacts will be arranged by the Welsh HPT/Duty Officer as usual. The case follow-up, collection, documentation and dissemination of information would be the responsibility of the Welsh HPT/Duty Officer.
12. Management for cases in higher education institutions

Cases of meningococcal disease in higher educations pose a serious problem in public health management. Students' living arrangements and lifestyles make it difficult to define and trace close contacts. Students’ variable use of primary care services at university make them more vulnerable. Misinformation about the incident causes chaos and panic among students.

A multidisciplinary working group set up by the Universities UK has revised the 1998 guidelines and published new guidelines on the management of the meningococcal disease in higher education institutions. This guidance entails actions to taken by health protection teams and higher education institutions before and after the occurrence of meningococcal disease cases and of outbreak. It is the responsibility of the respective health protection team/LHB to work in partnership with the local higher education institution to prepare a joint action plan.

This document can be accessed via this link.

http://bookshop.universitiesuk.ac.uk/downloads/MeningitisGuidelines.pdf

13. Induction and training

It is the responsibility of the health protection team to send information on the public health management of meningococcal disease to GPs, Paediatricians, Physicians, Microbiologists and other junior clinical staff (Appendix 13). CCDC should ensure that introduction to infection and communicable control service is incorporated in the induction programme of junior doctors of the NHS Trust hospitals in their area.

14. Audit

NPHS Meningococcus Working Group recommended that audit should be an integral part of the public health management of meningococcal disease. A standards based meningococcal disease audit model has been given in Appendix 14. The standards and indicators have been derived from PHLS 2002 Guidelines (Appendix 15). Also a data collection form is given in Appendix 16 and that has been validated in an audit study in Gwent.
14. BIBLIOGRAPHY

1. PHLS Meningococcus Forum (2002) Guidelines for public health management of meningococcal disease in the UK. Communicable Disease and Public Health 5(3)187-204 (Updated February 2006 and due for publication this year)


6. Faculty of Public Health Audit Toolkit. www.fph.org.uk
Appendix 1  Case definitions

Case requiring public health action

Confirmed case:

Clinical diagnosis of meningitis, septicaemia or other invasive disease and at least one of:

*Neisseria meningitidis* isolated from normally sterile site
Gram negative diplococci in normally sterile site
Meningococcal DNA in normally sterile site
Meningococcal antigen in blood, CSF or urine.

Meningococcal infection of the eye (including conjunctiva) should also be regarded as a confirmed case for public health action because of the high immediate risk of invasive disease.

Probable case

Clinical diagnosis of meningitis or septicaemia where the public health officer, in consultation with the clinician managing the case, considers that meningococcal infection is the most likely diagnosis. In the absence of an alternative diagnosis a febrile ill patient with a petechial/purpuric rash should be regarded as a probable case of meningococcal septicaemia.

Case not requiring public health action

Possible Case

Clinical diagnosis of meningitis, septicaemia or other invasive disease where the public health officer, in consultation with the clinician managing the case, considers that a diagnosis other than meningococcal disease is at least as likely. This category includes cases treated with antibiotics whose probable diagnosis is viral meningitis.

Infection in non-sterile sites

Isolation of meningococci from sputum, nasopharynx or genital tract is not by itself an indication for public health action as asymptomatic carriage is common. However, when assessed together with other clinical and microbiological parameters, a positive throat swab may increase the index of suspicion that this is a probable case, especially if the isolate is a virulent strain.
## Appendix 2

### MENINGOCOCCAL DISEASE CASE REPORT

**Notified by:** ______________  **Contact tel:** _____________  **Date:** __/__/__  **Time:** ______

**Received by:** ______________  **PH Specialist responsible:** _________  **Actioned by:** ______

### CASE DETAILS

<table>
<thead>
<tr>
<th>Name</th>
<th>Dob:</th>
<th>Age:</th>
<th>Sex:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post code:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupation/school/nursery:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GP name:</td>
<td>GP address:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GP tel:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Admission date:</td>
<td>Time:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital:</td>
<td>Ward:</td>
<td>Consultant:</td>
<td></td>
</tr>
</tbody>
</table>

### CLINICAL DETAILS

**Obtained from:** _______________________

**Clinical diagnosis:** ____________________________  **Onset:** ___________________

**Clinical history:** ________________________________________________________________________

**Seen and referred by GP?** YES/NO

**Benzyl penicillin given pre-admission?** YES/NO

**Clinical investigations:**

- **FBC:** Comments: 
- **Blood culture taken?** YES/NO  **Comments:**
- **Lumbar puncture performed?** YES/NO  **Comments:**
- **Throat Swab:** YES/NO  **Result:**
- **2.5-5ml EDTA blood for PCR taken:** YES/NO  **Requested:** YES/NO  **Culture/PCR results (+date):** ________________________________________________________________________

### ACTION

- □ Advise 2 days Rifampicin for case
- □ All contacts traced (details overleaf)
- □ Workplace/school/nursery contacted and leaflets/letter sent
- □ GP letter sent. Which area(s): ______________________________________________________
- □ Resuscitation team exposure checked
- □ Ambulance staff exposure checked
- □ Meningitis voluntary agencies/NHS Direct informed
- □ Men C vaccination history checked (overleaf)

**Notes:** ________________________________________________________________________

### SUMMARY OUTCOME (for office use only)

**Disease:** □ Meningococcal Septicaemia  □ Meningococcal Meningitis  □ Pneumococcal Meningitis  □ Viral Meningitis  □ Not meningitis/meningococcal disease

**Culture:** Pos/Neg  **Specimen type:**  **Organism:**  **Type:**

**PCR:** Pos/Neg  **Group:** (A,B,C,Y or W135)  **Sub-type:** (e.g. P1.15)

**Outcome:** (on receipt of discharge letter) ____________________________________________

---

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### ADMINISTRATION OF PROPHYLAXIS TO CLOSE CONTACTS OF MENINGOCOCCAL DISEASE CASE

Informant: __________________ Relationship to case: ______________ Index case received Men C conjugate vaccine: YES/NO

<table>
<thead>
<tr>
<th>Name</th>
<th>Relationship to case</th>
<th>Age</th>
<th>Received Men C vaccine</th>
<th>Address</th>
<th>Phone number</th>
<th>GP</th>
<th>Rifampicin</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>eg. Medication, Oral contraceptives Allergies, Pregnancy</td>
</tr>
</tbody>
</table>

Contact tracing completed by ____________________________ Date: ______/____/______ Time: ____________

---

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Follow up: (Clinical condition, Lab results, Date of discharge/death, chemoprophylaxis given to index case if not been treated with ceftriaxone, Close contacts received prescribed chemoprophylaxis, referral to audiology clinic)
**Appendix 3  Sample letter to GPs requesting prophylaxis to be prescribed**

Health Protection Team  
Day-time Tel number  
Fax number  
Out-of-hours tel number for local Ambulance Control  
Date

Dear Doctor

The following patients are registered with your surgery. They have been in close contact with a case of meningococcal disease.

<table>
<thead>
<tr>
<th>Name</th>
<th>DOB</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

Unless there are contraindications (e.g. severe liver disease), please could you prescribe a course of rifampicin for each of them. The dosages are (all twice daily(bd) for 2 days):

**Children**

- 0-2 months 20mg  (1ml syrup*)
- 3-11 months 40mg  (2ml syrup*)
- 1-2 years 100mg  (5 ml syrup*)
- 3-4 years 150mg  (7.5ml syrup*)
- 5-6 years 200mg  (10ml syrup*)
- 7-12 years 300mg  (capsule /or 15ml syrup)
- Over 12 years and Adults 600 mg  (2 capsules 300mg each)

* Rifampicin syrup contains 100mg/5ml
Rifampicin can reduce the effectiveness of hormonal contraceptives. It colours the urine red during treatment and can stain soft contact lenses permanently.

Please note that prophylaxis may reduce but does not eliminate the risk of meningococcal disease during the months following a case.

Thank you very much for your assistance.

Yours sincerely

Consultant in Communicable Disease Control
Appendix 4   Sample letter informing GPs when rifampicin has been given through hospital clinicians

Health Protection Team
Daytime Tel number
Fax: number
Out-of-hours Tel number of local Ambulance Control

Date

Dear Dr

Re: Meningococcal disease contacts

Name ………………………………………….. DOB…………………………

Name…………………………………………… DOB…………………………

Name…………………………………………… DOB…………………………

The above named patients are registered with your surgery and have been identified as close contacts with a case of meningococcal disease. They have been put on a two-day course of Rifampicin prophylaxis.

Yours sincerely

Consultant in Communicable Disease Control
Appendix 5  Sample letter for parents

Health Protection Team
Tel number

Date

To parents/guardians of children attending ______________________________

Dear Parent/Guardian

A child who attends the school was admitted to hospital this week with suspected meningococcal disease. Nearly all cases of meningococcal disease are isolated cases, and in these instances there is no increased risk to other children in the school or to the community. There is no need to keep your child away from school.

In general, ten percent of the population carries these bacteria in their throat at any one time. Most people who are carriers become immune to the disease. As this is an isolated case we have given antibiotics to close family contacts in order to clear their noses and throats of any bacteria they may be carrying and to prevent spread. No further action is needed at this time but we will keep the situation under review.

Early diagnosis and treatment is very important in combating meningococcal disease. Parents are asked to be watchful for the signs and symptoms of the illness. These are fever, nausea and vomiting, stiff neck, back and joint pain, severe headache, sensitivity to light, pale skin and sometimes a rash of tiny purple bruises which do not fade when pressed (tumbler test). Please take time to read the accompanying leaflet for more information. The illness can develop very quickly so if you are concerned about your children’s well-being please contact your doctor urgently and explain why you are worried.

I would recommend that if your children are not fully vaccinated against meningitis C vaccine, then you should arrange this with your doctor. The vaccine is highly effective against the C strain of the bacteria.

For more information about meningitis and septicaemia you may contact the following:

National Meningitis Trust (24 hour helpline) 0845 6000 800
Meningitis Trust Cymru 0845 6000800
Meningitis Research Foundation (24 hour helpline) 0808 800 3344

NHS Direct 0845 4647

Yours sincerely

Consultant in Communicable Disease Control
Appendix 6  Sample letter to GPs in the area

IN STRICT CONFIDENCE

Health Protection Team
Tel. No. …………………

Date

To: GPs in ……………….LHB
CC: NHS Direct, LHB CEO, LHB LPHD

Dear Colleague,

A young child from the …………..LHB area was admitted to hospital today with suspected meningococcal disease. The child is in Intensive Care but responding to treatment.

All household and close contacts requiring antibiotic prophylaxis have been identified and arrangements have been made for them to receive the antibiotics.

No one else requires antibiotics.

Anxious parents approaching you for advice should be reminded of the symptoms and signs of meningitis and septicaemia and advised to seek medical help quickly if they have serious concerns about their child’s well being.

Parents seeking further information about meningitis may contact any of the meningitis charities below:

National Meningitis Trust 0845 6000 800
Meningitis Trust Cymru 0845 6000 800
Meningitis Research Foundation 080 8800 3344

I would be very happy to discuss any concerns you might have. In particular, if anyone approaches you asking for antibiotics I would be grateful if you could request that they speak to myself or another member of the Health Protection Team first to allow us to assess their risk and advise accordingly.

For further information please contact me on the above number.

Yours sincerely

Consultant in Communicable Disease Control
Appendix 7  Sample press release

NB This must be agreed with the NPHS PR agency prior to release

Date

A young child from the ……………..LHB area was admitted to hospital today with suspected meningococcal disease. The child is in Intensive Care but responding to treatment.

All household and close contacts requiring antibiotic prophylaxis have been identified and arrangements have been made for them to receive the antibiotics.

No one else requires antibiotics.

Parents should be reminded that, following the introduction of the highly successful meningococcal Group C childhood immunisation programme in 1999, meningococcal disease is uncommon but cases do still occur, particularly from other strains of the germ.

It is important that parents recognise the symptoms and signs of meningitis and septicaemia. These include headache, fever, pale skin, drowsiness, vomiting, neck stiffness and sometimes a red rash that does not fade when pressed by a glass tumbler. Babies may be lethargic, irritable, off their feeds and very pale despite the high temperature. It is important to seek medical help quickly if there are serious concerns about anyone who develops these symptoms.

Parents seeking further information about meningitis may contact NHS Direct on 0845 4647 or any of the meningitis charities below:

<table>
<thead>
<tr>
<th>Charity</th>
<th>Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Meningitis Trust</td>
<td>0845 6000 800</td>
</tr>
<tr>
<td>Meningitis Trust Cymru</td>
<td>0845 6000 800</td>
</tr>
<tr>
<td>Meningitis Research Foundation</td>
<td>080 8800 3344</td>
</tr>
</tbody>
</table>

Notes for the Editor

Contact:
Mr Chris Lines
Head of Communication
National Public Health service for Wales
1 Charnwood Court
Parc Nantgarw
Cardiff CF15 7QZ
Tel: 01553 824176
E-mail: chris.lines@nphs.wales.nhs.uk
Appendix 8  Suggested membership of Outbreak Control Team

1. CCDC

2. Public Health Nurse (Health Protection Team)

3. Regional DPH

4. Local Health Board Public Health Director or rep

5. Director of Education/Director of Social Services or representative

6. Head Teacher/Representative (where appropriate)

7. Community Paediatrician

8. Representative of Trust for Child Health

9. School Nurse – where appropriate/Health Visitor

10. Consultant Microbiologist

11. Director of NPHS (Communicable Disease Control)

12. Public Relations Department

13. CDSC/Epidemiologist

14. Administrative assistant
Appendix 9

MENINGOCOCCAL PREVENTION MEASURES

- CONSENT FORM (CHILD)-

CHILD’S NAME (capitals):_________________________________ DOB ________________
CLASS/GROUP:________________________________________________________________________
PARENT/GUARDIAN’S NAME:________________________________________________________________
RELATIONSHIP TO CHILD: ____________________________________________________________
ADDRESS:____________________________________________________________________________
____________________________________________________________________________________
GENERAL PRACTITIONER’S NAME:_______________________________________________________
SURGERY ADDRESS:____________________________________________________________________

Please state if your child has any serious medical condition_______________________________

Does your child take regular medication? If so, please state _______________________________

Does your child have any allergies? If so please state: _________________________________

Has your child received meningococcal vaccine in the last 3 years?_________________________

I do/do not want my child to receive antibiotics.  
Signed
Date

I do/do not want my child to receive meningococcal vaccination
Signed
Date

For Office use only
Vaccine batch number_________________________________
Given by _______________________________ Date: ___________________
PATIENT INFORMATION LEAFLET

CIPROFLOXACIN TREATMENT FOR PROTECTION AGAINST MENINGITIS

You have been given a single dose (two tablets of 250mg or one tablet of 500mg for adults and children over 12 years, and one tablet of 250 mg for children aged 5-12 years) of an antibiotic called ciprofloxacin. It is a well-known antibiotic which is used to treat many different conditions. It will kill the meningococcal germs that are carried in the nose and throat.

BEFORE TAKING THE ANTIBIOTICS PLEASE TELL THE DOCTOR IF

- You have had a previous allergic reaction to ciprofloxacin
- You are pregnant or breast feeding

If either of these apply to you your doctor will arrange for you to have an alternative medicine.

TAKING THE ANTIBIOTICS

It is important that you swallow the tablet whole with a full glass of water. You also need to drink plenty of fluid for the rest of the day after taking this tablet.

Do not take alcohol for 24 hours as it may make you feel drowsy and affect your ability to drive or use machinery.

SIDE EFFECTS

Side effects include feeling sick, tummy ache, headache and feeling tired. These usually settle quickly and are not a cause for concern.

One possible side effect is facial swelling. This normally subsides over a period of about half an hour but if it doesn’t or it becomes worse you should contact your doctor immediately. You should also seek medical help immediately if your throat becomes tight or your breathing becomes difficult.

WHAT TO LOOK OUT FOR

Although ciprofloxacin will destroy the bacteria found in the nose and throat, it will not kill the bacteria if they have already entered the bloodstream. There is a small chance that you may still become ill. You must remain vigilant for the signs and symptoms of meningitis and septicaemia. If you develop a fever, headache, stiff neck, dislike bright lights or a rash, you must seek medical help quickly.

If you are unclear or would like further information, please ask your doctor, pharmacist or local health protection team (Tel. No. ).
Appendix 11

National Public Health Service for Wales
PATIENT INFORMATION LEAFLET
RIFAMPICIN TREATMENT FOR PROTECTION AGAINST MENINGITIS

The antibiotic you have been given is called Rifampicin. Rifampicin is a well-known antibiotic, which is used to treat many different conditions. It is recommended for close contacts of someone with meningococcal disease. It will kill the meningococcal germs that are carried in the nose and throat.

It comes as either tablets or syrup and is suitable for people of all ages.

Rifampicin must be taken twice a day for two days. The instructions will be clearly written on the box or bottle. It is important that you complete the course.

BEFORE TAKING THE ANTIBIOTICS PLEASE TELL THE DOCTOR OR PUBLIC HEALTH NURSE IF

- You are suffering from jaundice (yellowing of skin or whites of eyes)
- You are allergic to Rifampicin
- You are on medication for epilepsy (anticonvulsants)
- You are on blood thinning medication (anticoagulants)

If any of the above apply they will arrange for you to have an alternative medicine.

If you are pregnant or may be pregnant, your treatment will need to be discussed.

SIDE EFFECTS

Side effects may include:

- Orange/reddish staining of body fluids such as urine, sputum and tears.
  
  Beware – this may permanently stain some contact lenses & nappies.

  Therefore, do not wear contact lenses whilst on treatment and for one week following completion of course.

- Tummy upset, diarrhoea and nausea

- Skin flushing and itching, with or without a rash

- Very rarely, jaundice (yellowing of the skin or whites of the eyes)

INTERACTIONS WITH OTHER MEDICATION

If you are taking the combined oral contraceptive pill (known as “the pill”) or the progesterone only pill (known as the “mini pill”) you should take extra precautions (e.g. condoms), for the time that you are on Rifampicin and for 4 weeks after your medicine has finished. It is also important that if you have 7 days of pills (or less) left in the packet, do not have your usual 7- day break between packs but instead start to take your new packet of pills immediately after finishing the last one. You may or may not have a bleed that month. Please note that no other type of contraception will be affected by Rifampicin.

If you are unclear or would like further information, please ask your doctor, pharmacist or local health protection team (Tel. No. )

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### Appendix 12

**TYPICAL CHANGES IN THE CSF IN VARIOUS NEUROLOGICAL DISEASES**
(From Hutchinson’s Clinical Methods 1995 edition)

<table>
<thead>
<tr>
<th>Disease Condition</th>
<th>Physical Characteristics</th>
<th>Cytology (cells/ul)</th>
<th>Protein (g/l)</th>
<th>Glucose (mmol/1)</th>
<th>Tests for Syphilis</th>
<th>Stained Deposit</th>
<th>Culture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>Clear and Colourless</td>
<td>Lymphocytes 0-5</td>
<td>0.1-0.4</td>
<td>2.5-4.2</td>
<td>Negative</td>
<td>No Organisms</td>
<td>Sterile</td>
</tr>
<tr>
<td>Bacterial</td>
<td>Yellowish And turbid</td>
<td>Polymorphs 200-2000 Lymphocytes 5-50</td>
<td>0.5-2.0</td>
<td>&lt;2.0</td>
<td>Negative</td>
<td>Bacteria</td>
<td>Positive</td>
</tr>
<tr>
<td>Viral</td>
<td>Usually clear</td>
<td>10-100 mixed cells at first, becoming lymphocytic in 36 hours</td>
<td>0.1-0.6</td>
<td>2.5-4.2</td>
<td>Negative</td>
<td>No organisms</td>
<td>Sterile</td>
</tr>
</tbody>
</table>
Appendix 13
Guidance for junior doctors handbook on prevention of secondary cases of meningitis

1. **Prophylaxis of contacts** is only indicated when meningococcal or Hib disease (rare) is the most likely diagnosis i.e. it is not necessary in suspected viral cases being treated “just in case”. If equivocal discuss with CCDC. Prophylaxis is not necessary in pneumococcal and viral meningitis.

2. **Notify immediately all suspected cases** of meningitis or meningococcal septicaemia by phone to the Consultant in Communicable Disease Control (CCDC) or on call Public Health Specialist. This is the legal duty of the doctor who makes or suspects the diagnosis to inform local Health Protection Team directly by Telephone (Tel. ) from 9.00 am - 5.00 pm or via Ambulance Control (Tel. ) out of hours. Admissions after midnight can be notified the following morning.

3. **In meningococcal cases** prescribe prophylaxis (see below) for close family living in the same household as the case in the 7 days before onset. Advise household contacts that they are at increased risk of meningitis. Give advice on early symptoms and reinforce advice by giving a leaflet on meningococcal disease. Prescribe rifampicin for the case to clear nasopharyngeal carriage at the same time as household contacts or as soon as possible afterwards, certainly before discharge (not necessary if treated with Ceftriaxone).

4. **In Hib cases** the need for prophylaxis should be discussed with the CCDC or on-call Public Health Specialist. Indications for prophylaxis and drug regimes differ from those for meningococcal prophylaxis.

5. **Staff** (including ambulance) do not require prophylaxis unless their mouth or nose has been directly and heavily exposed to respiratory droplets/secretions from a case around the time of admission.

6. **The CCDC will** arrange for the next of kin to be interviewed to establish other close contacts and will arrange prophylaxis for them, and for later immunisation of all close contacts if indicated, and ensure information is disseminated to appropriate local schools, work places and General Practitioners, and is responsible for early detection of clusters and outbreaks of disease.

**RIFAMPICIN is the drug of choice.** Dosage: twice daily (bd) for 2 days:

<table>
<thead>
<tr>
<th>Age</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 2 months</td>
<td>20 mg (1ml syrup*)</td>
</tr>
<tr>
<td>3 - 11 months</td>
<td>40 mg (2ml syrup*)</td>
</tr>
<tr>
<td>1 – 2 years</td>
<td>100 mg (5ml syrup*)</td>
</tr>
<tr>
<td>3 – 4 years</td>
<td>150 mg (7.5ml syrup*)</td>
</tr>
<tr>
<td>5 – 6 years</td>
<td>200 mg (10ml syrup*)</td>
</tr>
<tr>
<td>7 - 12 years</td>
<td>300 mg (1 capsule /or syrup)</td>
</tr>
<tr>
<td>over 12 years &amp; adults</td>
<td>600 mg (2 capsules)</td>
</tr>
</tbody>
</table>

*Rifampicin syrup is 100mg/5ml (dose based on weight: 0-11 months: 5mg/kg bd, 1-12 years: 10mg/kg bd)

**Contraindications:** jaundice (Caution: hepatic or renal impairment, porphyria)

**Adverse effects:** Warn about interaction with the oral contraceptive pill (use barrier method during the course and for 4 weeks after stopping, if starting rifampicin within 7 days of the end of a OCP packet then start a new packet without a break), staining of soft contact lenses (remove them), reddish discolouration of urine, saliva and other secretions, rashes and GI upset.

**Alternative regimes** (Neither antibiotic is licensed for this purpose):

- Ciprofloxacin (from 2 years of age, not in pregnancy) Single oral dose – Adults 500 mg
  125mg
- Ceftriaxone Single l/m dose – Adults 250 mg, Children 12months to 12 years – 125mg

**Pregnancy and breastfeeding:** Prophylaxis is recommended. Use either rifampicin or Ceftriaxone

**Consultant in Communicable Disease Control Tel. (local HPT Number) or (Ambulance control Number)** out of hours

**References**

Appendix 14

Meningococcal Disease Audit

Definition

Audit is an improvement tool which aims to improve the outcome of patient care and population health by reviewing the provided care/services against explicit standards. Any gaps in the service are identified, and agreed changes are implemented. Audit is done after an agreed period of time to ensure that improvements are sustained.

Audit spiral

The standard based audit model has four key stages.

Stage one: Planning the audit

- Set evidence base standards and agree on indicators (see appendix 15)
- Agree on data to be collected and timescale for data collection
- Agree on data collection proforma (see appendix 16)
- Agree who is responsible for taking the audit forward

Stage Two: Measuring the current practice

- Collect data onto data collection proforma
- Analyse the data and prepare a report
- Identify key changes to be made
- Discuss these proposed changes with all stakeholders
- Prioritise and agree on changes/improvements

Stage Three: Implementing changes/improvement

- Agree what is to be done and what is not be done
- Agree on the processes to be used to implement change such as policies, guidelines, procedures, educational initiatives etc.
- Identify any barriers to this implementation process and ways to overcome them
- Agree who will take the lead and who will be involved
- Agree on the timescale
- Identify the resources to implement change

Stage Four: Ensuring changes are sustained

- Redo the audit
- In addition use other methods of continuous monitoring such as significant event audit, complaints, feedback, routine data analysis etc.
Appendix 15
Standards for the Meningococcal Disease Audit

- Parenteral benzyl penicillin should be given prior to hospital admission if meningococcal disease was suspected by the referring doctor.

- Chemoprophylaxis should be given to all close contacts (ideally) within 24 hours after the diagnosis of index case.

- A number of laboratory investigations (see 5) should be requested if meningococcal disease is suspected.

- Index case should receive chemoprophylaxis prior to discharge unless they have been treated with ceftriaxone.

- Index case should receive Men C vaccination if indicated.

- All identified close contacts should receive Men C vaccination if indicated.

- Case should be referred to the audiology clinic for hearing test on discharge.

- CCDC/CPHM should share information about a case with other NHS colleagues and external agencies as necessary.

Indicators for the Meningococcal Disease Audit

- Patient seen and referred by the GP.

- Parenteral benzyl penicillin was given by the GP.

- Time taken by the clinician in charge to notify the case to HPT/Duty Officer after diagnosis.

- Time taken by the HPT/Duty Officer to complete contact tracing and advise chemoprophylaxis.

- Chemoprophylaxis given to index case if required.

- Men C vaccination status of the index case and advice given if required.

- Men C vaccination status of the close contacts and advice given if required.

- Laboratory investigations done and results.

- Medicine given as chemoprophylaxis.

- Case referred to audiology clinic and the outcome of that examination.

- Dissemination of information.
Appendix 16

Meningococcal Disease Audit Data collection form

Hospital No. ____________________ Age: _______ M/F: __________

Admission date & time: ______________

Notification to HPT/Duty Officer date & time:_______________________________________

Time taken by attending clinician to notify to HPT/Duty Officer:_________________________

If delayed for more than 6 - 8 hours, why?__________________________________________

Contact tracing finished and prophylaxis advised date & time:___________________________

Time taken by the HPT/Duty Officer to complete contact tracing and advise chemoprophylaxis
after notification:_____________________________________________________________

If delayed for more than 16 hours, why?___________________________________________

Was the patient referred by GP? Yes □ No □

Was Benzyl Penicillin given by GP prior to admission? Yes □ No □

What was the Probable diagnosis?

Meningococcal meningitis □
Meningococcal septicaemia □
Meningitis & Septicaemia □

Was following investigations requested? (please tick)

Blood C&S □
Blood PCR □
Serum for serology □
CSF (if LP done) □
Pharyngeal swab □

Which antibiotic was given to treat the case?

Benzyl Penicillin Yes □ No □
Ceftriaxone Yes □ No □
Cefotaxime Yes □ No □

Others________________________________________________________
Did the index case receive chemoprophylaxis? Yes □ No □

Did the index case receive vaccination if indicated? Yes □ No □

Total number of close contacts identified

Number for whom chemoprophylaxis was arranged through hospital

Number for whom chemoprophylaxis was arranged through GP

Did all identified contacts receive chemoprophylaxis? Yes □ No □

Did the contacts receive vaccination if indicated? Yes □ No □

Information was sent to:

GP concerned Yes □ No □

GPs in the area Yes □ No □

Work place Yes □ No □

School/nursery/playgroup Yes □ No □

LHB Yes □ No □

NHS Direct Yes □ No □

Meningitis charities/voluntary agencies Yes □ No □

Patient expired: Yes □ No □

Discharge date: ____________

Audiology clinic referral Yes □ No □

Outcome of Hearing Test (hearing affected) Yes □ No □
Appendix 17

Guidelines for the Management of Meningococcal Disease in Children
NB: The two arms should run simultaneously

SUSPECTED MENINGOCOCCAL DISEASE

Score with Glasgow Meningococcal Septicaemia Prognostic Score

GPMS 8 or More?

Yes

Baseline bloods including BM stix IV antibiotics*

Skin-core gradient >3°C or low blood pressure or extensive rash

No

Contact PICU Elective Ventilation, CVP & Arterial monitoring

Normal saline 20 ml/Kg stat

Cool peripheries or low BP persists, or D & V or rash evolving

4.5% albumin 20 ml/Kg. Contact Intensive Care Dobutamine 5 microg/Kg/min. Check BM stix

Still hypotensive or DIC present or rash evolving

FFP 20 ml/Kg

Increase inotropes* Albumin/FFP/blood as indicated

GPMS 8 or More?

No

Re-score in 1 hour or if deteriorates

Continue standard therapy Re-score if deteriorates

*For antibiotic and inotropes dosing, follow recommendations on next page.
### Glasgow Meningococcal Septicaemia Prognostic Score

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SYSTOLIC BLOOD PRESSURE If &lt; 75 mmHg &lt;4 years, or, &lt;85 mmHg &gt;4 years</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>SKIN/RECTAL TEMPERATURE If &gt;3°C</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>MODIFIED COMA SCALE If initial score &lt;8, or deterioration of 3 or more points at any time</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>DETERIORATION IN LAST HOUR Ask parents or nurses: if yes</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>NECK STIFFNESS If absent</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>EXTENT OF PURPURA If widespread ecchymoses or extending lesion on review</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>BASE DEFICIT If &gt;8</td>
<td>1</td>
</tr>
</tbody>
</table>

**Initial Assessment**

- Airway Breathing & Circulation *(follow PALS or APLS guidelines)*
- Tachycardia develops early in shock. Hypotension is a late sign
- Not all children will have a rash, but a spreading rash is ominous
- Whenever Meningococcal Disease is suspected, immediately give either Cefotaxime (50 mg/kg/6 hourly) or Ceftriaxone (80 mg/kg/once daily)
Continuing Management

1 Assess Airway and Breathing
- Obtain Glasgow Meningococcal Septicaemia Prognostic Score (GMSPS) – see over.

2 Venous Access
- Place two large bore IV cannulae if possible. Intravenous line if difficult venous access.
- Volume resuscitation.
  - Initially 20 ml/kg Normal Saline. Then 20 ml/kg boluses of 4.5% human albumin solution, guided by BP, HR and peripheral perfusion.
- At the time of IV cannulation, draw emergency blood samples.
  - If possible send elective and diagnostic blood samples as well (see below).
- Give intravenous antibiotics.

3. If >40ml/kg of Fluid in One Hour, or GMSPS Remains ≥8
- Discuss with regional PICU and consider retrieval.
- Consider intubation & ventilation.
- Consider Inotropic support.
  - Start with Dobutamine (5 -20 microg/kg/min). Dobutamine can be given via peripheral line.
  - Start Adrenaline (0.1 -2 mcrog/kg/min) if requires escalation in inotrope dose, continuing large volume resuscitation and remains haemodynamically unstable. Should be given centrally.
- Consider placing a multiple-lumen central venous catheter.
- Give volume according to indicators of hypovolaemia - heart rate, BP, base deficit, CRT, core peripheral temp gap.
- Insert arterial line.
- Correct electrolyte derangement as necessary.
- Correct hypoglycaemia.
- Correct hypocalcaemia to support blood pressure (0.2 ml/kg/of 10% Ca gluconate max 20 ml). May need infusion 0.1 - 0.4 ml/kg/hr.
- Give fresh frozen plasma (10-20 ml/kg) for coagulopathy, Cryoprecipitate (5 ml/kg) if Fibrinogen <1 g/L.
- Give packed cells to maintain haemoglobin >10 g/dL.
- Give sedation and muscle relaxation as appropriate.
Laboratory Tests

**Urgent** - Arterial blood gas, glucose, FBC, urea and electrolytes, creatinine, Ca++, PT, APTT, Fibrinogen and X-match

**Elective** - Lactate, Mg++, PO4-

**Diagnostic** - Blood culture, nasopharyngeal swab for culture and 3-5 mls of blood in EDTA tube for PCR

Prophylaxis

- Follow local policy for nasopharyngeal swabs and antibiotic prophylaxis
- Notify Public Health.
Appendix. 18. Patient Group Direction for the Supply of rifampicin for prophylaxis against meningococcal disease

<table>
<thead>
<tr>
<th>Velindre NHS Trust</th>
<th>National Public Health Service for Wales</th>
</tr>
</thead>
<tbody>
<tr>
<td>NGD comes into effect</td>
<td>Date:</td>
</tr>
<tr>
<td>PGD Review</td>
<td>Date:</td>
</tr>
<tr>
<td>Expiry</td>
<td>Date:</td>
</tr>
<tr>
<td>Name of Medicine</td>
<td>Rifampicin</td>
</tr>
<tr>
<td>Professionals to whom PGD applies</td>
<td>NPHS Health Protection Nurses</td>
</tr>
<tr>
<td>Consultant in Communicable Disease Control</td>
<td>Name:</td>
</tr>
<tr>
<td></td>
<td>Signature:</td>
</tr>
<tr>
<td>Consultant in Pharmaceutical Public Health</td>
<td>Name:</td>
</tr>
<tr>
<td></td>
<td>Signature:</td>
</tr>
<tr>
<td>Nurse Director, Velindre NHS Trust</td>
<td>Name: Ms Diane Smith</td>
</tr>
<tr>
<td></td>
<td>Signature:</td>
</tr>
<tr>
<td>CEO, Velindre NHS Trust</td>
<td>Name: Mr Paul Miller</td>
</tr>
<tr>
<td></td>
<td>Designation: CEO</td>
</tr>
<tr>
<td></td>
<td>Signature:</td>
</tr>
<tr>
<td>Clinical Condition</td>
<td>Prevention of secondary case of meningococcal disease in adults and children.</td>
</tr>
<tr>
<td>-------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Criteria for Inclusion:</td>
<td>Close contacts of the index case irrespective of vaccination status</td>
</tr>
<tr>
<td></td>
<td>- Those who have had close prolonged contact with the case in a household type setting during the seven days before the onset of the illness e.g. those living or sleeping in the same house including the extended household, pupils in the same dormitory, boy/girlfriends or university students sharing a kitchen in a hall of residence</td>
</tr>
<tr>
<td></td>
<td>- Those who have had transient close contact only if they have been directly exposed to large particle droplet/secrections from the respiratory tract of a case around the time of admission to hospital.</td>
</tr>
<tr>
<td></td>
<td>- Health care workers whose mouth or nose is directly exposed to large particle droplets/secrections from the respiratory tract of a probable or confirmed case around the time of admission to hospital. General medical or nursing care is not an indication for prophylaxis</td>
</tr>
<tr>
<td></td>
<td>- Pregnant and breastfeeding women</td>
</tr>
<tr>
<td>Outbreaks/Clusters of meningococcal disease</td>
<td>A defined target group specified by the Consultant in Communicable Disease Control when 2 or more cases are reported from an educational institution with a link between cases.</td>
</tr>
<tr>
<td>Criteria for Exclusion:</td>
<td>- Those who are taking anti-coagulant or anti – convulsive therapy</td>
</tr>
<tr>
<td></td>
<td>- Those who are jaundiced or have known hypersensitivity to rifampicin</td>
</tr>
<tr>
<td>Prophylaxis is not indicated for the following unless they are already identified as a close contact:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Staff and children attending the same nursery or creche</td>
</tr>
<tr>
<td></td>
<td>- Students or pupils in the same class/school/tutor group unless a second case occurs within four weeks</td>
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<td>- Work or school colleagues</td>
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<td>- Friends</td>
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<td></td>
<td>- Residents of nursing/residential homes</td>
</tr>
<tr>
<td></td>
<td>- Kissing on cheek or mouth (intimate kissing would normally bring the contact into the close prolonged category)</td>
</tr>
<tr>
<td></td>
<td>- Food or drink sharing or similar low level of salivary contact</td>
</tr>
</tbody>
</table>

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Authors: Arif Mahmood & Sara Hayes Reviewed: May 2006 Page 48 of 56
Attending the same social function
Travelling in the same plane, train or bus or car

Seek further advice
If in doubt about any of the above medical advice should be sought from CCDC.

Action for excluded patients
- Excluded contacts may require reassurance and advice. Telephone advice, leaflets and written information is available from the CCDC office
- Contacts on anti-coagulant or anti – convulsive therapy or with jaundice will be referred to their GP for prophylaxis
- Those with known hypersensitivity to rifampicin will be offered ciprofloxacin

Description of Treatment

<table>
<thead>
<tr>
<th>Name of Medicine:</th>
<th>Rifampicin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal status:</td>
<td>POM</td>
</tr>
<tr>
<td>Status of medicine</td>
<td>Licensed indication</td>
</tr>
<tr>
<td>Form:</td>
<td>Capsule or Syrup</td>
</tr>
<tr>
<td>Strength</td>
<td>300mg or 100mg/5ml</td>
</tr>
</tbody>
</table>

Dosage:
- Adults and children over 12 years – 600mg
- Children 1-12 years 10mg/kg
- Infants under 12 months 5mg/kg

One dose every twelve hours for two days
Suitable doses based on average weight for age are:
- 0–2 months 20mg (1ml of syrup)
- 3–11 months 40mg (2ml of syrup)
- 1-2 years 100mg (5ml of syrup)
- 3-4 years 150mg (7.5ml of syrup)
- 5-6 years 200mg (10ml of syrup)
- 7-12 years 300mg (1 capsule/or 15ml syrup)

Total Daily Dose:
- Adults and Children over 12 years – 1.2g
- Children 1-12 years – 300mg – 600mg
- Infants under 12 months – 40mg – 80mg

Route of Administration
- Oral

Frequency of Administration:
- Twice per day

Duration of treatment
- Two days

Total Treatment Quantity:
- Adults and Children over 12 years – 2.4g
- Children 1-12 years – 600mg - 1.2g
- Infants under 12 months – 80mg - 160mg

Adverse Reactions/Side Effects
- Orange/reddish staining of body fluids such as urine, sputum and tears
- Gastrointestinal symptoms including diarrhoea, nausea and vomiting
- Very rarely jaundice

Written advice for patient/carer
- Information leaflet to be provided for each contact

Verbal advice for patient/carer
- Not to take rifampicin if taking anti-convulsants, anticoagulants or allergic to
rifampicin.  
- Side effects as above. If unable to complete the course due to side effects contacts should seek medical help  
- Permanent staining of soft contact lenses and nappies  
- To complete the course  
- Contacts taking the combined oral contraceptive pill or the progesterone only pill (mini pill) should take extra contraceptive precautions for the two days during which rifampicin is being taken and for 4 weeks after the medication has been completed. No other form of contraception will be affected by rifampicin.

<table>
<thead>
<tr>
<th>Follow up:</th>
<th>None but GP to be informed</th>
</tr>
</thead>
</table>
| Arrangements for Referral for Medical Advice: | Refer to GP if registered  
Refer to CCDC if not registered |
| Records for Audit | Following to be noted in contact tracing records:  
Supply  
- Name of preparation  
- Dosage, frequency and quantity of medicine supplied  
- Date of supply  
- Batch number and expiry date  
- Signature of nurse supplying the drug  
- GP name and address  
- Letter sent to GP regarding dosage |
### Staff

<table>
<thead>
<tr>
<th>Professional qualifications:</th>
<th>Registered General Nurse Level 1</th>
</tr>
</thead>
</table>
| Training:                   | • Experience in caring for contacts of patients with meningococcal disease and dealing with associated anxieties  
• Familiarity with guidelines for the public health management of meningococcal disease |
| Continuing Education:       | • Maintenance of personal education as specified by the NMC.  
• Regular updates on meningococcal disease.  
• Regular updates on the use of antimicrobials  
• Act in accordance with the latest versions of the NMC Code of Conduct (2000), Scope of Professional Practice (1992) and Standards for the Administration of Medicines (2000)  
• Recognise own limitations and act accordingly. |

<table>
<thead>
<tr>
<th>Signature of individuals able to operate the PGD:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Name:</td>
<td>Signature:</td>
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<tr>
<th>Signature of senior professional person authorising individuals to operate the PGD</th>
<th>Name:</th>
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<tbody>
<tr>
<td></td>
<td>Designation:</td>
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<td>Signature:</td>
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</tbody>
</table>
### Appendix. 19. Patient Group Direction for the Supply of ciprofloxacin for prophylaxis against meningococcal disease

<table>
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<tr>
<th>Velindre NHS Trust</th>
<th>National Public Health Service for Wales</th>
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<td>PGD Expiry</td>
<td>Date:</td>
</tr>
<tr>
<td>Name of Medicine</td>
<td>Ciprofloxacin</td>
</tr>
<tr>
<td>Professionals to whom PGD applies</td>
<td>NPHS Health Protection Nurses</td>
</tr>
<tr>
<td>Consultant in Communicable Disease Control</td>
<td>Name: Signature:</td>
</tr>
<tr>
<td>Consultant in Pharmaceutical Public Health</td>
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<tr>
<td>Nurse Director, Velindre NHS Trust</td>
<td>Name: Ms Diane Smith Signature:</td>
</tr>
<tr>
<td>CEO, Velindre NHS Trust</td>
<td>Name: Mr Paul Miller Designation: CEO Signature:</td>
</tr>
</tbody>
</table>
### Clinical Condition

Prophylaxis of secondary case of meningococcal disease to adults and children over 2 years.

### Criteria for Inclusion:

- Close contacts of the index case irrespective of vaccination status
- Over 2 years of age
- Those who have had close prolonged contact with the case in a household type setting during the seven days before the onset of the illness e.g. those living or sleeping in the same house including the extended household, pupils in the same dormitory, boy/girlfriends or university students sharing a kitchen in a hall of residence
- Those who have had transient close contact only if they have been directly exposed to large particle droplet/secrections from the respiratory tract of a case around the time of admission to hospital.
- Health care workers whose mouth or nose is directly exposed to large particle droplets/secrections from the respiratory tract of a probable or confirmed case around the time of admission to hospital. General medical or nursing care is not an indication for prophylaxis
- Female contacts who are taking the oral contraceptive pill

### Outbreaks/Clusters of meningococcal disease

- A defined target group specified by the Consultant in Communicable Disease Control when 2 or more cases are reported from an educational institution with a link between cases

### Criteria for Exclusion:

- Hypersensitivity to ciprofloxacin or other quinolone antibiotics
- Pregnancy or lactation

Prophylaxis is not indicated for the following unless they are already identified as a close contact:

- Staff and children attending the same nursery or creche
- Students or pupils in the same class/school/tutor group unless a second case occurs within four weeks
- Work or school colleagues
- Friends
- Residents of nursing/residential homes
- Kissing on cheek or mouth (intimate kissing would normally bring the contact into the close prolonged category)
- Food or drink sharing or similar low level of
salivary contact
- Attending the same social function
- Travelling in the same plane, train or bus or car

Seek further advice
If in doubt about any of the above medical advice should be sought from the CCDC and for contacts with the following conditions:
- a history of epilepsy
- family history of or actual defects on glucose-6-phosphate dehydrogenase (G6PD)
- severe renal impairment
- contacts taking corticosteroids, phenytoin, theophylline, anticoagulants, NSAIDS, ciclosporin, glibenclamide, probenecid.

Action for excluded patients
- further advice should be sought for those excluded for medical reasons.
- an alternative drug used for prophylaxis such as rifampicin may be supplied in accordance with the relevant PGD
- those excluded for contact reasons may need reassurance

Description of Treatment
Name of Medicine: Ciprofloxacin
Legal status: POM
Status of medicine: Unlicensed indication (specified in BNF)
Form: Tablet/suspension
Strength: 500mg
Dosage: Single dose of 500mg in adults and children over 12 years, 250mg in children aged 5-12 years and 125 mg for children 2-4 years
Total Daily Dose: Adults and children >12 years - 500mg, Children 5-12 years – 250mg, Children 2-4 years -125mg
Route of Administration: Oral
Frequency of Administration: One dose only
Total Treatment Quantity: Adults and children >12 years - 500mg, Children 5-12 years – 250mg, Children 2-4 years - 125mg
Adverse Reactions: In patients who have a regular continuing dose the following adverse reactions have been identified:
- Gastrointestinal symptoms (such as nausea, vomiting, dyspepsia, abdominal pain, diarrhoea)
- Headache, dizziness, rash, arthralgia, facial swelling – rarely breathing difficulties are associated with facial swelling

Written advice for patient/carer
Information leaflet
Verbal advice for patient/carer
Reinforce written advice. Advise if facial swelling occurs to observe and if it increases or is accompanied by difficulty breathing then medical help should be sought urgently
Ciprofloxacin should not be taken if pregnant.

Follow up: None but GP to be informed

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| Arrangements for Referral for Medical Advice: | Refer to GP if registered  
| | Refer to CCDC if not registered  
| Records of Supply for Audit | Following to be noted in contact tracing records:  
| | • Name of preparation  
| | • Dosage, frequency and quantity of medicine supplied  
| | • Date of supply  
| | • Batch number and expiry date  
| | • Signature of nurse supplying the drug  
| | • GP name and address  
| | • Letter sent to GP regarding dosage  

### Staff

| Professional qualifications: | Registered General Nurse Level 1  
| Training: | • Experience in caring for contacts of patients with meningococcal disease and dealing with associated anxieties  
| | • Familiarity with guidelines for the public health management of meningococcal disease  
| Continuing Education: | • Maintenance of personal education as specified by the NMC.  
| | • Regular updates on meningococcal disease.  
| | • Regular updates on the use of antimicrobials  
| | • Act in accordance with the latest versions of the NMC Code of Conduct (2000), Scope of Professional Practice (1992) and Standards for the Administration of Medicines (2000)  
| | • Recognise own limitations and act accordingly.  

| Signature of individuals able to operate the PGD: Name: | Signature:  
| Name: | Signature:  
| Name: | Signature:  
| Name: | Signature:  
| Name: | Signature:  
| Name: | Signature:  

| Signature of senior professional person authorising individuals to operate the PGD: Name: | Designation:  
| Signature: |