

## LTHT Infection Control Policies

### Meningococcal Infection

**Meningococci are the most common bacteria causing bacterial meningitis. They are associated with two main types of illness: meningitis and septicaemia, although other illnesses can occur including conjunctivitis, pericarditis and arthritis. The bacteria can be found naturally in the throat or nose of 10 - 20% of the population, only rarely giving rise to illness. However when illness does occur the infection can progress very rapidly and is fatal in about 1 in 10 cases. Most cases are seen in young children and teenagers. In Britain, meningococcal infection is a notifiable disease.**

#### Scope

This policy applies to:

- All patients at LTHT
- All staff and students working within LTHT who have direct patient contact.

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## **Key Points:**

- If patients have known or suspected meningococcal infection they should be isolated in a single room until they have completed 24 hours of appropriate antibiotics.
- Chemoprophylaxis is advised for household and or intimate kissing contacts to prevent secondary cases.
- Chemoprophylaxis is only recommended for healthcare workers whose mouth or nose is directly exposed to infectious respiratory droplets of probable or confirmed cases of meningococcal disease during acute illness until completed 24 hours of systemic antibiotics.
- Healthcare workers should wear facemasks when carrying out any procedures that may result in exposure to infectious respiratory droplets.
- Routine vaccination of healthcare workers is not recommended. However Men C vaccination is recommended for all people under 24 years of age.

### **1. What causes it?**

- The bacterium *Neisseria meningitidis* (a Gram-negative coccus usually seen in pairs under the microscope) causes meningococcal infections.
- *N. meningitidis* is carried asymptotically in the nasopharynx of about 10-20% of healthy people and is spread from person to person by respiratory droplets.
- Meningococci can be divided into five distinct groups: A, B, C, W135 and Y. The groups mostly commonly causing illness in this country are Groups B (60-65% of cases) and C (35-40%, although this is reducing following the introduction of a vaccine).

### **2. What illness results?**

- Meningococci cause two main types of illness: meningitis (an inflammation of the meninges – the lining of the brain) and septicaemia (when the bacteria

enter the blood stream and result in infection). Although other illnesses can result including conjunctivitis, pericarditis and arthritis.

- Meningitis occurs after the organism invades the bloodstream from the nasopharynx to reach the meninges.
- The signs and symptoms of meningitis vary dependant on age but can include fever, lethargy, irritability, poor feeding, a stiff neck, severe headache and dislike of bright lights (photophobia), vomiting and drowsiness or even coma. In many cases there may also be a purplish-red petechial rash that does not blanch with pressure.
- If infection is diagnosed early and treated promptly most people (90%) survive.
- However, about 1 in 8 people who recover experience some long-term effects; e.g. headaches, joint stiffness, epileptic fits, deafness and learning difficulties.
- Septicaemia, which is the more serious illness, can occur on its own or in addition to meningitis.
- In septicaemia without meningitis, the headache, neck stiffness and photophobia may be absent but the rash may be extensive, bleeding can occur into many different organs and the patient may be comatose.
- Fulminating septicaemia cases can often die of complications including septic shock and disseminated intravascular complications within hours of being apparently well. Suspected meningococcal infection is therefore a medical emergency.

### **3. Who is vulnerable?**

- Most cases are seen in young children (usually under four years of age with the greatest risk at about six months)
- The other high risk group is teenagers between 15 and 19 years of age.
- Meningococcal disease is also commonly seen among young adults who congregate or live in close quarters, for example halls of residence, military barracks, or those returning from religious pilgrimage to the Haj.

### **4. How is it spread?**

- Meningococcal infection is not highly infectious – the bacteria do not survive for very long outside the body.

- The bacteria are passed from person to person, through nasopharyngeal secretions or large respiratory droplets from the nose and throat of infected people.
- The most common spread is between family members where there is close physical contact.
- Close contact in residential accommodation, such as student halls of residence and schools can also give the opportunity for the spread of infection.

## 5. What is the treatment?

- An antibiotic (usually benzyl penicillin or cefotaxime) should be given by injection immediately meningococcal meningitis or septicaemia is suspected. (GPs are encouraged to give penicillin iv or im before urgent transportation of the patient to hospital).
- The patient should then receive a course of iv antibiotics (usually benzyl penicillin or cefotaxime).
- Penicillin substantially reduces the infective risk during treatment, however it does not eradicate nasopharyngeal carriage of the organism. Therefore oral rifampicin is normally recommended in addition to penicillin. Preferably as soon as possible, but definitely before patients are discharged from hospital to eradicate any nasopharyngeal carriage. Alternative antibiotics may occasionally be used (Microbiology or Infectious Diseases will advise).
- Patients treated with cefotaxime do not also need to be treated with rifampicin because this effectively eradicates nasopharyngeal carriage of *N. meningitidis*.

## 6. How can it be prevented?

- Several combined vaccines have been available for some years – Groups A and C vaccine and Groups A, C, W135 and Y vaccine. These are recommended for the protection of people travelling to areas of the world where these groups are common.
- These older vaccines are ineffective in children under 18 months old and only provide short-term protection in older children and adults.

- There is now a new vaccine against meningococci group C that is particularly effective and provides long term protection. It is now routinely given to babies at 12 weeks, 16 weeks and a booster at 12 months as part of the UK vaccination schedule. It is also recommended that all adults under the age of 24 years receive 1 dose Meningococcal C vaccine which provides long term protection.
- It is important to be aware that there is currently no vaccine against group B meningococci.

## 7. Do contacts need to be treated?

- There is evidence to support the effectiveness of chemoprophylaxis for preventing secondary cases in household contacts/intimate kissing partners in contact with the index case during the 7 days before onset of illness.
- The treatment is usually oral rifampicin (Microbiology or Infectious Diseases will advise, also refer to appendix 1 for guidance on chemoprophylaxis). Pregnant patients need ceftriaxone for prophylaxis, which is held on the Infectious Diseases ward. To refer a patient for treatment please contact the ID Registrar or Consultant on call.
- Any tracing or treatment of contacts will be co-ordinated by the West Yorkshire Health Protection Unit. Within Office hours Mon-Fri this is performed by the Infection Control Nurse on reactive duty following notification from the Health Protection Agency. Out of Office hours and during weekends the on-call Health Protection Agency staff will perform this task in liaison with the clinical team.(Refer to appendix 2 for Contact Tracing Forms)
- It is important that all cases, suspected or known, are reported promptly to the West Yorkshire Health Protection Unit in order that contact tracing can commence, contact details in appendix 3. (**See Notification of Communicable Disease Policy**)

## 8. What about staff?

- Chemoprophylaxis is **only** recommended for healthcare workers whose mouth or nose is directly exposed to infectious respiratory droplets/secretions within a distance of 1 metre from a probable or confirmed case of meningococcal disease during acute illness until 24hours of systemic antibiotics.
- This type of exposure is most likely to occur in staff who undertake airway management during resuscitation without wearing a mask.

- Droplets and secretions are only considered to be infectious from the onset of the acute illness until completion of 24 hours of treatment with systemic antibiotics.
- Chemoprophylaxis is not recommended without a clear history of exposure as described above.
- General medical or nursing care of cases should not be regarded as an indication for prophylaxis.
- It is important to note that hospital acquired meningococcal infection is extremely rare.

### **9. What precautions should be taken with a known or suspected case?**

- All patients with known or suspected meningococcal infection should be isolated in a single room for the first 24 hours of appropriate antibiotic treatment.
- Any healthcare worker carrying out procedures that may result in exposure to infectious respiratory droplets as described above, should wear a facemask.
- When used, masks should be close fitting and either a dust-mist or high efficiency particulate air (HEPA) filtering mask. **LOOSE SURGICAL MASKS SHOULD NOT BE USED FOR THIS PURPOSE.**
- Staff working in intensive care units may be at higher risk of exposure. It is therefore important that they reduce any risk by wearing masks appropriately and using closed suction on the patient.
- Routine vaccination of healthcare workers with meningococcal C conjugate vaccine is **NOT** recommended for two reasons:
  - I. At time of exposure the serogroup of the infecting strain is not usually known, so previous vaccination would not rule out the need for chemoprophylaxis.
  - II. As the vaccination programme in this country takes effect, the incidence of serogroup C disease should diminish, thus reducing risk of secondary cases that are vaccine preventable.

### **References and Further Reading**

PHLS (1995) Control of meningococcal disease: guidance for consultants in communicable disease. *Communicable Disease Report* 5 (13): R189-R195.

PHLS (1995) Control of meningococcal disease: guidance for microbiologists. *Communicable Disease Report*. 5 (13): R196-R198.

PHLS (2002) Guidelines for public health management of meningococcal disease in the UK. *Communicable Disease and Public Health Report*. Sept 2002 vol 5 (3) Pp 187-204 plus Appendices.

Stuart JM, Gilmore AB, Ross A, Patterson W, Kroll JS, et al (2001) Preventing secondary meningococcal disease in health care workers: recommendations of a working group of the PHLS Meningococcus Forum. *Communicable Disease and Public Health*. 4 (2): 102-105.

Health Protection Agency (2006) Guidance for public health management of meningococcal disease. Health Protection Agency Meningococcus Forum. Updated August 2006

[www.hpa.org.uk](http://www.hpa.org.uk)

Further information and support for families is available and provided by :-

Meningitis Research Foundation – Tel 080 8800 3344 or [www.meningitis.org](http://www.meningitis.org)

Meningitis Trust - Tel 01453 768000 or [www.meningitis-trust.org.uk](http://www.meningitis-trust.org.uk)

#### Documentation control

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## APPENDIX 1

### **CHEMOPROPHYLAXIS FOR MENINGOCOCCAL DISEASE**

#### **Background**

*Neisseria meningitidis* is one of the three common causes of bacterial meningitis and may also give rise to septicaemia. Nasopharyngeal carriage of the organism is of significance, both in the causation of disease and in the development of natural protection against clinical infection. Overall the incidence of disease is highest in infants, followed by 1-5 year olds. Calculations of the risk of secondary illness are not available, however, of those secondary cases studied by CDSC about 40% occurred within 2 days of onset of illness in the index case and a total of 55% within 7 days.

#### **Objectives of chemoprophylaxis**

The primary objective is to eliminate carriage of the responsible organism and thereby prevent its transmission to susceptibles.

Secondary objectives, for which the evidence is equivocal, are to:

- a) Protect susceptibles from colonisation by responsible organism.
- b) Treat susceptibles who are incubating the disease.

#### **Indications for chemoprophylaxis**

1. ALL people sleeping in the same household as index case at the time of the illness and in the 7 days preceding its onset. Occupants of other households if the index case has slept overnight during the preceding 7 days.
2. Index cases at time of hospital discharge (penicillin does not prevent nasopharyngeal carriage).
3. Individual consideration will need to be given to:
  - a) nurseries, creches etc. which share some of the attributes of a household.
  - b) other "intimate" contacts of a case who do not actually live in the same household.
4. Prophylaxis may be considered if more than one related case occurs in any institution. Thought should be given to collecting throat swabs prior to chemoprophylaxis, either to direct the chemoprophylaxis and/or to inform the epidemiology of the infection.
5. ROUTINE prophylaxis is NOT indicated for GPs/hospital staff unless mouth to mouth resuscitation has occurred, or there has been similar exposure.

#### **Chemoprophylaxis**

1. Rifampicin is the drug of choice instituted without delay. (0.5% of strains rifampicin resistant, more than 36% are resistant to sulphonamide).

Recommended dosage:

Children under 12 months	5mg/Kg twice daily for 2 days
Children 1 to 12 years of age	10mg/Kg twice daily for 2 days
Adults	600mg twice daily for 2 days

EXCEPT women who are pregnant or breastfeeding, people with severe hepatic impairment.

Pregnant women should be counselled about rifampicin, ceftriaxone or no prophylaxis.

**ALL CONTACTS SHOULD BE MADE AWARE OF THE SIGNS AND SYMPTOMS OF MENINGOCOCCAL DISEASE**

2. A single oral dose of Ciprofloxacin (500mg) has been used for adults but is not licensed for use in children and adolescents.
3. Pregnant women can be given Ceftriaxone 250 mg single dose intramuscularly (with 1% lignocaine). Ceftriaxone is not licenced in the UK for this purpose. This is available on Ward 16 at St James's University Hospital.
4. Vaccine is available for A, C and W strains. If the strain is confirmed, immunisation should be given in addition to chemoprophylaxis. There is no vaccine available for Group B cases.

The provision of Chemoprophylaxis in hospital for close contacts of cases being managed as meningococcal infection should be under taken promptly because of the speed with which secondary cases can occur, 50% within 72 hours of the index case. Summoning the on call pharmacist is justified out of hours.

If there is any doubt about the use of chemoprophylaxis please contact the West Yorkshire Health Protection Unit on 0113 2840606 (in hours) or 0113 2063283 (out of hours) and ask for the 'Public Health Medicine Doctor'. The West Yorkshire Health Protection Unit will also arrange chemoprophylaxis for contacts who are not present in the hospital.

<p><i>West Yorkshire Health Protection Unit</i>  <i>Tel: 0113 2840606 Fax: 0113 2840617</i></p> <p><i>Meningitis/Meningococcal Infection Investigation</i>  <i>Form</i></p>	
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*Ref No:* ..... *Investigating Officer*

*Date/Time Notified* ..... *By:*  
 .....

*Consultant:*.....  
 \_\_\_\_\_

**PATIENT DETAILS**

*Name:* ..... *Sex*  
*DOB:* ..... *Age*  
*Address:* .....

*Full Postcode:* ..... *Ethnicity*  
*Tel. No.* ..... *NHS No*

*GP Name* ..... *Surgery*  
*GP Tel No* .....

**PCT**

**ADMISSION/HOSPITAL DETAILS**

*Hospital* .....  
*Ward* ..... *Tel No* .....  
*Date Admitted* .....  
*Transferred To/Ward/When* .....

*Arrived by*  
*Car*  *Public Transport*  *Ambulance*  *Other*



*Meningitis C*

*Hib*

*Pneumococcal*

*Date*

*Date*

*Date*

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*CONTEXT*

*(Please record details of Childminder, Playgroup, Nursery, School or Workplace etc)*

*Name of Organisation*

.....  
.....

*Address*

.....  
.....  
.....  
.....

*Telephone No* ..... *Contact Name*

.....

*Date Last Attended*

-

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*DIAGNOSTIC LABORATORY TESTS/RESULTS*

*Blood Culture*  *Date Taken* ..... *Result*

.....

*Lumbar Puncture*  *Date Taken* ..... *Result*

.....

*Throat Swab*  *Date Taken* ..... *Result*

.....

*PCR (2.5 ml EDTA Blood)*  *Date Taken* ..... *Result*

.....

*Serology Acute*  *Date Taken* ..... *Result*

.....

*Serology Convalescent*  *Date Taken* ..... *Result*

.....

*Confirmation Summary*

*Organism* .....

*Group* .....

*Type* .....

*Subtype* .....

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**HEALTH PROTECTION ACTIONS**

	<b>Yes</b>		<b>N/A</b>		<b>Date</b>
<b>Local Authority</b> <input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
<b>CCDC Return (Probable/Confirmed only)</b>	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
<b>GP Informed</b>	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
<b>Press office (If appropriate)</b>	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
<b>School/Nursery Informed</b>	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
<b>Sample Letter to organization</b> <input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
<b>Contact tracing completed</b>	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
<b>Prophylaxis completed</b>	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
<b>School Nurse/Health Visitor</b>	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
<b>Public Health Oncall Doctor</b>	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

CONTACTS

1. ***NAME*** ***DOB:*** ***Relationship to case:***  
***Address:***

***Tel:*** ***GP/Surgery:***

***Prophylaxis Given By*** ***Ward***  ***GP***

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2. ***NAME*** ***DOB:*** ***Relationship to case:***  
***Address:***

***Tel:*** ***GP/Surgery:***

***Prophylaxis Given By*** ***Ward***  ***GP***

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3. ***NAME*** ***DOB:*** ***Relationship to case:***  
***Address:***

***Tel:*** ***GP/Surgery:***

***Prophylaxis Given By*** ***Ward***  ***GP***

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4. ***NAME*** ***DOB:*** ***Relationship to case:***  
***Address:***

***Tel:*** ***GP/Surgery:***

***Prophylaxis Given By*** ***Ward***  ***GP***

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5. ***NAME*** ***DOB:*** ***Relationship to case:***  
***Address:***

***Tel:*** ***GP/Surgery:***

***Prophylaxis Given By*** ***Ward***  ***GP***

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6. ***NAME***

***DOB:***

***Relationship to case:***

***Address:***

***Tel:***

***GP/Surgery:***

***Prophylaxis Given By***

***Ward***  ***GP***

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7. ***NAME***

***DOB:***

***Relationship to case:***

***Address:***

***Tel:***

***GP/Surgery:***

***Prophylaxis Given By***

***Ward***  ***GP***

***ADDITIONAL NOTES***

## **APPENDIX 3**

### **CONTACT DETAILS**

#### **Leeds Health Protection Unit**

For a known or suspected case of Meningococcal infection please ring the West Yorkshire Health Protection Unit on 0113 2840606 in hours, out of hours please contact 0113 2063283 and ask for the 'Public Health Medicine Doctor'

The Leeds Health Protection Team are –

Dr Mike Gent – Consultant in Communicable Disease Control.

Gail Evans – Health Protection Nurse

Jacqui Cliff – Communicable Disease Surveillance Officer

#### **LTHT Infection Control**

LGI/SJUH/SCFT/WGH/CAH/CKH hospitals can contact the Infection Control Office on Ext 22691