

Meningitis

Key Points

Patients with bacterial meningitis need urgent medical attention & immediate antibiotic treatment.

**NOTIFY Public health/ Consultant in Communicable Disease Control (CCDC)
immediately of suspected and confirmed cases**

**Antibiotic prophylaxis will be prescribed for close contacts of cases as determined
by Public Health/ CCDC**

Viral meningitis is more common than bacterial meningitis

The risk to health care workers of acquiring meningitis is very low

Source Isolation precautions should be taken initially

Standard and Transmission based Infection Control precautions should be used

Bacterial Meningitis

Introduction

- The prognosis for bacterial meningitis is grave if diagnosis and treatment are delayed. The disease may be very rapidly progressive. Despite antibiotics, the overall mortality is still about 7%. Bacterial meningitis is more common in children than in adults.
- The organisms are harboured in, and excreted from the respiratory tract. Close contacts of a patient often carry the same organism. Outbreaks of disease may occur in groups of young people in close communities (e.g. in camps, boarding schools or universities).

Common Causative Organisms

Neisseria meningitidis (meningococcus)

- The most common cause. Peaks in young children and young adults. Transmission in hospitals or infections in healthcare worker contacts rarely occur.

Haemophilus influenzae

- Almost always occurs in young children (3 months to 6 years of age). Often capsulate type b ('Hib'). It is less common in the UK since the introduction of Hib vaccine.

Streptococcus pneumoniae (pneumococcus)

- Common in the very young and elderly patients. Often virulent strains. Infection commonly follows viral infection.

Other bacteria

- Many other bacteria can cause meningitis. For example, in neonates, Group B streptococci, *Escherichia coli* and *Listeria monocytogenes* are more common than the bacteria mentioned above. Any other bacterium may cause meningitis as part of a septicaemic illness.

Mycobacterium tuberculosis

- This is now very rare in the UK, but it will be suspected in certain populations and on the results of the CSF examination.

Management

Action

- Appropriate antimicrobial treatment should be commenced immediately i.e. by the A&E department if not already done so by G.P.
- Isolate the patient
- Wear a fluid shield mask when carrying out close examination of the patient (e.g. eyes and throat) especially if they have coughing, sneezing or recent history of vomiting.
- Likewise wear a fluid shield mask if undertaking aerosol generating procedures such as suction or intubation.
- Notify Public Health / CCDC immediately who will commence contact tracing of the close family and wider community as required. Notification must be as soon as possible and may be done on clinical suspicion only; it is not necessary to wait for lab confirmation before calling.

- Visitors do not need to wear protective clothing unless they are at risk of exposure to naso-pharyngeal secretions, but should be instructed to wash their hands before and after visiting.
- Inform Infection Prevention and Control Team.
- Check list for common causative organisms for meningococcal disease.

Send

- Blood cultures.
- CSF for microscopy and culture (if possible send 3 separate universal sterile containers of CSF following lumbar puncture) Inform the laboratory staff in advance of sending the specimen.
- Blood glucose, routine haematology, clotting screen, renal function.
- EDTA blood (in a full blood count bottle) to Microbiology for PCR.
- Peri-nasal or good throat swab (request “for meningococcus”).

Management

- Start antibiotics immediately.
- Source isolate for 48hrs.
- Consider prophylactic antibiotics for family contacts.

Inform

- CCDC
- Infection Prevention and Control Team

Antibiotic Prophylaxis

- Antibiotic prophylaxis may be advised for close family contacts of patients with meningococcal disease and siblings of those with Haemophilus influenzae. Throat or peri-nasal swabs should be taken beforehand to establish whether carriage is present but antibiotic prophylaxis must not be not delayed while these test results are awaited.
- Common antibiotics chosen are rifampicin or ciprofloxacin. The advantage of ciprofloxacin is that it may be given as a single dose.
- The risk of acquiring the infection is low. An exception would be made for those exposed to a large dose of secretions (e.g. mouth-to-mouth resuscitation).
- Antibiotic prophylaxis is not usually given to staff caring for patients with meningitis.



Staff Contacts

- Staff contacts should be considered for prophylactic antibiotics when the mouth or nose of the staff member has been directly and heavily exposed to respiratory droplets and/or secretions from a probable or confirmed case of meningococcal disease within the first 48hrs of the patient's treatment. Examples include:
- Airway management e.g. intubation or nasopharyngeal suction or other prolonged close contact with the case where the staff member has not been wearing a mask

Viral Meningitis

Exclusion

- First exclude bacterial meningitis.

Spread

- Although the viruses which cause these diseases tend to be highly infectious (as they are shed in respiratory secretions and/or faeces) they rarely result cross infection resulting in meningitis. Most contacts will have a mild respiratory infection and will not have meningitis. Viruses can be transmitted by the faecal-oral, the respiratory route or by direct close contact.

Common Causative Organisms

- Enteroviruses, particularly echoviruses which are most common in late summer; a different serotype predominates each year.
- Coxsackie viruses (also enteroviruses)
- Mumps virus (often with encephalitis)
- Herpes simplex virus (particularly type 2)
- Varicella-zoster virus

Management

Action

- Isolate the patient.
- Notify public Health / CCDC.
- Visitors need not wear protective clothing unless they are at risk of exposure to nasopharyngeal secretions, but should be instructed to wash their hands before and after visiting.
- Inform Infection Prevention and Control Team.

References

1. Department of Health. Preventing Meningitis. 2005. Available at www.dh.gov.uk. (Go to the Chief medical officer pages, then the 'Progress on Policy' Section.)
2. Communicable Disease Surveillance Centre NI (CDSC-NI) for forms on surveillance of meningococcal disease. Available at: <http://www.cdscni.org.uk/forms/default.asp>
3. Health Protection Agency. General advice on Infections such as meningitis including surveillance data: available at: <http://www.hpa.org.uk/> (look at Infectious diseases tab, then A-Z list of infections.)
4. Thompson MJ, Ninis N, Perera R, et al. Clinical recognition of meningococcal disease in children and adolescents. *Lancet* 2006(367):397-403.