



Meningitis and Hearing Loss

WHAT IS MENINGITIS?

Meningitis is an inflammation of the lining of the brain which has several different causes. By far the most common form is viral meningitis which, although rarely life threatening, can leave sufferers weakened with constant headaches, tiredness and depression. Antibiotics are ineffective for viral meningitis and recovery can be slow.

Bacterial meningitis, although rare, can be far more serious. According to the statutory bodies responsible for surveillance of meningitis, in 2003 there were 1985 reported cases of bacterial meningitis and septicaemia in England and Wales. 151 cases of meningococcal disease were reported in Scotland, and in Northern Ireland 110 cases of bacterial meningitis and septicaemia were reported. These cases were broken down into two main types; each named after the different bacterial organisms:

- Meningococcal (strains A, B, C, W135, X, Y and Z – strains B, C and W135 are the most common)
- Pneumococcal

Following the introduction of the conjugate Men C vaccine in 1999/2000, cases of C strain meningococcal disease have dropped by over 90 per cent in the age groups targeted for vaccination. The vaccine is now available to everyone aged under 25. However, there is no vaccine that can prevent all forms. Cases continue to occur because routine immunisation is not available to protect against some forms. In particular there is no vaccine against group B meningococcal bacteria, the strain that causes by far the most disease in the UK and Ireland.

Bacterial meningitis can be treated by antibiotics, but it is essential that the infection is diagnosed as early as possible, as the earlier that treatment starts, the better the outlook.

WHAT ARE THE CHANCES OF HEARING LOSS FOLLOWING MENINGITIS?

Deafness is the most common of all forms of permanent damage following meningitis, affecting as many as ten per cent of all children who recover (Tarlow 1997). Damage can result from both the direct effect of the infection on the brain and also the body's response to it. Strong reactions likely to cause permanent damage are more commonly associated with pneumococcal meningitis.

The site of permanent hearing loss is almost always the cochlea. Damage usually happens within the first couple of days of the illness.

The chances of a child experiencing a degree of hearing loss following meningitis depend on a number of factors. The age of the child is crucial, with newborn babies facing a particular risk.

Before 1992 when Hib (Haemophilus influenzae type b) vaccine was introduced into the childhood vaccination schedule, Hib was the biggest cause of meningitis in children under 5 years of age and was a major cause of deafness. However, even since then, hearing problems remain one of the most common after effects of bacterial meningitis.

Other forms of meningitis which are not vaccine preventable, and which pose a significant risk of hearing loss, are group B streptococcal and E coli meningitis, which together account for most cases of meningitis in newborn babies (neonatal meningitis).

Bacterial meningitis accounts for around six per cent of all hearing impairment in children. According to research 72 per cent of these children will become deaf before their third birthday. Deafness at this age can have a severe impact upon a child's development of social and language skills. For this reason it is vital that hearing impairment following meningitis is identified as soon as possible so that parents can adopt appropriate strategies for combating its effects.

However, a 1993 study showed that around 22 per cent of all children who survived meningitis were not tested for impaired hearing. Given that many cases of meningitis occur in children before they have developed speech, even children who have suffered profoundly impaired hearing could go undetected. In such cases, children are disadvantaged educationally and are unable to benefit from hearing devices and other strategies which could be of use.

Hearing impairment in older children may also go undetected, especially if the hearing loss is mild or affects only one ear.

Therefore, it is recommended that hearing tests be conducted as soon as a child has recovered and is fit enough and all parents are strongly urged to ensure that their child does undergo a test. If hearing is found to be normal, then the child should be re-tested after six months. After this they can be discharged if no hearing loss has been identified.

As well as hearing loss, other common long-term effects of meningitis include tinnitus: permanent or temporary sounds (usually described as ringing sounds) experienced in the head or ears.

WHAT SHOULD I DO IF MY CHILD IS DIAGNOSED WITH A HEARING LOSS?

If, following meningitis, you or your child is diagnosed with a hearing impairment, there are a number of organisations you can contact for information and advice. At Deafness Research UK we produce a range of leaflets and factsheets on relevant issues which should answer many of your questions. We also have a team of medical advisors to whom we can refer more complex enquiries. Contact the Information Service for a list of the information resources available.

Open: 9.00 a.m. to 5.00 p.m., Monday to Friday (a message can be left at other times).

Freephone: 0808 808 2222

Textphone: 020 7915 1412

E-mail: info@deafnessresearch.org.uk

or click the 'ask question' option from our website homepage:
www.deafnessresearch.org.uk

WHAT ARE THE SYMPTOMS OF MENINGITIS & SEPTICAEMIA?

Meningitis and septicaemia, the blood poisoning form of the disease, can be difficult to identify, as the symptoms can be flu-like. However, given the rapid development of these conditions, it is vital that it identified and treated early. Symptoms include:

	Meningitis	Septicaemia
Rash	✓, not present in all cases	✓, develops anywhere on body
Fever / vomiting	✓	✓
Cold hands and feet	x	✓
Rapid breathing	x	✓
Stomach/joint/muscle pain	x	✓, sometimes with diarrhoea
Drowsiness / impaired consciousness	✓	✓, not in all cases
Severe headache	✓	x
Dislike of bright lights	✓, not often present in young children	x
Stiff neck	✓, not often present in young children	x

Babies may also suffer from:

- Tense or bulging soft spot on the baby's head
 - Blotchy skin, getting paler or turning blue
 - Refusing to feed
 - Irritable when picked up, with a high pitched or moaning cry
 - A stiff body with jerky movements, or else floppy and lifeless
- However, it is important to note that symptoms will vary and not everyone will display all the symptoms listed.

For further information on vaccinations or identification and treatment of meningitis and septicaemia, please contact:

The National Meningitis Trust

Fern House, Bath Road, Stroud, Gloucestershire GL5 3TJ

Tel/text: 01453 768000 / Fax: 01453 768001

24-hour support line: 0845 6000 800

www.meningitis-trust.org

Meningitis Research Foundation

Midland Way, Thornbury, Bristol BS35 2BS

Tel: 01454 281811

Fax: 01454 281094

24 hour helpline freephone: 0808 800 3344 / email: info@meningitis.org

www.meningitis.org

WHAT RESEARCH IS BEING CONDUCTED INTO DETECTING CHILDHOOD DEAFNESS?

Deafness Research UK is at the forefront of the development of new, more efficient devices and procedures for identifying childhood deafness as early as possible. Until a few years ago, children were routinely screened for deafness using the Infant Distraction Test (IDT), performed by a health visitor. This test, which had barely changed in thirty years, failed to detect the majority of children with a hearing loss.

Deafness Research UK worked on the development of a new test called the Oto-Acoustic Emissions (OAE) test for over a decade. It involves a small probe being placed just inside a baby's ear, which produces a gentle sound. The test relies on the fact that for each sound heard by the ear, the ear itself produces a tiny corresponding sound. This 'echo', known as an otoacoustic emission, will be present in all hearing children, but will be reduced in children with a hearing impairment.

In the last few years the OAE test has been introduced as part of the Newborn Hearing Screening Programme (NHSP). This screening programme is now in use throughout the country.

Deafness Research UK is continuing its research to improve neonatal hearing screening. Currently we have a team developing a test called the Maximum Length Sequence Brainstem Auditory Evoked Response (MLS BAER) test for the early detection of deafness as a result of brain damage caused by oxygen starvation during birth. This sort of deafness cannot be detected by the OAE test, therefore methods for early detection are crucial to minimise the impact on child development.

Deafness Research UK is the medical charity for deaf and hard of hearing people. Supported entirely by voluntary contributions, **Deafness Research UK** aims to:

- encourage and finance research into the prevention, diagnosis, treatment and cure of hearing difficulties
- educate people about hearing problems and their treatments, offering information and advice based upon the most up-to-date evidence available

You can support this work by making a donation or joining the Deafness Research UK League of Friends. For more information call us on 020 7833 1733 or write to:

Deafness Research UK, 330-332 Gray's Inn Rd, London WC1X 8EE

This factsheet has been produced by Deafness Research UK, in consultation with the Meningitis Research Foundation. Whilst all reasonable efforts have been made to ensure the information and advice given is taken from reputable sources and passed to the public in good faith, no responsibility can be taken on the part of Deafness Research UK or its advisors for any error or omission. You should not act on any advice without first referring to your family doctor or another medically qualified adviser.

Reviewed: September 2005