CONDITION

H influenzae meningitis

H influenzae meningitis is a serious bacterial infection of the protective tissues around the brain and spinal cord.

WHAT IT IS
Bacterial infection of tissues surrounding the brain and spinal cord

BODY SYSTEM
Brain and nervous system

MAIN SYMPTOMS
Fever, severe headache, stiff neck, confusion

WHAT CAUSES IT
Haemophilus influenzae bacterial infection

HOW IT IS DIAGNOSED
Spinal fluid and blood testing

MAIN TREATMENT
Urgent intravenous antibiotics and supportive hospital care

CAN IT BE CURED?
Yes - prompt antibiotics can clear infection

IS IT AN EMERGENCY?
Yes - suspected meningitis needs immediate assessment

LONG-TERM OUTLOOK
Many recover, but lasting nerve problems can occur

Overview

H influenzae meningitis is inflammation of the protective tissues around the brain and spinal cord caused by Haemophilus influenzae bacteria. These tissues are called the meninges. Bacterial meningitis can worsen quickly, so suspected cases need emergency medical assessment and treatment.

Despite its name, H influenzae does not cause influenza, or "the flu." It is a different type of germ. Several strains can cause infection. Type b, usually called Hib, was once a major cause of bacterial meningitis in young children. Routine Hib vaccination has made it much less common in vaccinated populations.

Other strains, including non-type b and "nontypeable" strains, can also cause meningitis. Nontypeable means the bacteria do not have the outer capsule used to classify some strains.

The bacteria can live in the nose and throat without causing illness. Meningitis develops if they enter the bloodstream and reach the tissues around the brain. This is called invasive H influenzae infection.

Symptoms

Symptoms may develop over hours or during a few days. Not everyone has every symptom, and early illness can look like a less serious infection.

Symptoms in older children and adults can include:

Babies may not develop an obvious stiff neck. Possible signs include poor feeding, vomiting, unusual sleepiness, persistent irritability, a weak or high-pitched cry, or reduced interest in people and surroundings. The soft area on top of a baby's head may bulge. Some babies become floppy, while others appear unusually stiff.

A person with infection in the bloodstream may also have cold hands and feet, pale or blotchy skin, fast breathing, or very low energy. A rash is not required for meningitis. Waiting for one can delay treatment.

These symptoms do not confirm the cause. Viruses, other bacteria, and several non-infectious conditions can produce similar symptoms.

- Fever
- Severe or worsening headache
- Stiff or painful neck
- Nausea or vomiting
- Discomfort in bright light
- Unusual sleepiness, confusion, or irritability
- Seizures
- Reduced alertness or difficulty waking

Causes and risk factors

H influenzae meningitis happens when the bacteria move beyond the nose or throat into normally sterile parts of the body, such as the blood or spinal fluid. Spinal fluid, also called cerebrospinal fluid or CSF, surrounds the brain and spinal cord.

The bacteria spread through respiratory droplets and close contact with secretions from the nose or throat. Brief everyday contact does not always lead to infection. Many people who carry the bacteria remain well.

Hib meningitis is most likely in children who are too young to have completed their first vaccine doses or who have not been fully vaccinated. It can still occur after vaccination, but this is uncommon.

Other factors that can raise the risk of invasive infection include:

Risk factors do not mean that someone will develop meningitis. People without a known risk factor can also become ill.

- Having no working spleen, including after spleen removal
- Sickle cell disease
- Certain immune system problems
- Medicines or treatments that substantially weaken immunity
- Older age or serious long-term health conditions
- Close household or childcare contact with someone who has Hib infection

Diagnosis

H influenzae meningitis cannot be confirmed from symptoms alone. Hospital tests are needed, and antibiotics like amoxicillin or doxycycline may be started before every result is available.

The main test is a lumbar puncture, sometimes called a spinal tap. A clinician places a needle into the lower back to collect a small sample of spinal fluid. The sample is checked for signs of inflammation and tested for bacteria.

Testing may include a culture, which tries to grow the bacteria, and a polymerase chain reaction, or PCR, test that looks for bacterial genetic material. Blood cultures are usually taken as well. Identifying the strain can help public health teams decide whether close contacts need preventive antibiotics.

A brain scan is not required before every lumbar puncture. It may be needed first if there are signs that the procedure could be unsafe, such as certain neurological changes or concern about raised pressure around the brain. Testing should not cause an avoidable delay in antibiotics.

Treatment and management

Treatment begins urgently in hospital. Antibiotics are given into a vein so that effective levels reach the blood and spinal fluid. Initial treatment usually uses antibiotics that cover the common causes of bacterial meningitis. It can then be adjusted when laboratory testing identifies the bacteria and shows which antibiotics are likely to work.

A corticosteroid such as dexamethasone may be given shortly before or with the first antibiotic dose. This medicine reduces inflammation. Its possible benefit is greatest when it is started very early, particularly for Hib meningitis in children. Whether it is continued depends on the identified cause and the clinical situation.

Supportive treatment may include intravenous fluids, oxygen, medicines for seizures, and careful management of blood pressure, temperature, pain, and brain swelling. People who are seriously unwell may need intensive care.

Droplet precautions are generally used in hospital until effective antibiotics have been given for an appropriate period. These precautions reduce exposure to respiratory secretions.

Hib infection is reported to public health authorities in many countries. A public health team may recommend preventive antibiotics for certain household or childcare contacts. This is intended to remove Hib from the throat and reduce further spread. It is not routinely needed for every casual contact or for meningitis caused by every H influenzae strain.

Hearing should be checked after bacterial meningitis. Babies and children may also need follow-up of speech, learning, movement, and development.

Complications

Inflammation around the brain can affect hearing, movement, learning, behaviour, and other nerve functions. Some problems become clear during the illness, while others are noticed only during recovery.

Possible complications include:

Infection in the bloodstream can lead to sepsis, which is the body's dangerous reaction to infection. Meningitis can be fatal, especially if treatment is delayed. Prompt treatment improves the chance of recovery but cannot prevent every complication.

- Hearing loss
- Seizures or epilepsy
- Problems with balance, coordination, or movement

- Difficulties with memory, concentration, speech, or learning
- Weakness affecting part of the body
- Fluid build-up in or around the brain
- Vision problems
- Emotional or behavioural changes

Prevention

H influenzae meningitis cannot always be prevented. Hib vaccination is the main way to prevent meningitis caused by type b bacteria. It does not protect against every strain of H influenzae or against other causes of meningitis.

Hib vaccine is included in routine childhood immunisation programmes in many countries. Some people with particular immune or spleen conditions may be offered additional vaccination based on local guidance.

When a Hib case is confirmed, the public health team assesses who had close contact and whether preventive antibiotics are needed. Recommendations consider factors such as the ages and vaccination status of household members and whether vulnerable children were exposed. People should not use leftover antibiotics or share them with contacts.

Everyday measures such as handwashing, covering coughs, and not sharing items contaminated with saliva may reduce the spread of respiratory germs. They are not a substitute for vaccination or public health measures after a confirmed case.

Living with it and what to expect

H influenzae meningitis is an acute illness rather than a lifelong infection. When antibiotics work, they clear the bacteria. Recovery from the effects of inflammation may take much longer.

Some people feel much better within weeks. Others experience tiredness, headaches, poor sleep, dizziness, reduced concentration, or sensitivity to noise for several months. A gradual return to school, work, exercise, and busy environments may be needed.

Hearing loss can be temporary or permanent. A formal hearing test is important even if hearing seems normal. Young children may need repeated developmental review because difficulties with language, learning, or coordination can appear as expectations increase with age.

Follow-up may involve a primary care clinician, paediatrician, hearing specialist, neurologist, rehabilitation team, or school support service. Routine follow-up is used to monitor recovery and address lasting symptoms. It is different from emergency care for new fever, confusion, seizures, or rapidly worsening symptoms.

Many people recover without major long-term limitations. Others need ongoing hearing support, therapy, seizure treatment, educational help, or rehabilitation. The course cannot be predicted from the diagnosis alone.

When to get medical help

Suspected bacterial meningitis is an emergency. Call emergency services or go to an emergency department immediately if someone has fever with a severe headache, stiff neck, confusion, unusual drowsiness, a seizure, or difficulty waking.

A baby needs urgent assessment for fever with poor feeding, unusual sleepiness, persistent irritability, a bulging soft spot, a high-pitched cry, floppiness, or unusual stiffness. Do not wait for every typical symptom to appear.

Emergency help is also needed for breathing difficulty, blue or grey skin, rapidly worsening weakness, collapse, or signs of severe bloodstream infection such as cold mottled skin and reduced responsiveness.

After discharge, seek urgent medical advice for a new fever, worsening headache, repeated vomiting, increasing confusion, a seizure, new weakness, or clear deterioration. Arrange routine follow-up for persistent tiredness, headaches, hearing concerns, concentration problems, or changes in a child's speech, learning, movement, or behaviour.

Common questions

Is H influenzae meningitis contagious?

The bacteria can spread through close contact with respiratory secretions, but meningitis itself is not passed directly from one brain to another. Only certain close contacts of a person with confirmed Hib infection need preventive antibiotics. Public health teams make this assessment.

Is H influenzae the same as flu?

No. Haemophilus influenzae is a bacterium. Influenza is caused by influenza viruses. The similar name comes from an incorrect historical belief that the bacterium caused influenza.

Can adults get H influenzae meningitis?

Yes. It can occur at any age. Adults who are older, have no working spleen, have weakened immunity, or live with serious health conditions may be more vulnerable to invasive infection.

Can you get it after having the Hib vaccine?

Yes, although Hib meningitis is uncommon in fully vaccinated people. The vaccine protects against type b but not every H influenzae strain. No vaccine prevents all forms of bacterial meningitis.

Can H influenzae meningitis be cured completely?

Antibiotics can clear the infection. Some people recover fully, while others have lasting effects caused by inflammation or injury during the illness. Hearing and developmental follow-up help identify problems that may need support.

Why might family members need antibiotics if they feel well?

A close contact may carry Hib in the throat without symptoms. Preventive antibiotics can remove the bacteria and lower the chance of another invasive infection in a vulnerable household or childcare contact. They are recommended only in specific circumstances.

Sources

- Centers for Disease Control and Prevention. Clinical Overview of Haemophilus influenzae Disease .
- Centers for Disease Control and Prevention. Manual for the Surveillance of Vaccine-Preventable Diseases: Chapter 2, Haemophilus influenzae Invasive Disease .
- Centers for Disease Control and Prevention. Epidemiology and Prevention of Vaccine-Preventable Diseases: Haemophilus influenzae Type b . The Pink Book, 14th edition.
- Briere EC, Rubin L, Moro PL, Cohn A, Clark T, Messonnier N. Prevention and Control of Haemophilus influenzae Type b Disease: Recommendations of the Advisory Committee on Immunization Practices . MMWR Recommendations and Reports. 2014;63(RR-01):1-14.
- National Institute for Health and Care Excellence. Bacterial meningitis and meningococcal disease: recognition, diagnosis and management . NICE guideline NG240, 2024.
- Tunkel AR, Hartman BJ, Kaplan SL, et al. Practice Guidelines for the Management of Bacterial Meningitis . Clinical Infectious Diseases. 2004;39(9):1267-1284.



- World Health Organization. Haemophilus influenzae type b conjugate vaccines: WHO position paper . Weekly Epidemiological Record. 2013;88(39):413-426.