CONDITION

Endocarditis - children

Endocarditis is a serious infection of the inner heart lining or valves in a child.

WHAT IT IS
Infection of the inner heart lining or valves

BODY SYSTEM
Heart and circulation

MAIN SYMPTOMS
Fever, tiredness, poor appetite, shortness of breath

WHAT CAUSES IT
Bacteria, or rarely fungi, entering the bloodstream

HOW IT IS DIAGNOSED
Blood cultures and heart ultrasound

MAIN TREATMENT
Intravenous antimicrobial medicines, sometimes heart surgery

CAN IT BE CURED?
Yes - treatment can clear the infection

IS IT AN EMERGENCY?
Yes - suspected cases need urgent hospital assessment

LONG-TERM OUTLOOK
Most recover, though heart damage or recurrence can occur

Overview

Endocarditis is an infection of the endocardium, the thin lining inside the heart. It usually affects one or more heart valves, which control the direction of blood flow.

Most cases in children are caused by bacteria that enter the bloodstream and settle inside the heart. Fungi cause a small number of cases. The medical term is infective endocarditis .

Endocarditis is uncommon in children but serious. It can damage a valve, reduce the heart's ability to pump, or spread infected material elsewhere in the body. Treatment usually begins in hospital and lasts several weeks.

Risk is higher in some children with a heart condition, previous heart surgery, implanted heart device, or long-term intravenous line. However, endocarditis can occur without a known heart problem.

Symptoms

Symptoms may develop over days or gradually over weeks. They can be difficult to recognise because they resemble many common childhood infections.

Possible symptoms include:

A clinician may hear a new heart murmur or a change in an existing one. Most childhood murmurs are not caused by endocarditis, and some affected children have no noticeable murmur.

Less common signs include tiny red or purple spots on the skin, inside the mouth, or under the nails. Painless marks can occur on the palms or soles, and tender bumps may appear on fingers or toes.

Babies may feed poorly, breathe faster, be difficult to settle, sleep more than usual, or fail to gain weight as expected.

- Persistent or repeatedly returning fever
- Chills, sweating, or night sweats
- Unusual tiredness, weakness, or irritability
- Poor appetite or weight loss
- Fast breathing or shortness of breath
- A fast heartbeat
- Muscle, joint, back, chest, or abdominal pain
- Headache, nausea, or vomiting
- A pale, grey, or generally unwell appearance

Causes and risk factors

Endocarditis usually begins when bacteria enter the bloodstream. If part of the heart lining or a valve is abnormal or damaged, bacteria may attach there and form an infected clump called a vegetation .

Bacteria can enter through infected skin, the mouth, another infection, surgery, or an intravenous catheter. Everyday brushing and chewing can also introduce small numbers of mouth bacteria, which is why dental health matters for children at increased risk.

Higher-risk situations include:

A child can still develop endocarditis without these factors. A heart murmur alone does not mean a child is at high risk. Endocarditis does not usually spread from person to person.

- Some congenital heart conditions
- An artificial heart valve or artificial material used in heart repair
- Previous endocarditis
- Certain remaining heart defects after treatment
- An implanted heart device
- A long-term central venous catheter
- Haemodialysis
- A weakened immune system
- Serious skin or bloodstream infections

Diagnosis

Endocarditis cannot be confirmed from symptoms alone. Diagnosis combines the child's history and examination with blood tests and heart imaging.

Blood cultures check whether bacteria or fungi grow from a blood sample. Several samples may be required. When safe, they are collected before antibiotics like amoxicillin or doxycycline begin because treatment can make the organism harder to identify.

An echocardiogram , or heart ultrasound, shows the valves, chambers, and blood flow. The first test is often performed by moving an ultrasound probe over the chest.

If images are unclear or suspicion remains high, a transoesophageal echocardiogram may be considered. A small probe is passed into the food pipe under sedation or anaesthesia, allowing more detailed images from close to the heart.

Other tests may include:

Blood cultures sometimes remain negative, especially after earlier antibiotics or when an organism is difficult to grow. Specialist laboratory tests may then help identify the cause.

- Blood counts and inflammation markers
- Kidney and liver function tests
- An electrocardiogram
- Chest imaging

- Brain or body scans if complications are suspected

Treatment and management

Children with suspected endocarditis usually need urgent hospital assessment by paediatric cardiology and infection specialists.

The main treatment is antimicrobial medicine, usually antibiotics given into a vein. Treatment depends on the organism, affected valve, and whether artificial material is present. If cultures have not identified the cause, treatment may begin against likely bacteria and then be adjusted.

Treatment commonly lasts several weeks because organisms within a vegetation can be difficult to clear. Blood tests, repeat cultures, and sometimes further echocardiograms monitor progress.

Some stable children may complete part of their intravenous treatment through a specialist outpatient or home service, with careful planning and monitoring.

Surgery may be needed when:

Surgery may repair or replace a valve, remove infected tissue, or remove an infected device. Decisions are made jointly by the heart, infection, and surgical teams.

Rest, fluids, nutrition, pain relief, and treatment of complications are also important. Activity advice changes as the infection settles and the heart recovers.

- A valve is badly damaged or leaking
- The heart is struggling to pump effectively
- Infection continues despite appropriate medicine
- An abscess forms around a valve
- A vegetation is likely to break away
- Artificial valve material or a heart device is infected

Complications

Endocarditis can damage a valve and cause blood to leak backwards. Severe damage may lead to heart failure, when the heart cannot pump effectively enough.

Infection can spread into nearby heart tissue, form an abscess, or affect electrical pathways and cause an abnormal rhythm.

Pieces of vegetation may break away and travel through the bloodstream. These emboli can block blood flow or spread infection to the brain, lungs, kidneys, spleen, bones, or other organs.

Complications can include stroke, seizures, kidney inflammation, lung infection, bone or joint infection, and persistent bloodstream infection. Hospital monitoring helps identify and treat these problems early.

Valve damage may remain after the infection clears. Some children need long-term cardiology follow-up or later surgery.

Prevention

Endocarditis cannot always be prevented, even when families follow all recommended measures.

Good dental health reduces bacteria entering the blood from inflamed gums or dental infection. Children should brush regularly, attend routine dental care, and have tooth pain, swelling, or gum infection assessed promptly.

Keep cuts and skin conditions clean. Seek advice for spreading redness, pus, increasing pain, or fever. Children should not pick at damaged skin around intravenous lines or surgical wounds.

A small group at highest risk may need preventive antibiotics before certain dental procedures involving the gums or tooth roots. This can include children with an artificial valve, previous endocarditis, or particular congenital heart conditions. Antibiotics are not recommended for every child with a heart condition or for routine dental cleaning at home.

If a child is considered high risk, follow written advice from their cardiology team and tell their dentist about the heart condition and any previous endocarditis. Do not use leftover antibiotics or arrange preventive treatment without the clinical team.

Families caring for a central line at home should follow their training and promptly report redness, discharge, line damage, or unexplained fever.

Living with it and what to expect

Treatment may affect family life for weeks. A child may miss school, need repeated blood tests, and have temporary physical activity limits. Tiredness and reduced stamina can continue after other symptoms improve.

Many children recover, particularly with prompt treatment. Recovery depends on the organism, valve damage, underlying heart health, and any complications.

Follow-up commonly includes cardiology and infectious disease appointments, further echocardiograms, and blood tests. Attend these visits even when recovery seems to be going well.

Return to school is usually gradual and depends on energy, infection control, intravenous treatment arrangements, and heart function. Strenuous sport may be restricted until the heart is reassessed. Children with lasting valve damage may need longer-term monitoring or activity limits.

Endocarditis can recur, especially after a previous episode. Persistent fever should not be ignored. Families may receive an endocarditis alert card and instructions about dental treatment and when to seek assessment.

When to get medical help

Arrange urgent same-day medical assessment if a child at increased risk develops an unexplained fever, especially if it persists, repeatedly returns, or occurs with marked tiredness, poor feeding, weight loss, or chills.

A child with a central line needs prompt assessment for fever or shaking chills even if the line site looks normal. Follow the emergency plan from their clinical team.

Seek urgent advice if a child being treated for endocarditis develops returning fever, worsening breathlessness, new swelling, reduced urine, persistent vomiting, or increasing weakness.

Call emergency services if the child:

Routine follow-up checks recovery, heart function, treatment effects, and prevention. It should not replace urgent care for new or rapidly worsening symptoms.

- Has severe difficulty breathing
- Collapses, faints, or cannot be woken normally
- Develops sudden weakness, facial drooping, or trouble speaking
- Has a seizure
- Has severe chest pain or becomes blue, grey, or very pale
- Develops rapidly worsening confusion or extreme drowsiness

Common questions

Is endocarditis contagious?

No. Ordinary contact, sharing a room, or attending school does not spread endocarditis.

Can my child get endocarditis without a known heart condition?

Yes. Heart conditions increase risk, but endocarditis can occur in children with previously healthy hearts. Bloodstream infections, central lines, and serious skin infections can also increase risk.

How long does treatment take?

Intravenous antimicrobial treatment often lasts several weeks. The exact duration depends on the organism, valve, artificial material, complications, and response.

Will my child need heart surgery?

Not always. Surgery is considered when medicine cannot control the infection, a valve is seriously damaged, heart function is affected, or another major complication develops.

Can my child go back to school and sports?

Many children return to school gradually. Sport may need to wait until the infection has cleared and the heart has been reassessed.

Can endocarditis come back?

Yes, particularly after a previous episode or when an underlying heart risk remains. Dental care, follow-up, and prompt assessment of unexplained fever are important.

Sources

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