CONDITION

Relapsing fever

Relapsing fever is a bacterial infection that causes repeated episodes of fever and other flu-like symptoms.

WHAT IT IS
Borrelia bacterial infection causing repeated fever episodes

BODY SYSTEM
Whole body, including blood and nervous system

MAIN SYMPTOMS
Recurrent fever, chills, headache, muscle aches

WHAT CAUSES IT
Infection spread by ticks or body lice

HOW IT IS DIAGNOSED
Blood smear or molecular testing during fever

MAIN TREATMENT
Antibiotics and supportive care

CAN IT BE CURED?
Yes - antibiotics usually clear the infection

IS IT AN EMERGENCY?
Sometimes - confusion, breathing trouble, or shock signs

LONG-TERM OUTLOOK
Usually full recovery after prompt treatment

Overview

Relapsing fever is an infection caused by several types of Borrelia bacteria. It gets its name from its typical pattern: a high fever improves and then returns days later. This can happen more than once if the infection is not treated.

The bacteria are carried by certain ticks or, less often, human body lice. Relapsing fever is not the same as Lyme disease, although both are caused by Borrelia bacteria and some forms are spread by ticks.

There are three main forms:

Many people recover fully with antibiotics like amoxicillin or doxycycline . However, untreated infection can affect the brain, heart, lungs, liver, or other organs. Illness during pregnancy also

carries added risks. Recognising the pattern and mentioning possible tick, louse, travel, or cabin exposure can help testing and treatment happen sooner.

- Soft tick relapsing fever, linked to soft-bodied ticks that often live in rodent-infested buildings
- Hard tick relapsing fever, mainly caused by Borrelia miyamotoi and spread by the same broad group of ticks that can spread Lyme disease
- Louse-borne relapsing fever, spread by infected human body lice

Symptoms

Symptoms often begin suddenly. The exact pattern differs by the type of infection, but fever episodes may last several days, improve, and then return.

Common symptoms include:

Some people develop a rash, but it is not always present. Relapsing fever does not usually cause the expanding, target-like rash associated with Lyme disease.

The fever returns because the bacteria change proteins on their surface. The immune system controls one form of the bacteria, but another form can multiply and trigger a new episode. Soft tick relapsing fever may cause several relapses. Louse-borne illness more often causes fewer episodes.

Possible signs of more serious illness include confusion, unusual sleepiness, a stiff neck, seizures, shortness of breath, chest pain, yellowing of the skin or eyes, or unusual bleeding. Young children, older adults, pregnant people, and people with weakened immune systems may be more vulnerable to complications.

- High fever and shaking chills
- Severe headache
- Muscle and joint aches
- Weakness or marked tiredness
- Nausea, vomiting, or abdominal discomfort
- Sensitivity to light

Causes and risk factors

Relapsing fever is caused by infection with Borrelia bacteria. How it spreads depends on the

form.

Soft ticks live near rodents and feed for a short time, often at night. Their bites may not be noticed because they feed quickly and do not usually remain attached. Exposure has been linked to sleeping in rodent-infested cabins, caves, or older buildings, particularly in mountainous areas of western North America. Soft tick relapsing fever also occurs in parts of Africa, Asia, Europe, and the Americas.

Hard tick relapsing fever is spread by infected Ixodes ticks. These ticks can be found in wooded, brushy, or grassy areas. Because they may also carry other organisms, more than one tick-borne infection can occasionally occur at the same time.

Louse-borne relapsing fever is caused by Borrelia recurrentis . It spreads when an infected body louse is crushed and bacteria enter broken skin or the eyes. Body lice live and lay eggs in clothing, especially when clothes cannot be washed or changed regularly. Outbreaks are associated with overcrowding, displacement, poverty, and limited access to washing facilities. It does not spread through ordinary social contact.

Having relapsing fever does not reliably protect you from getting it again.

Diagnosis

A clinician will ask about your fever pattern and possible exposures. Important details include recent travel, time spent in rustic or rodent-infested buildings, tick bites, outdoor activity, body lice, and contact with crowded living conditions.

A blood sample taken while the fever is high may show the spiral-shaped bacteria under a microscope. Thick and thin blood smears can be used, similar to blood testing for malaria. The number of bacteria in the blood may fall between fever episodes, so a smear taken at that time can be negative.

Polymerase chain reaction, or PCR, testing looks for bacterial genetic material. It can confirm infection and may help identify the Borrelia species. Availability differs between laboratories.

Antibody blood tests may help with some forms, especially later in the illness, but they are not always useful early on. Results can sometimes overlap with Lyme disease testing. Routine blood tests may also show low platelets, anemia, or changes in liver and kidney function, but these findings do not confirm the cause.

If the brain or its surrounding tissues may be involved, additional tests may be needed. These can include brain imaging or examination of cerebrospinal fluid, the liquid around the brain and spinal cord.

Treatment and management

Relapsing fever is treated with antibiotics. The antibiotic and length of treatment are chosen according to the type of relapsing fever, the person's age, pregnancy status, illness severity, allergies, and whether the nervous system is involved. Tetracycline-class antibiotics are often used, while penicillin-class medicines, ceftriaxone, and some other antibiotics may be appropriate in certain situations.

People who are seriously unwell may need hospital care. Supportive treatment can include fluids, oxygen, fever relief, and monitoring of blood pressure and organ function.

A temporary reaction called a Jarisch-Herxheimer reaction can happen after the first antibiotic treatment. As bacteria die, inflammation may cause a sudden rise in fever, chills, sweating, headache, faster heart rate, or a drop in blood pressure. It usually starts within several hours. It is not usually an antibiotic allergy, but it can be difficult to distinguish from worsening infection or an allergic reaction without medical assessment.

Because this reaction can occasionally be severe, monitoring may be recommended when treatment starts, particularly for louse-borne infection, severe illness, or pregnancy. Trouble breathing, faintness, swelling of the face or throat, or widespread hives need emergency care because they may indicate a serious allergic reaction.

Complete the antibiotic course exactly as directed, even if the fever settles quickly. Follow-up may include checking that symptoms have resolved and repeating abnormal blood tests.

Complications

Complications are more likely when diagnosis or treatment is delayed. They are not inevitable, and prompt antibiotic treatment lowers the risk.

The infection can sometimes affect the brain and nerves, causing meningitis, facial weakness, hearing problems, confusion, or seizures. Meningitis means inflammation of the tissues surrounding the brain and spinal cord.

Other possible complications include inflammation of the heart, breathing failure, liver inflammation, kidney injury, low blood pressure, bleeding, or severe dehydration. Louse-borne relapsing fever can be particularly serious during outbreaks where nutrition and access to medical care are limited.

In pregnancy, relapsing fever is linked to miscarriage, premature birth, low birth weight, and infection in the newborn. A pregnant person with possible exposure and fever should receive prompt medical assessment rather than waiting for another episode.

Prevention

There is no vaccine for relapsing fever. Prevention focuses on avoiding infected ticks and controlling body lice.

To reduce soft tick exposure, avoid sleeping in buildings with signs of rodents until the building has been properly treated. Rodent control should include sealing gaps and safely removing nests. Simply killing rodents without controlling their ticks may leave infected ticks behind.

In areas with hard ticks:

Body-louse prevention requires access to clean clothing and regular washing. Clothing, bedding, and towels may need hot washing and drying or another approved treatment. During an outbreak, public health teams may arrange delousing, clean clothing, antibiotics, and assessment of close contacts.

Relapsing fever cannot always be prevented because tick bites may go unnoticed. Risk reduction is still useful, especially when staying in rustic buildings or spending time in known tick habitats.

- Use an appropriate insect repellent on exposed skin
- Treat clothing and outdoor equipment with products intended for that use
- Wear long sleeves and trousers in brushy or wooded areas
- Check your body and clothing after outdoor activity
- Shower soon after coming indoors and remove attached ticks promptly

Living with it and what to expect

With suitable treatment, fever and other symptoms often begin to improve within days. Tiredness, weakness, and reduced stamina may last longer, especially after several fever episodes or a severe infection.

Most treated people recover without lasting effects. Recovery can take longer if the nervous system, heart, lungs, liver, or kidneys were affected. Follow-up in these situations may continue for weeks or months and may include repeat blood tests or assessment of ongoing symptoms.

Contact a clinician if fever returns after treatment, symptoms fail to improve, or new problems develop. A returning fever could mean that the infection has relapsed, treatment was not fully effective, or another infection is present. It should not be assumed to be part of normal recovery.

Relapsing fever is not generally a lifelong condition once the infection has been cleared. However, previous infection does not provide dependable immunity, so another exposure can cause a new infection.

When to get medical help

Arrange prompt medical assessment if you have repeated episodes of fever and may have been exposed to ticks, body lice, a rodent-infested building, or an area where relapsing fever occurs. Do not wait for the fever to return before seeking care.

Contact a clinician promptly if fever develops during pregnancy after possible tick or louse exposure. Babies, young children, older adults, and people with weakened immune systems should also be assessed early.

Seek emergency help for:

A fever and chills shortly after the first antibiotic dose may be a Jarisch-Herxheimer reaction. Follow the monitoring and emergency instructions given with treatment, especially if symptoms are intense or include breathing difficulty or faintness.

- Difficulty breathing, blue or grey lips, or severe chest pain
- Confusion, fainting, a seizure, or difficulty waking
- A severe headache with a stiff neck
- Signs of shock, such as cold clammy skin, extreme weakness, or collapse
- Uncontrolled bleeding or vomiting blood
- Facial or throat swelling after an antibiotic

Common questions

Why does the fever keep coming back?

The bacteria can change proteins on their surface. After your immune system controls one version, a different version may multiply and cause another fever episode. Antibiotics are used to clear the infection rather than waiting for each episode to pass.

Is relapsing fever the same as Lyme disease?

No. Both are caused by Borrelia bacteria, and some forms are spread by ticks, but they involve different bacterial species and often cause different symptoms. Hard tick relapsing fever can occur in areas where Lyme disease is found.

Can I catch relapsing fever from another person?

Ordinary contact does not spread it. Tick-borne forms require a bite from an infected tick. Louse-borne infection involves infected body lice and bacteria entering through damaged skin or the eyes. It is not spread by coughing, sharing meals, or touching intact skin.

Can a tick bite cause relapsing fever without leaving a mark?

Yes. Soft ticks feed quickly, often while a person is asleep, and may leave no obvious mark. Hard ticks can also be small and difficult to see. Not remembering a bite does not rule out the infection.

Will relapsing fever go away without antibiotics?

Fever episodes may stop for a time, but the infection can return or cause complications. Antibiotic treatment is used to clear the bacteria. Repeated fever or a relevant exposure should be medically assessed.

How soon will I feel better after treatment?

The fever may improve quickly, but fatigue and weakness can last longer. Some people temporarily feel worse after the first antibiotic dose because of a Jarisch-Herxheimer reaction. Recovery takes longer when the infection has affected major organs or the nervous system.

Sources

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