CONDITION

Group B streptococcal septicemia of the newborn

A serious newborn bloodstream infection caused by group B Streptococcus bacteria.

WHAT IT IS
Newborn bloodstream infection causing sepsis

BODY SYSTEM
Blood and circulation, sometimes lungs and nervous system

MAIN SYMPTOMS
Poor feeding, sleepiness, temperature changes, breathing difficulty

WHAT CAUSES IT
Infection with group B Streptococcus bacteria

HOW IT IS DIAGNOSED
Blood culture, with spinal fluid culture when needed

MAIN TREATMENT
Immediate intravenous antibiotics and hospital supportive care

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

IS IT AN EMERGENCY?
Yes - all suspected cases need immediate hospital care

LONG-TERM OUTLOOK
Many recover; meningitis may cause lasting disabilities

Overview

Group B streptococcal septicemia is a serious infection in a newborn's blood. It is caused by group B Streptococcus , often shortened to group B strep or GBS.

"Septicemia" is an older term for a bloodstream infection. Healthcare teams now often use terms such as GBS bloodstream infection, bacteremia, or sepsis. Sepsis means that the body is having a harmful, widespread response to an infection. It can affect breathing, blood pressure, and the function of major organs.

GBS commonly lives in the bowel or vagina of healthy adults without causing symptoms. This is called colonization. A baby may be exposed to the bacteria around birth, but only a small proportion of exposed babies develop an infection.

GBS infection in newborns is grouped by when it begins:

Early-onset infection is often linked to exposure before or during birth. Late-onset infection can come from a parent, another person, or the baby's surroundings, and the exact source is often unknown.

This condition requires urgent hospital treatment. Antibiotics like amoxicillin or doxycycline can clear the infection, but treatment needs to begin quickly because newborns can become unwell over a short period.

- Early-onset disease develops during the first 6 days after birth, often within the first day
- Late-onset disease develops from 7 through 89 days of age

Symptoms

The symptoms of GBS septicemia can be subtle. A newborn may not have all the expected signs of infection, and fever is not always present.

Possible symptoms include:

Early-onset GBS infection commonly causes breathing problems. It may resemble other newborn conditions, including pneumonia or problems related to premature birth.

Late-onset infection may cause fever, poor feeding, sleepiness, or irritability. It is more likely than early-onset disease to occur with meningitis, which is infection and inflammation around the brain and spinal cord. A newborn with meningitis may be very difficult to wake, have seizures, or develop a bulging soft spot on the head. However, these signs are not always present.

- Feeding poorly or refusing feeds
- Being unusually sleepy, difficult to wake, floppy, or less responsive
- Irritability or persistent, unusual crying
- Fast, noisy, or difficult breathing
- Pauses in breathing, called apnea
- Pale, blotchy, blue, or grey skin
- A high or unusually low temperature
- Vomiting or a swollen abdomen
- Fewer wet diapers

- A fast or unusually slow heart rate
- Seizures or abnormal jerking movements

Causes and risk factors

The direct cause is infection with GBS bacteria. The bacteria may enter the baby's blood and sometimes spread to the lungs, brain, joints, bones, or other tissues.

For early-onset disease, bacteria usually pass from a pregnant person to the baby shortly before or during birth. This can happen even when the pregnant person feels well and has no symptoms.

Factors linked with a higher chance of early-onset infection include:

Having a risk factor does not mean that a baby will develop GBS infection. Babies can also become infected when no risk factor was known.

The source of late-onset GBS is often less clear. Babies may encounter the bacteria from close contacts or the environment. Premature babies and babies who have needed prolonged hospital care may be more vulnerable, but late-onset disease can also occur in healthy, full-term babies.

GBS colonization is not considered a sexually transmitted infection. It may come and go naturally, and it is not a sign of poor hygiene.

- GBS found during the pregnancy
- GBS bacteria found in urine during pregnancy
- A previous baby who developed GBS disease
- Birth before 37 weeks of pregnancy
- A long period between the waters breaking and birth
- Fever during labor
- Infection of the membranes and fluid around the baby

Diagnosis

A newborn with possible sepsis is assessed urgently in hospital. The team will examine the baby's breathing, circulation, temperature, alertness, feeding, and hydration.

A blood culture is the main test used to confirm GBS in the bloodstream. A blood sample is

placed in special equipment that checks whether bacteria grow. Identifying the bacteria also helps the team choose the most suitable antibiotic.

Because cultures take time, treatment usually starts before the final result is available. A negative culture does not always rule out infection, especially if antibiotics were given before the sample was collected.

Other tests may include:

A lumbar puncture uses a needle in the lower back to collect a small amount of the fluid surrounding the brain and spinal cord. It may be delayed if the baby is too unwell for the procedure to be done safely.

Blood counts and inflammation markers can support the assessment, but they do not confirm GBS septicemia on their own.

- Blood tests for inflammation, blood cell counts, glucose, and organ function
- A lumbar puncture to test spinal fluid for meningitis
- A chest X-ray if pneumonia or breathing disease is suspected
- Urine culture, particularly in some babies with late-onset infection
- Cultures from another suspected infection site

Treatment and management

Suspected newborn sepsis is treated in hospital as an emergency. Antibiotics are given through a vein as soon as the necessary cultures have been collected, provided that collecting samples does not delay urgent care.

At first, doctors usually use antibiotics that cover GBS and other bacteria that can cause newborn infection. Treatment may be changed when culture results identify the organism. If tests and the baby's progress make infection unlikely, the team may stop antibiotics after clinical review.

The length of treatment is based on where the infection is, the culture results, and how the baby responds. Infection limited to the bloodstream generally needs a different treatment course from meningitis, bone infection, or joint infection.

Some babies need care in a neonatal or pediatric intensive care unit. Supportive treatment may include:

Parents can usually still be involved in comfort, feeding, expressing breast milk, and skin-to-skin care when the clinical team considers it safe. Breastfeeding does not usually need

to stop because of GBS, although feeding plans may change temporarily if the baby is too unwell to feed normally.

- Oxygen or mechanical help with breathing
- Fluids and nutrition through a vein
- Treatment to support blood pressure and circulation
- Careful control of blood glucose and body temperature
- Medicines for seizures
- Monitoring of urine output and organ function

Complications

GBS septicemia can interfere with blood flow and oxygen delivery to the body. Possible complications include shock, breathing failure, abnormal blood clotting, and injury to organs such as the brain, kidneys, or heart.

The infection may also spread and cause:

Some babies die despite treatment. The risk is generally greater in very premature babies and in babies with severe sepsis, shock, or meningitis.

Many surviving babies recover without an obvious long-term problem. Lasting effects are more likely after meningitis or significant brain injury. These may include hearing loss, movement difficulties, seizures, vision problems, or delays in learning and development. The range is wide, and an individual baby's outcome cannot be predicted from the diagnosis alone.

- Meningitis
- Pneumonia
- Bone or joint infection
- Local collections of infection
- Seizures

Prevention

Not every case can be prevented.

Many maternity systems offer GBS testing during pregnancy or use risk factors during labor to decide who should receive preventive antibiotics. Practices differ between countries.

When GBS is identified or certain risk factors are present, antibiotics given through a vein during labor can greatly reduce the chance of early-onset GBS disease. Antibiotics taken by mouth before labor do not reliably remove colonization or provide the same protection.

Antibiotics during labor do not prevent every early-onset infection. They also have not been shown to prevent late-onset GBS disease.

After birth, routine handwashing before handling a young baby helps reduce the spread of many infections. People with fever, vomiting, diarrhea, cold sores, or respiratory symptoms should avoid close contact with a newborn until appropriate.

There is no evidence that routine separation from a healthy GBS-colonized parent prevents late-onset disease. Breastfeeding is generally encouraged and is not routinely stopped because a parent carries GBS.

Living with it and what to expect

During the first days of treatment, the healthcare team closely watches the baby's breathing, circulation, feeding, alertness, and blood test results. Improvement may occur after antibiotics begin, but recovery time differs. Premature babies or babies with complications may need a longer hospital stay.

Before discharge, the team will explain feeding plans, medicines if any are still needed, and follow-up. A baby recovering from an uncomplicated bloodstream infection may only need routine medical and developmental checks. Follow-up is more structured after meningitis, seizures, organ injury, or a long intensive care stay.

Hearing checks are particularly important after bacterial meningitis. Developmental assessments can identify early changes in movement, communication, hearing, vision, or learning. Early support may help if a difficulty becomes apparent.

Over the following months and years, many children grow and develop as expected. Others have ongoing needs related to hearing, movement, seizures, or development. Some effects may not be clear during the newborn period, so attending recommended follow-up remains important even when a baby appears well.

Having GBS infection once does not guarantee lifelong immunity. Recurrent invasive GBS infection is uncommon but can occur. A new fever or other signs of illness still need prompt assessment.

When to get medical help

Possible sepsis in a newborn is an emergency. Do not wait for a routine appointment if a baby under 3 months has a temperature of 38°C or higher, feels unusually cold, feeds poorly, is much sleepier than normal, or develops breathing changes. Seek urgent medical assessment even if the symptoms seem mild.

Call emergency services now if a baby:

After hospital discharge, routine follow-up is used to check growth, feeding, hearing, and development. Contact the follow-up team sooner if feeding worsens, expected skills are lost, movements seem unusual, or there are concerns about hearing or vision. These concerns are important but are different from the emergency signs above.

- Has severe difficulty breathing or repeated pauses in breathing
- Has blue, grey, or very pale skin
- Is floppy, unresponsive, or cannot be woken
- Has a seizure
- Appears to be rapidly getting worse

Common questions

Is group B strep septicemia contagious?

GBS bacteria can pass between people, but invasive bloodstream infection is not usually described as contagious in the same way as a cold or flu. Most adults who carry GBS are healthy. Good hand hygiene is sensible, especially around newborns, but affected babies do not usually need to be separated from their parents solely because of GBS.

Did the baby get GBS because someone did something wrong?

Usually not. GBS can naturally live in the body without symptoms, and colonization may not have been known. Infection can happen even when pregnancy care and prevention measures were followed correctly.

Can a baby get GBS even after antibiotics during labor?

Yes. Antibiotics during labor lower the chance of early-onset infection but cannot remove the risk completely. They do not reliably prevent late-onset disease.

Can I breastfeed after my baby has had GBS sepsis?

Usually, yes. Expressed milk may be used if the baby cannot feed directly while unwell. In unusual situations, such as recurrent infection, the clinical team may investigate possible sources and discuss a temporary feeding plan.

Will my baby have long-term problems?

Many babies recover fully, particularly when infection is recognized and treated promptly. Long-term effects are more likely after meningitis, seizures, shock, extreme prematurity, or brain injury. Follow-up checks help identify concerns that may not be visible at discharge.

Can GBS infection come back?

It can recur, although this is uncommon. Previous infection does not make a new fever safe to observe at home. A baby under 3 months with fever or signs of illness needs urgent medical assessment.

Sources

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