CONDITION

Low blood sugar - newborns

Low blood sugar in newborns means a baby's blood glucose falls below the level considered safe for their age and circumstances.

WHAT IT IS
Abnormally low blood glucose during the newborn period

BODY SYSTEM
Blood sugar regulation and nervous system

MAIN SYMPTOMS
Jitteriness, poor feeding, sleepiness, seizures

WHAT CAUSES IT
Delayed adaptation, excess insulin, illness, or metabolic disorders

HOW IT IS DIAGNOSED
Repeated glucose testing, with laboratory confirmation

MAIN TREATMENT
Feeding, glucose gel, or intravenous glucose

CAN IT BE CURED?
Sometimes - transient cases resolve; disorders persist

IS IT AN EMERGENCY?
Sometimes - seizures, breathing trouble, or unresponsiveness

LONG-TERM OUTLOOK
Usually good; severe prolonged episodes can harm the brain

Overview

Glucose is a type of sugar and the body's main source of energy. A newborn's brain depends heavily on it. Low blood sugar in a newborn is called neonatal hypoglycaemia .

Before birth, glucose passes from the pregnant person's bloodstream through the placenta. After birth, that supply stops. The baby must begin using stored energy and getting glucose from milk. Blood glucose normally falls for a short time during this adjustment.

Some babies have a lower or longer-lasting fall than expected. This may happen because they have limited energy stores, use glucose quickly, or continue making too much insulin. Insulin is the hormone that moves glucose out of the bloodstream and into cells.

There is no single glucose number that defines every case. The level that needs action can

depend on the baby's age in hours, symptoms, medical history, and whether the result is repeated. Hospitals also use somewhat different protocols. A low reading therefore needs to be interpreted by the newborn care team rather than considered on its own.[1-4]

Most newborn episodes are temporary and improve with feeding or glucose treatment. Persistent or repeated low readings can occasionally point to an underlying hormone, insulin, or metabolic condition. Prompt recognition matters because severe or prolonged hypoglycaemia can affect the brain.

Symptoms

Many newborns with low blood sugar have no visible symptoms. This is why babies with known risk factors may be tested even when they appear well.

When symptoms occur, they can include:

These signs are not specific to low blood sugar. Infection, breathing problems, low calcium, and other newborn conditions can look similar. A glucose test is needed to find out whether hypoglycaemia is present.

Jitteriness is not always a seizure. A jittery baby's movements may stop when the limb is gently held, while seizure movements may continue. Any suspected seizure in a newborn needs emergency assessment.

- Shaking or jitteriness
- Weak sucking, poor feeding, or refusing feeds
- Unusual sleepiness, limpness, or difficulty waking
- A weak or high-pitched cry
- Low body temperature
- Fast, irregular, or paused breathing
- Pale or bluish skin
- Seizures

Causes and risk factors

Low blood sugar often results from the newborn's difficulty adapting to life outside the womb. It is more likely when the baby's glucose needs are high, their energy stores are limited, or insulin remains unusually active.

Babies commonly screened for hypoglycaemia include those who:

When diabetes is present during pregnancy, the baby may make extra insulin in response to the glucose reaching them before birth. After the cord is cut, that glucose supply ends, but the baby's insulin can remain high for a time.

A small or premature baby may have less stored fat and glycogen. Glycogen is stored glucose that the liver can release between feeds. These babies may also tire quickly while feeding.

Less common causes include congenital hyperinsulinism, in which the pancreas releases too much insulin, and disorders affecting hormones, the liver, or the way the body processes nutrients. These conditions are more likely to be considered when hypoglycaemia is severe, needs substantial treatment, or continues beyond the first few days.[2,5]

- Were born early, especially late-preterm babies
- Are smaller than expected for their stage of pregnancy
- Are larger than expected for their stage of pregnancy
- Were exposed to diabetes during pregnancy
- Became unwell or stressed around birth
- Have difficulty staying warm or feeding
- Need treatment for breathing problems or infection

Diagnosis

A small blood sample is usually taken from the baby's heel and checked with a bedside glucose meter. Screening may begin soon after birth and continue before feeds until readings remain within the hospital's target range.

Bedside meters give quick results, but they can be less accurate at very low glucose levels. An unexpectedly low result is often confirmed using a laboratory blood test. If a baby has serious symptoms, treatment should not be delayed while waiting for confirmation.[1-4]

Doctors assess more than the number. They consider:

A baby with ongoing or unexplained hypoglycaemia may need additional blood and urine tests. When possible, some samples are collected while the glucose is low. These can measure insulin, ketones, fatty acids, cortisol, growth hormone, and substances linked to metabolic disorders. The results help show whether the baby is making and using stored energy normally.[2,5]

- The baby's age when the sample was taken
- Whether symptoms are present
- How low the reading is
- Whether glucose improves after feeding or treatment
- Whether low readings keep returning

Treatment and management

Treatment aims to raise glucose safely while supporting feeding and keeping the baby warm. The approach depends on the glucose result, symptoms, age, and risk factors.

A well baby with a mildly low reading may be fed promptly. Depending on the circumstances, this may be breastfeeding, expressed breast milk, donor milk, or infant formula. Feeding support can help with positioning, attachment, expressing milk, and waking a sleepy baby for feeds.

Some hospitals use dextrose gel for certain newborns. Dextrose is another name for glucose. The gel is rubbed inside the baby's cheek and followed by a feed. It can raise glucose while allowing many babies to stay with their parent, but it must be used under a newborn care protocol.[3,4,6]

A baby with symptoms, a very low result, or readings that do not improve may need glucose through a vein. This is called intravenous, or IV, glucose. The amount is adjusted using repeated blood tests. Feeding may continue when it is safe.

The care team will usually keep checking glucose until the baby maintains safe levels through several feed-and-fast cycles. IV glucose is reduced gradually rather than stopped suddenly.

Persistent hypoglycaemia may require specialist care. Treatment then focuses on the cause and may include medicines that reduce insulin release, hormone replacement, a specialised feeding plan, or, rarely, surgery for severe congenital hyperinsulinism.[2,5] These decisions are made by neonatal and paediatric endocrine teams.

Complications

The brain needs a steady energy supply. Severe, prolonged, or frequently repeated hypoglycaemia can cause seizures or brain injury. Some affected children later have difficulties with movement, vision, learning, or development.

The risk cannot be predicted from one glucose reading alone. It is influenced by how low the glucose falls, how long it remains low, whether episodes recur, whether symptoms occur, and whether the baby has another illness. Research has not established that every brief, symptom-free low reading causes long-term harm.

Treatment can also affect the early newborn experience. Babies needing IV therapy may require admission to a neonatal unit or temporary separation from their parent. Feeding and skin-to-skin contact are supported whenever medically safe.

Prevention

Not every episode can be prevented. Prematurity, poor growth before birth, congenital hyperinsulinism, and inherited metabolic disorders are not caused by anything a parent did after delivery.

Good management of diabetes during pregnancy may reduce some risks, but it does not remove the need for newborn screening when indicated.

After birth, measures that support stable glucose include keeping the baby warm, providing skin-to-skin contact when safe, starting feeds early, and feeding often enough for the baby's needs. Babies with risk factors should be screened according to the hospital's newborn protocol.

If feeding is difficult, early help with breastfeeding, expressing milk, or an alternative feeding plan may prevent long gaps without nutrition. Formula or glucose gel is not routinely needed by every newborn; its use depends on the baby's results and clinical circumstances.

Living with it and what to expect

For most babies, low blood sugar is part of the first hours or days of adapting after birth. Once feeding is established and glucose readings stay stable, testing can stop. Most of these babies do not need treatment after leaving hospital.

Before discharge, the care team may check that the baby can maintain glucose between feeds. They may also review feeding, weight, temperature, and any remaining medical concerns.

Routine follow-up usually focuses on feeding and growth. A baby who had severe symptoms, repeated episodes, or an identified underlying disorder may need developmental checks and follow-up with neonatal, endocrine, metabolic, dietetic, or other specialist services.

Persistent hypoglycaemia has a different course. Some causes improve over weeks or

months, while inherited insulin or metabolic conditions may need long-term treatment. Families may be taught how to manage feeds, recognise symptoms, check glucose, or use an emergency plan. The exact routine is based on the diagnosed cause.

Most babies treated promptly for a short-lived episode recover fully. No individual outcome can be promised, especially after severe or prolonged hypoglycaemia. Keeping scheduled growth and developmental reviews helps identify any concerns early.

When to get medical help

While your baby is in hospital, tell the newborn care team immediately if your baby becomes unusually shaky, cold, difficult to wake, or unable to feed. Do not wait for the next planned glucose check.

Seek urgent medical assessment for a newborn who:

Call emergency services if your baby has a seizure, becomes unresponsive, turns blue, has serious breathing difficulty, or has repeated pauses in breathing. If you have been given an emergency hypoglycaemia plan, follow it while help is being arranged.

Symptoms in a newborn can worsen quickly and may have causes other than low blood sugar. A home glucose result should not delay emergency care for a baby with serious symptoms.

- Is feeding much less than usual or repeatedly cannot finish feeds
- Is unusually sleepy, floppy, jittery, or difficult to wake
- Has repeated vomiting or seems increasingly unwell
- Has an abnormally low temperature
- Has known hypoglycaemia and readings below the baby's discharge plan

Common questions

Is low blood sugar common in newborns?

A brief fall in glucose is part of normal adjustment after birth. Clinically important hypoglycaemia is more likely in premature, unusually small or large, unwell babies and babies exposed to diabetes during pregnancy. Not every healthy newborn needs routine testing.

Does low blood sugar mean my baby has diabetes?

Usually not. Diabetes causes high blood sugar, not low blood sugar. A baby born after a pregnancy affected by diabetes may have temporary hypoglycaemia because their insulin

remains high after birth.

Can breastfeeding cause low blood sugar?

Breastfeeding itself does not cause hypoglycaemia. Risk can increase if a vulnerable baby cannot take or transfer enough milk, especially during the first days. Feeding support, expressed milk, donor milk, formula, glucose gel, or IV glucose may be used according to the baby's needs.

How long does newborn low blood sugar last?

Temporary episodes often settle during the first one to three days as feeding and glucose regulation improve. Low readings that persist, return frequently, or require substantial glucose support may need investigation for an underlying condition.

Will low blood sugar affect my baby's brain?

Severe, prolonged, or recurrent hypoglycaemia can injure the brain, but a brief low reading does not automatically mean harm has occurred. The overall risk is based on the pattern of readings, symptoms, other illnesses, and response to treatment.

Can low blood sugar come back after leaving hospital?

Temporary hypoglycaemia is unlikely to return once a baby maintains stable readings and feeds reliably. Babies with persistent conditions may remain at risk and should leave hospital with a specific feeding, monitoring, and emergency plan.

Sources

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