CONDITION

Congenital cytomegalovirus

Congenital cytomegalovirus is an infection passed to a baby before birth that can affect hearing, growth, vision, or development.

WHAT IT IS
Cytomegalovirus infection acquired before birth

BODY SYSTEM
Hearing, nervous system, eyes, liver, blood, and growth

MAIN SYMPTOMS
Hearing loss, jaundice, small head, poor growth

WHAT CAUSES IT
Viral infection during pregnancy

HOW IT IS DIAGNOSED
Saliva PCR confirmed by urine PCR within three weeks

MAIN TREATMENT
Antiviral therapy, hearing care, and developmental support

CAN IT BE CURED?
No - virus remains lifelong after infection

IS IT AN EMERGENCY?
Sometimes - seizures or severe breathing difficulty

LONG-TERM OUTLOOK
Often healthy, but hearing or developmental effects may emerge

Overview

Congenital cytomegalovirus, often shortened to congenital CMV, happens when cytomegalovirus passes to a developing baby during pregnancy. "Congenital" means present from birth.

CMV is a common virus in the herpesvirus family. After infection, it stays inactive in the body and can sometimes become active again. In healthy children and adults, CMV usually causes no symptoms or a mild illness. Its effects can be more important when infection occurs before birth.

Many babies with congenital CMV appear healthy at birth. Others have signs affecting their growth, liver, blood, brain, hearing, or vision. Even when there are no early signs, hearing loss or developmental differences can occasionally appear later.

Early testing matters because congenital CMV can only be confirmed reliably during the first three weeks after birth. It also allows hearing, vision, development, and treatment needs to be assessed promptly.

Symptoms

Most babies with congenital CMV have no obvious symptoms when they are born. A baby who looks healthy can still have the infection.

Possible signs at birth include:

Blood tests may show a low platelet count, which can contribute to bruising or skin spots. Liver tests may also be abnormal. Brain imaging may show changes such as calcium deposits, enlarged fluid spaces, or differences in brain development.

Some effects are not noticeable until later. These may include:

CMV-related hearing loss may be present at birth, or it may develop months or years later. It can remain stable, worsen, or change over time.

- Yellow skin or eyes, called jaundice
- Small red or purple spots caused by bleeding under the skin
- A smaller-than-expected head, called microcephaly
- Low birth weight or poor growth before birth
- An enlarged liver or spleen
- Feeding difficulty, unusual sleepiness, or weak muscle tone
- Seizures
- Hearing or vision problems
- Hearing loss in one or both ears
- Speech or language delay
- Difficulty with movement, balance, learning, or coordination
- Vision loss
- Seizures or cerebral palsy in more seriously affected children

Causes and risk factors

Congenital CMV is caused by CMV crossing the placenta during pregnancy. The placenta is the organ that supplies the developing baby with oxygen and nutrients.

A pregnant person may acquire CMV for the first time, experience a new strain of the virus, or have an earlier infection become active again. Previous CMV infection does not provide complete protection, although the chance of serious fetal effects is generally greater with a first infection during pregnancy.

CMV spreads through body fluids, including saliva, urine, blood, semen, vaginal fluids, and breast milk. Young children commonly carry and shed the virus without appearing unwell. Frequent contact with their saliva or urine can increase exposure during pregnancy.

Factors linked with exposure include:

A maternal CMV infection does not always pass to the fetus. When transmission happens, it does not always cause health problems. More serious effects are more likely when fetal infection occurs earlier in pregnancy, although infection later in pregnancy can also affect the baby.

CMV acquired during birth or through breast milk is called postnatal CMV, not congenital CMV. This distinction matters because the expected effects and approach to testing are different.

- Living with or caring for young children
- Sharing food, cups, utensils, or toothbrushes
- Kissing a young child on or near the mouth
- Sexual contact with someone shedding CMV
- Working in settings with close contact with young children

Diagnosis

Congenital CMV is confirmed by finding the virus in a baby's saliva, urine, or blood within the first 21 days after birth. Polymerase chain reaction, or PCR, is the usual test. PCR detects the virus's genetic material.

A saliva test is convenient for screening. A positive result is normally confirmed with a urine PCR test. This helps rule out contamination of the saliva sample by CMV in breast milk.

Testing after three weeks cannot usually show whether the infection happened before or after birth. A stored newborn blood spot may sometimes help with a later diagnosis, but this test can miss congenital CMV. A negative stored blood spot therefore does not reliably rule it out.

Testing may be offered when a baby:

Screening policies differ by location. Not passing a hearing screen does not mean a baby has CMV or permanent hearing loss, but follow-up should happen promptly enough to allow CMV testing within the first three weeks.

After confirmation, the care team may arrange blood and urine tests, a detailed hearing assessment, an eye examination, and brain imaging. These tests look for effects that may not be obvious during a routine newborn examination.

During pregnancy, maternal blood tests can show recent or past CMV infection, but interpreting them can be complicated. Testing amniotic fluid with PCR can identify fetal infection in some circumstances. Ultrasound and MRI may look for fetal changes, but normal imaging cannot guarantee that hearing or developmental effects will not occur.

- Has signs that could be caused by congenital CMV
- Does not pass the newborn hearing screen
- Has certain findings on prenatal ultrasound
- Is identified through a routine or targeted newborn screening program

Treatment and management

Not every baby with congenital CMV needs antiviral medicine. Treatment decisions are based on symptoms, examination findings, test results, the baby's age, and the balance between possible benefits and side effects.

A specialist may recommend the antiviral medicine valganciclovir for a newborn with significant CMV-related symptoms, particularly when the brain, hearing, eyes, liver, blood, or several organs are affected. Ganciclovir may be given through a vein when oral treatment is not suitable.

Antiviral treatment does not remove CMV from the body. In eligible symptomatic infants, it may improve hearing and developmental outcomes, but it cannot reverse every change that occurred before birth. Evidence is less certain for babies whose only finding is hearing loss, and treatment practices in that situation are not uniform.

These medicines can lower infection-fighting white blood cells and may affect the liver or kidneys. Babies receiving them need regular blood tests and specialist follow-up. Treatment should not be started, stopped, or changed without the prescribing team.

Ongoing management may include:

Babies without symptoms usually do not receive antiviral medicine, but follow-up remains important because hearing changes can appear later.

- Repeat hearing tests
- Hearing aids or cochlear implant assessment
- Speech and language therapy
- Physical or occupational therapy
- Feeding and nutrition support
- Vision care
- Treatment for seizures or other specific complications
- Early childhood developmental services

Complications

Hearing loss is the most common long-term effect. It may affect one or both ears and may develop even after a baby passes the newborn hearing screen. Early recognition supports language development and access to hearing technology when needed.

Children who were seriously affected before birth may have:

The likelihood of these complications is higher when a baby has several symptoms or abnormal brain findings at birth. However, early test results cannot predict every child's course with certainty.

Congenital CMV does not automatically mean that a child will have a disability. Many children, especially those without symptoms at birth, continue to grow and develop typically.

- Delayed movement, speech, or learning
- Cerebral palsy, which affects movement and posture
- Epilepsy
- Feeding or swallowing difficulties
- Reduced vision
- Ongoing poor growth
- Differences in head or brain growth

Prevention

Congenital CMV cannot always be prevented. There is currently no licensed vaccine, and

having had CMV before does not give complete protection against reinfection or reactivation.

During pregnancy, reducing contact with saliva and urine from young children may lower the chance of acquiring CMV. Practical steps include:

These steps reduce risk but cannot remove it completely. CMV exposure is common and is not a sign that anyone has done something wrong.

There is no established treatment that guarantees prevention of fetal infection after CMV is acquired during pregnancy. If testing suggests a recent infection, specialist assessment can clarify whether further testing or fetal monitoring may be useful.

- Washing hands with soap and water after changing nappies, helping with toileting, or wiping a child's nose
- Washing hands after handling toys or objects covered in saliva
- Not sharing cups, food, utensils, or toothbrushes with young children
- Kissing young children on the forehead or cheek rather than the mouth
- Cleaning surfaces that come into contact with urine or saliva
- Using barrier protection during sex when CMV exposure is a concern

Living with it and what to expect

The outlook is different for each child. Babies who have no symptoms at birth often remain well, although some later develop hearing loss. Children with significant symptoms at birth are more likely to need long-term hearing, vision, movement, learning, or feeding support.

Follow-up usually focuses on hearing and development. Hearing assessments continue beyond the newborn period because CMV-related hearing loss can appear or change later. Developmental reviews look at movement, communication, play, learning, feeding, and social skills.

If a difference is found, early support can help a child build skills and communicate. This might include hearing technology, sign language, spoken-language support, therapy, or educational adjustments. The right approach depends on the child and family.

CMV remains in the body for life. Young children with congenital CMV may shed the virus in saliva and urine for months or years. They can generally take part in family life, childcare, school, and community activities. Ordinary social contact does not need to be restricted.

Pregnant people and anyone who could become pregnant should take extra care around saliva and urine. Consistent handwashing is more useful than isolating the child.

Some children need only hearing checks and routine developmental observation. Others have complex needs and benefit from coordinated medical, therapy, educational, and family support over many years. The care plan can change as the child grows and new strengths or needs become clearer.

When to get medical help

Arrange prompt medical advice if a newborn has jaundice, unexplained red or purple skin spots, feeding problems, unusual sleepiness, poor weight gain, or abnormal movements.

If a baby does not pass the newborn hearing screen, arrange the recommended follow-up without delay. When congenital CMV testing is appropriate, the sample needs to be collected within the first 21 days to confirm that infection occurred before birth.

For a child with confirmed congenital CMV, contact the care team if you notice:

These concerns need timely assessment but are not always emergencies.

Call emergency services if a baby or child:

- Less response to voices or everyday sounds
- Loss of words or developmental skills
- New problems with balance, movement, feeding, or vision
- Unusual staring episodes or repeated jerking movements
- Fever or signs of infection while taking antiviral medicine
- Has a seizure lasting several minutes or repeated seizures without recovering
- Has severe difficulty breathing
- Becomes blue, very pale, unresponsive, or unusually difficult to wake
- Shows signs of severe dehydration, such as very few wet nappies with marked drowsiness

Common questions

Can a baby have congenital CMV and look healthy?

Yes. Many babies with congenital CMV have no visible signs at birth. Some remain healthy, while others develop hearing loss later. This is why continued hearing follow-up may be advised even after a normal newborn hearing screen.

Does a positive CMV test mean my child will have a disability?

No. A positive test confirms infection, but it does not predict the outcome by itself. Symptoms at birth, hearing tests, eye examinations, brain imaging, and development over time provide more information. Some children have no lasting effects.

Is congenital CMV contagious?

The child may shed CMV in saliva and urine. The virus can spread to other people, but it rarely causes serious illness in healthy children or adults. Careful handwashing is particularly important for pregnant people and those planning pregnancy.

Can my child attend childcare or school?

Usually, yes. Children with congenital CMV do not generally need to be excluded from childcare or school. Staff should follow routine hygiene practices for nappies, toileting, saliva, and shared surfaces.

Did I cause my baby's congenital CMV?

No. CMV is common, usually causes no symptoms, and can spread during ordinary contact. Even careful hygiene cannot prevent every infection. A congenital CMV diagnosis is not evidence that a parent did something wrong.

Will congenital CMV affect a future pregnancy?

Having had CMV before does not mean a future baby will have congenital CMV. The virus can reactivate or a different strain can cause reinfection, but fetal transmission does not happen in every pregnancy. A maternity clinician can help interpret previous test results and discuss testing in a future pregnancy.

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