



My Baby has Congenital CMV Disease: The Newborn

Editor's note. This article is part of a series of articles to provide practical information for parents, physicians, and other health care professionals caring for infants and children with congenital CMV infection and disease. This first article will explain the symptoms of congenital CMV infection in the newborn and provide suggestions for specialty consultations, laboratory tests, and imaging studies that may be helpful. Subsequent articles will focus on age-specific, long-term, follow-up issues, including nutrition, development, vision, hearing, education and social issues. Reprints of the articles in this series can be obtained from The National Congenital CMV Disease Registry.

How common is congenital CMV infection?

Of the estimated 4 million births annually in the United States, approximately one percent of these babies will be born with a congenital CMV infection, making it the most common congenital infection in humans. About ten percent of congenitally infected babies will be symptomatic (have symptoms) at birth, and many will suffer some kind of permanent disability. The remaining ninety percent of congenitally infected babies will be asymptomatic (have no symptoms) and appear normal at birth. However, up to fifteen percent of these infants who appear symptom-free at birth may have permanent disabilities, the most common of which is progressive hearing loss.

What are the signs and symptoms of congenital CMV disease?

Signs and symptoms of congenital CMV infection that can be observed at birth include microcephaly (small head size), small for gestational age (small body

size), petechiae (little red spots under the skin), purpura (larger purple spots under the skin), hepatosplenomegaly (enlarged liver and spleen), jaundice (yellow color of skin and eyes), thrombocytopenia (low count of platelets in blood), pneumonia, seizures, hyper- or hypotonia (abnormally high or low muscle tone), intracranial calcifications (calcium deposits in the brain), chorioretinitis (inflammation of the back of the eye that can cause blindness), and deafness. Your baby may have one or more than one of these signs or symptoms.

How do you make the diagnosis of congenital CMV infection or disease?

The diagnosis of congenital CMV infection is confirmed by isolating (growing) the virus from urine, saliva, blood, or tissue that is collected during the baby's first three weeks of life. Urine usually is tested because it contains the highest concentration of the virus. A positive viral culture collected beyond the three-week period but within the first year of life is considered a possible congenital CMV infection, but also may be an acquired CMV infection from blood transfusions, mother's breast milk or birth canal secretions. If the baby's hospital does not have the capability to grow viruses like CMV, then a urine sample, kept cool at refrigerator temperature, may be sent by mail to a reference laboratory for testing. The use of blood tests, such as CMV IgG and IgM antibody levels, are not recommended for the specific diagnosis of congenital CMV infection because only up to one half of infants with proven congenital CMV infection will have a positive CMV IgM antibody titer, and many newborns will have a positive CMV IgG antibody titer from blood passed to them from their mother and

not actually be congenitally infected with the virus.

When a diagnosis of congenital CMV infection has been made, what type of evaluation is recommended?

As with any newborn, a thorough physical examination by a pediatrician or family physician is advised. The physical examination should note the baby's weight, length, and head size. Up to one-half of babies with congenital CMV disease may be small for their gestational age and the presence of a small head size (microcephaly) suggests the newborn may develop developmental disabilities later. The size of the internal organs, liver and spleen, should be noted. The presence or absence of skin lesions (petechiae or purpura) also should be noted. A thorough neurologic examination to look for abnormalities in muscle tone, as well as the presence of seizures or abnormal newborn reflexes also is an important part of the baby's physical examination. Laboratory tests also should be performed in all infants born with congenital CMV disease. These tests include a complete blood count and platelet count, tests for CMV hepatitis and jaundice (including total and direct bilirubin levels and transaminase levels), and a urine for CMV culture. If there are problems with breathing or respiration, then a chest radiograph (x-ray) may be performed to check for pneumonia or enlarged heart. Other studies that are recommended include an unenhanced CT scan of the head to visualize the brain structures and to detect the presence of calcium deposits (intracranial calcifications) in the brain, a hearing test called an auditory brain stem evoked response (ABER) to detect deafness, and an examination of the eyes by an ophthalmologist (eye doctor) to detect chorioretinitis (inflammation of

the back of the eye) or other abnormalities that can produce vision loss.

Studies that usually do not provide useful or specific information for the routine management of infants with congenital CMV disease include CMV antibody tests on the blood of the newborn or other forms of "TORCH" titers, radiographs (X-rays) of the long bones and skull, or CMV DNA tests such as PCR. Imaging studies of the head such as MRI scans or ultrasound examinations, while useful for many diseases in newborns, are not the most sensitive or specific tests for calcium deposits seen in congenital CMV disease of the brain.

Can congenital CMV infection or disease be treated?

If your baby has serious disease, such as pneumonia, that may cause difficulty breathing, viral sepsis that may cause shock, or bleeding from a very low platelet count, support in a neonatal intensive care unit may be necessary. Treatment for these conditions include mechanical ventilation (breathing machine), extra fluids and medications to support blood pressure, and platelet transfusions.

Most infants with congenital CMV disease, however, are only mildly to moderately ill at birth and do well in a Level II nursery. If your baby has severe jaundice and hepatitis due to CMV, medications may be given to help the liver "clear" the bilirubin levels. If your baby's blood count or platelet count is low, then transfusions may be given. Careful attention should be given to nutritional needs, since many babies with congenital CMV disease are small for gestational age and therefore already malnourished at birth. Clinical research trials are being conducted nationwide to see if specific antiviral treatment with drugs such as ganciclovir helps babies with severe disease at birth due to CMV infection. You or your doctor may contact the National Congenital CMV Disease Registry for the names of participants near you who are conducting these research treatment trials.

Is special isolation required in the hospital since my baby has an infection with a virus?

Standard universal hospital precautions are recommended. Special isolation is not necessary. Since CMV is spread by intimate or close contact with infectious secretions, such as saliva or urine, careful hand washing after exposure to a CMV infected newborn is very important for everyone, but especially for pregnant women.

Study Participants Wanted

Neonates wanted for Congenital CMV Disease Treatment Trial

Babies are still needed for enrollment into the CASG (Collaborative Antiviral Study Group) Phase III Study to evaluate the safety and efficacy of ganciclovir (DHPG). To be considered for enrollment, a baby must present with congenital CMV disease with CNS involvement, be screened for enrollment before 28 days of age, and have a positive CMV culture.

If you are a physician and have a patient to be considered for possible study enrollment, or if you want information on becoming a member of the CASG, please contact Jan Kiell, R.N., at the Central Unit of the CASG.

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INSIDE...

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You are welcome to duplicate this annually printed newsletter. Please direct your questions, comments, or helpful hints to:

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OUTREACH BULLETIN BOARD

CMV Parent Support Network

Did you know that the CMV Registry maintains the National Parent-to-Parent Support Network? The support network is part of the CMV outreach program and is a forum created for parents to share information and concerns, or offer any advice they may have in caring for a child born with congenital CMV infection. Currently, there are more than 125 families who have joined. They represent 36 states, two Canadian provinces, and one family from Japan.

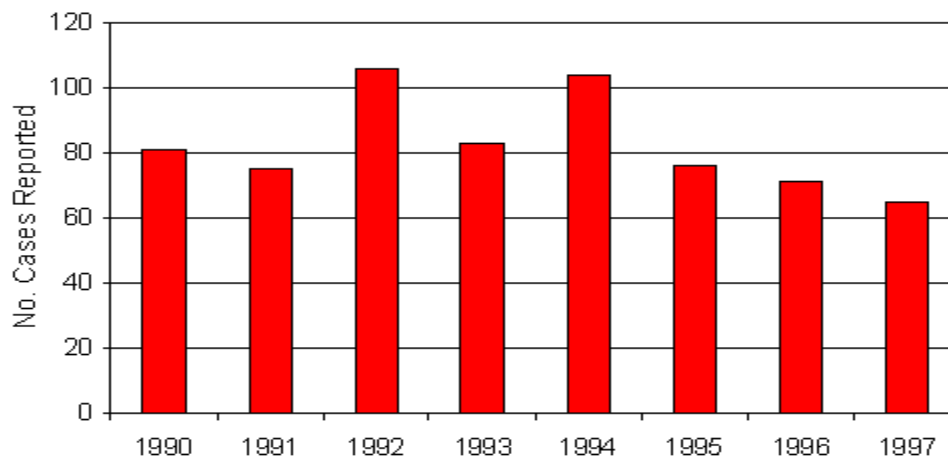
If you are interested in joining the network, either call us or complete the Subscription Form. We will then send you the network permission slip. Please complete the form, sign where indicated and return it to us. After we receive the information on your child, a list of parents on the network will be mailed to you. For those parents presently participating in the network, we ask that you take a few minutes to update the information we have on your child. Please mail, fax, phone, or e-mail the updated information on your child to us and after we receive it, the latest parent support list will be mailed to you.

NEWS FROM THE CMV REGISTRY

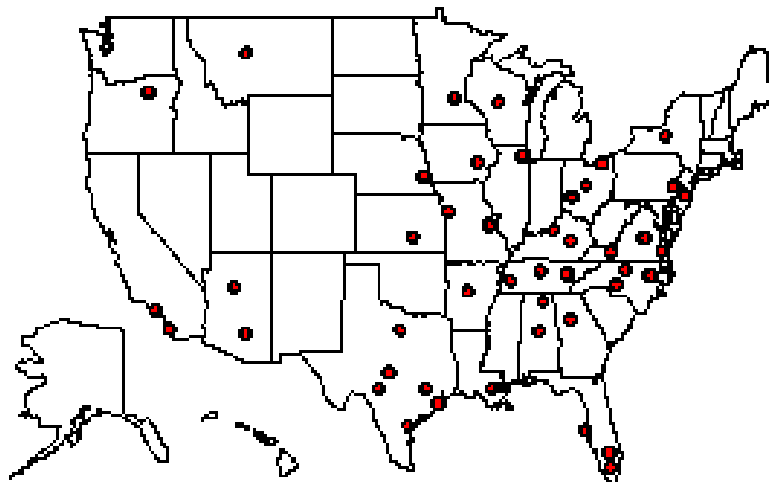
Registry News

The CMV Registry, established in January of 1990, is now over 8 years in existence. There are now 57 participating centers from many different areas of the United States and Canada that have reported 633 cases of congenital CMV disease. The location of these centers is shown in the map. The number of cases reported each year is illustrated in the bar graph.

National Congenital CMV Disease Registry No. Cases Each Year by Birth Date



Location of CMV Registry Participants



OUTREACH BULLETIN BOARD (continued)

Although some year-to-year variation is seen, the number of cases reported annually appears to be declining. It is difficult to determine whether this apparent decline is due to underreporting or an actual decline in the number of cases identified.

The abnormalities of the newborns reported to the CMV Registry to date are shown in the table on this page. The triad of petechiae/ purpura, hepatosplenomegaly, and small for gestation age assessment continue to be the most common reported abnormalities. Microcephaly, intracranial calcifications and sensorineural hearing loss are also rather common. Hemolytic anemia, chorioretinitis, pneumonia and neonatal seizures remain unusual, but significant, abnormalities in reported newborns. The most common reported abnormal laboratory test continues to be a low platelet count. The CMV Registry continues to enroll new cases and we plan a ten-year summary of our experience in the year 2000.

<u>Characteristics</u>	<u>Infants (%)</u>
Petechiae or purpura	337 (55)
Small for gestational age	292 (47)
Thrombocytopenia	311 (53)

Enlarged liver	300 (49)
Enlarged spleen	282 (46)
Intracranial calcifications	238 (44)
Jaundice at birth	229 (38)
Microcephaly	240 (40)
Hearing impairment	174 (43)
Hemolytic anemia	71 (14)
Chorioretinitis	55 (11)
Seizures	52 (9)
Pneumonia	57 (11)
Neurological abnormalities	165 (29)
Bilirubin	231 (42)
ALT	143 (31)

CMV Antibody Titer Testing The Controversy

Whether women who are pregnant or who may become pregnant should have their blood tested for CMV antibody is an issue of great concern and controversy. Antibodies are immune substances (proteins) in the serum and plasma portion of the blood that help fight off and control infection and disease. CMV IgG antibody is made at the time of first (primary) infection and persists throughout life. A positive CMV IgG antibody titer therefore means a person has been infected at some time with CMV. CMV IgM antibody is made early at the time of the first infection with CMV and usually disappears within 12 to 18 weeks (although it may remain elevated for shorter or longer periods in some individuals). A positive CMV IgM antibody titer therefore suggests a person is experiencing a recent primary infection with CMV, which might be of concern to a pregnant woman and her physician. It is possible CMV IgM antibody may be detected in low levels in some individuals experiencing a recurrent CMV infection.

Since most infections with CMV are asymptomatic the only way to determine if a pregnant woman has had a prior CMV infection or is vulnerable to a primary infection is to test her antibody titer. A positive CMV IgG antibody test most likely means she was infected prior to her pregnancy. However, in 1 to 2% of IgG antibody positive pregnant women, the CMV IgM antibody titer may be positive, suggesting she has experienced a recent infection. In this situation, counseling for the mother and father and careful monitoring of the fetus is advisable. Unfortunately, there is no universal marker that CMV has been transmitted to the fetus. If the CMV IgG antibody titer is negative, then the woman is susceptible to catching CMV. Most people will experience a CMV infection some time, but pregnancy is a time when CMV infection should be avoided, if possible. The spread of CMV can be controlled, but perhaps not totally eliminated, by practicing good

hygiene techniques. Precautionary measures that can be taken to control the person-to-person spread of CMV are included in the following table.

While some physicians provide CMV antibody testing either routinely or at the request of their patients, not all health care professionals agree that CMV antibody testing in women who are of childbearing age or pregnant is indicated. It is felt by some that routine CMV antibody testing is not proven to be cost-effective in preventing congenital CMV disease. It also has been suggested that positive CMV IgG and IgM antibody titers may cause unnecessary concern since the optimal management of a pregnant woman experiencing a CMV infection is unclear. Opponents of CMV antibody testing also suggest that the efficacy of the suggested precautionary measures to control the spread of CMV to the pregnant woman are unproven and also can lead to unnecessary concern over an event that cannot be reliably prevented or controlled.

While both sides have valid points, it seems reasonable to provide each woman with the factual information about the pros and cons of CMV antibody testing and allow her to participate in the decision with her health care professional.

**Precautionary measures
that can be taken to control
the spread of CMV infection**

Do wash hands after diaper changes and contact with bodily fluids.

Do not share food, cups, or eating utensils.

Do kiss young children on the hand or give them a big hug

Do not kiss young children on the face or lips

To be added to our mailing list, please send your request to us by the Subscription Form, or by postal mail or e-mail).

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QUESTION AND ANSWER CORNER

Q What is the most common disability associated with congenital CMV infection?

A. It is surprising for some to learn that hearing loss is the most common disability associated with congenital CMV disease. The incidence of hearing loss found in children born with CMV depends on whether the baby was born symptomatically or asymptotically infected with CMV at birth. Approximately 50% of babies born with a symptomatic CMV infection and approximately 15% of babies born with an asymptomatic CMV infection will be born with some degree of hearing loss. Moreover, a further deterioration of their hearing is likely. Children born with an asymptomatic CMV infection are often referred to as having a "silent" CMV infection. A "silent" CMV infection means that a newborn has no signs of the virus at birth, but has a positive CMV culture at birth. Consequently, hearing loss in a "silently infected" child may remain

undetected unless the child has a hearing test performed. A delay in the diagnosis of hearing loss puts the child in jeopardy for developmental, language, speech, and learning difficulties. Therefore, it is recommended that all newborns with congenital CMV infection have a hearing test at birth to identify hearing loss and repeat hearing tests throughout childhood to detect progression.

Q. Is it common for a child born with CMV infection to have seizure disorder?

A. Seizure disorder is an uncommon abnormality associated with congenital CMV infection. It is usually seen in children severely affected with symptomatic CMV infection of the central nervous system (brain). In many instances, children born with congenital CMV infection and who are diagnosed with seizures also have other clinical neurological findings such as intracranial calcifications, microcephaly, and chorioretinitis (eye disease). Our

research data show that about 10% of our study population who are born with symptomatic CMV infection have some form of seizure activity. In some instances, seizure activity is evident at the time of birth or in the newborn period. Seizures can also present anytime within the first six months of life. The severity of seizure activity ranges from child to child and can be described as mild, moderate or severe. In a mild form, seizure activity may manifest as staring, facial twitching, eyelid rolling. In a severe form, seizure activity can exhibit as (but not limited to) kicking, total body stiffness or violent body movements. If you suspect that your child may have seizures, it is important to have your child evaluated by a physician. Your physician most likely will ask you to describe carefully the activity suspected to be seizures and will perform a physical examination. If seizures are suspected, then an EEG may be performed to characterize the electrical activity of the brain and an anticonvulsant medication may be prescribed.

**NEWSLETTER SUBSCRIPTION AND PARENT SUPPORT NETWORK INFORMATION
MAILING ADDRESS CHANGES
CMV RESEARCH DONATIONS**

- I would like to be (added to / deleted from) the CMV Updates mailing list.
- I would like to be added to the CMV Updates email list.
- I have an address change.
- I would like to receive information about the congenital CMV disease Parent-to-Parent Support Network.
- I would like to be deleted from the Parent-to-Parent Support Network.
- Enclosed is my \$_____ donation to continue research on congenital CMV disease and infection. Please make checks payable to the "CMV Research Fund," which is affiliated with Baylor College of Medicine and Texas Children's Hospital, Houston, Texas. All donations are tax deductible.

Name: _____

Address: _____

Phone: (_____) _____

What is your interest in CMV infection?

- Parent/Family member of a child with congenital CMV disease or infection.
- Health care professional. Specify: _____
- Other. Specify: _____

Detach and mail this form to:

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