



## Advances in CMV Vaccine Research

Cytomegalovirus is known to some text books as the "silent" virus because most people will catch the virus at some point in their lifetime but usually will be free of any signs or symptoms of infection. A second pseudo name for CMV should be the "unknown" virus. For years CMV infection has been documented as the most common congenital infection in humans. CMV is also thought to be the leading infectious cause of mental retardation and nonhereditary sensorineural hearing loss. Regardless of these facts, the public health knowledge and concerns about CMV infection have remained disappointingly low. Besides medical personnel, people familiar with CMV infection are mainly those who have personal experience with this infection, such as immunocompromised individuals and parents who have a child born with CMV disease. Despite the lack of public awareness and the lack of concern in the medical community, research on CMV infection and disease has continued. Investigators have search for a vaccine to prevent CMV infection for over 20 years. A human live CMV vaccine has been studied since 1975; however, this vaccine has never been licensed. Using different combinations and different routes of administration, results of the live virus vaccine have varied from no immunity stimulated to good immunity responses. Recently, in San Diego in May 1995, results from the initial testing of a recombinant CMV vaccine were presented at the American Pediatric Society and Society for Pediatric Research conference. This vaccine contains an important protein from the virus, but the vaccine itself does not contain a live virus.

A CMV vaccine could prevent severe life-long disabilities in as many as 4,000 congenitally infected infants annually.

The Biocine Company and the University of Alabama School of Medicine indicate that the vaccine given with an adjuvant (substance added to enhance the activity of vaccine) produces immunity to CMV. When administered to healthy volunteers, the vaccine and adjuvant combination produced significantly greater immunity than did the vaccine/alum mixture and greater immunity than the placebo. Although this is just the beginning of this vaccine's testing protocol, it does appear to have promising results.

Unfortunately for many unborn babies in the future and for immuno-compromised individuals, it will be many years before an acceptable CMV vaccine becomes available. Getting a vaccine approved usually requires an extensive amount of testing since research must prove that the vaccine is safe, produces good and long lasting immunity, and that it is cost-effective. Recently however, the hopes of having a licensed CMV vaccine got a little brighter when the FDA approved a vaccine for chicken pox. Varicella-zoster virus, which causes chicken pox, is in the same family of viruses as CMV. Although chicken pox and CMV do not cause the same symptoms of disease, some of the properties of the viruses are similar. For this reason, researchers now believe that the new chicken pox vaccine may prove to be a short cut on the road to a CMV vaccine. Because CMV infection is the most common congenital infection, approval of an effective vaccine could potentially save as many as 4,000 infants from disease that would result in life-long disabilities or possibly death.

## Question & Answer Corner

Q A member of my family is pregnant and is in contact with a child who has CMV. She's worried about passing the virus along to her unborn child. Is there anything I can say or do to help?

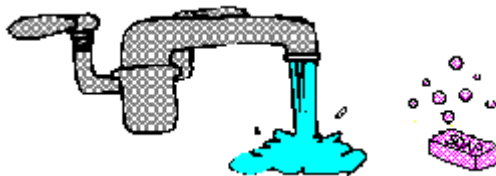
A What we know is that effects of CMV most commonly occur when a woman catches CMV infection for the first time when she is pregnant. This type of infection is known as a primary infection. Between 1 and 4% of women will catch CMV for the first time while they are pregnant. About 40% of these women will pass the virus along to the fetus. Of this group only 10 to 15% of the infected infants will have symptoms or abnormalities at birth.

Usually less severe are the congenital CMV infections caused by the mother's reactivated CMV infection. When a woman becomes pregnant who has had a prior CMV infection, it also is possible for her to pass the virus to her unborn child. This may occur if the virus reactivates. Less than 1% of pregnant women that have had CMV prior to pregnancy may experience a

reactivated infection and in rare instances of reactivated infection a baby is born with symptoms or abnormalities due to CMV infection. The risk of a pregnant woman becoming re-infected with a new strain of CMV is unknown, but also is theoretically possible.

Your family member may therefore wish to know her CMV antibody status to see if she has antibodies. Also, you may wish to refer to the following question and answer which deals with those persons in direct contact with individuals infected with CMV.

Q What is the best way to prevent the spread of CMV?



A Children and adults with an active CMV infection will "shed" the virus. When someone sheds CMV, the virus can be detected in their body fluids (such as urine, saliva, blood, etc.) whether or not they have any symptoms. According to research, the environment where CMV appears to be spread most frequently is in families or group settings where there are young children. Within such an environment, CMV is most likely spread from person to person by direct contact with infected body fluids. The best practice one can adopt to prevent the spread of the virus is to use good hygienic techniques and practice Universal Precautions. Simply stated, practicing good hygiene is achieved by washing hands with warm soapy water, rinsing, and drying. It is not necessary to wear gloves when having direct contact with people who are shedding the virus, nor is it necessary to wear a mask since CMV is not an airborne virus.

Other precautionary measures that may be taken to prevent the spread of CMV include: (1) avoid kissing young children on the mouth or cheek--instead, kiss them on the forehead or top of the head, (2) avoid sharing food, drink, and eating utensils with young children, and (3) wash hands with soap and water after diaper changes or after contact with a child's saliva.

Answers were provided by Carol Griesser, R.N., and Gail Demmler, M.D. If you need further information on these questions or have other questions/comments about CMV infection, please call, write, FAX, or e-mail us.

### Helpful Hints...

Group day-care centers and families with young children can prevent the spread of CMV infection. Because many infectious diseases are passed from child to child while playing, always practice good hygiene. Toys that have been mouthed by young children may be disinfected by washing them with a solution of one part chlorine bleach to nine parts water, rinsing thoroughly in water and drying. Nonimmersible or stuffed toys should be allowed to air dry for several hours between use. Reference: Bale JF, et al. Congenital Cytomegalovirus Infection Infection for Education Personnel. *Am J of Dis Child*, 1986;140:128-31.

### PARENT SUPPORT RESOURCES

#### A National Parent-to-Parent Program

Sometimes the best person to talk to is someone who has "been there and done that." Someone who will understand. The National Parent-to-Parent Support & Information System, Inc., is a database that links families with special health care needs or rare disorders. The national database will work with each family individually to meet their specific needs (for example, a parent may only wish to contact another family who has a child with hearing loss due to CMV infection). If you are interested in networking with other parents to gain emotional support as well as information, please call 800-651-1151 or write NPPSIS Inc., P.O. Box 907, Blue Ridge, GA 30513.

#### Starting Your Own Support Group

If you are looking for something with more interaction, you may wish to start your own support group. Whether you are interested in creating a support group for CMV infection or trying to locate resource information on CMV infection, the American Self-Help Clearing House can provide you with helpful tips. For more information contact: The American Self-Help Clearing House, St. Charles Riverside Medical Center; Denville, NJ 07834 or phone them at 201-625 7101.

Through the list of families participating in the CMV Parent to Parent Support Network, we may also be able to help you locate families in your area that have a child with congenital CMV disease. Call the National Congenital CMV Disease Registry for more information at 832-824-4387.

*Why won't they work with my child?*

Recently we have received a few calls from parents who were told that their child could not attend a certain class or see a certain therapist because the child has CMV infection. This type of exclusion and discrimination happens, but it shouldn't. There may also be legal implications if such actions occur. How do you handle therapists and educators that don't want to work with your child because of CMV infection? If you have advice, solutions, or just a good story to tell for parents, therapists, or educators, please send it to us. We may print your responses in the next newsletter.

**Facts & Figures from the National CMV Registry**

**Welcome!** Four new participating physicians (from Little Rock, Arkansas; Gainesville, Florida; Wichita, Kansas; and Corpus Christi, Texas) have recently joined the National Congenital CMV Disease Registry Collaborating Group, bring our total number of participants to 46. The Registry is co-sponsored by the Centers for Disease Control and Prevention (CDC) and has been ongoing for nearly six years. Thanks to the voluntary case reporting by dedicated doctors and nurses, 450 cases of symptomatic congenital CMV disease have been registered thus far. Abnormalities shared by infants reported to the Registry are summarized in Table 1 below. The average gestational age for this population is 36.1 weeks, mean birth weight is 2253.0 grams (4.97 lbs.), mean birth length is 44.7 cm (17.6 in.), and mean head circumference is 30.5 cm (12.0 in.). Also of interest, the average age at delivery for mothers is 22.7 years. Based on maternal characteristics, the Registry has the following distribution: 60% are white, 35% are black, and 5% are of some other race; 53% are single; 15% are Hispanic; and 64 % have either no health insurance or are on Medicaid.

**Table 1: Abnormalities at Birth for Infants Reported to the National Congenital CMV Disease Registry (N=450)**

SIGNS/SYMPTOMS	No. (%)
Petechiae or purpura	241 (55)
Hepatomegaly	213 (49)
Splenomegaly	205 (47)
Small for gest. age	204 (47)
Calcifications	170 (44)
Sensorineural deafness	118 (42)
Jaundice at birth	167 (39)
Microcephaly	160 (38)
Other neuro. problems	118 (29)
Hemolytic anemia	50 (15)
Chorioretinitis	41 (12)
Pneumonia	35 (10)
Seizures	38 (9)
LABORATORY TESTS	No. (%)
Platelets less than/equal to 75,000/mm <sup>3</sup>	214 (52)
D. bilirubin greater than/equal to 3 mg/dl	161 (42)
ALT > 100 U/L	101 (31)

**Note:** Percentiles were calculated using corrected totals (missing/unknown information was removed). For example, hearing tests were performed on only 283 of the 450 reported cases. Of the 283 tested cases, 118 (42%) had some degree of hearing loss.

# New Registry Forms

To gain further insights, we have updated the Registry reporting forms. Three additional clinical information variables have been added to ultimately indicate the number of deaths due to congenital CMV disease, the number of infected infants that also are co-infected with some other congenital infection (such as HIV or syphilis), and the number of infected babies receiving antiviral treatment. A few cosmetic changes have also been made on the form. Be on the lookout; new forms will be distributed to all participants in the coming months.

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

*CMV Updates* is a medium for discussion and exchange of ideas/information for parents, teachers, medical personnel, and therapists caring for children with congenital CMV disease. Please direct your comments, or helpful hints to:

National Congenital CMV Disease Registry  
Feigin Center, Suite 1150  
1102 Bates Street, MC 3-2371  
Houston, TX 77030-2399  
Phone: 832-824-4387  
FAX: 832-825-4347  
[cmv@bcm.edu](mailto:cmv@bcm.edu)

**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:**

CMV Registry, Feigin Center, Suite 1150 • 1102 Bates Street, MC 3-2371 • Houston, Texas 77030  
Telephone: 832-824-4387 • Fax: 832-825-4347 • E-mail: [cmv@bcm.edu](mailto:cmv@bcm.edu)