

Condition Overview: Congenital Cytomegalovirus (CMV)

Cytomegalovirus (CMV), a member of the herpes virus family, is a common virus that usually affects most people by the time they are 40 years of age. Twenty percent of children in the United States will have contracted CMV by puberty. Most people don't realize they are carrying CMV, as it tends to stay dormant, and the virus rarely exhibits symptoms. CMV is problematic, however, in individuals who are immunocompromised and those who are pregnant. This paper will focus primarily on congenital CMV, which is currently the most common intrauterine infection in the US (Dahle, et al, 2000).

Characterized by: Most infants are asymptomatic at birth, although a small percentage (5 to 10%) show signs of CMV, such as microcephaly, jaundice, retinitis, and neurological deficits (see Figure 1). Sequelae that may develop later in infancy are usually more severe in symptomatic babies, the most common being sensorineural hearing loss.

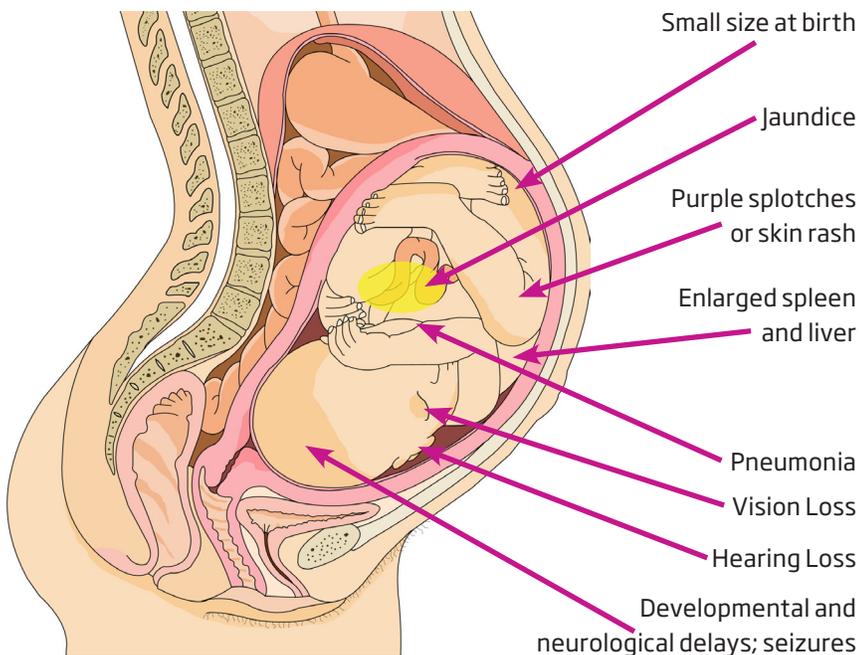


Figure 1. Congenital CMV symptoms that may be apparent at birth.

Incidence rate: Approximately 0.5 to 1.0% of newborns are infected at or before birth (see Figure 2).

CMV can be spread through secretions such as saliva, breast milk, blood, urine, and genital secretions. Sometimes it can be spread by blood transfusion or organ transplantation.

Diagnosis: Detected in saliva or urine within the first 2 weeks of life.

Differential Diagnosis: TORCH, Guillain-Barre syndrome, mononucleosis, Epstein-Barr syndrome, HIV, viral Hepatitis, toxoplasmosis.

Prevention: Good oral hygiene (especially in pregnant women); hand washing with soap and water following contact with diapers, oral secretions, or young children in day care.

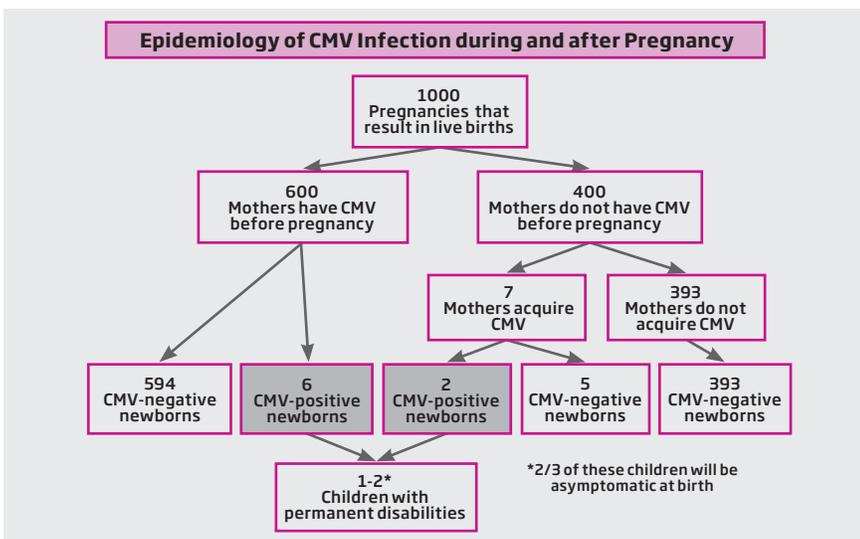
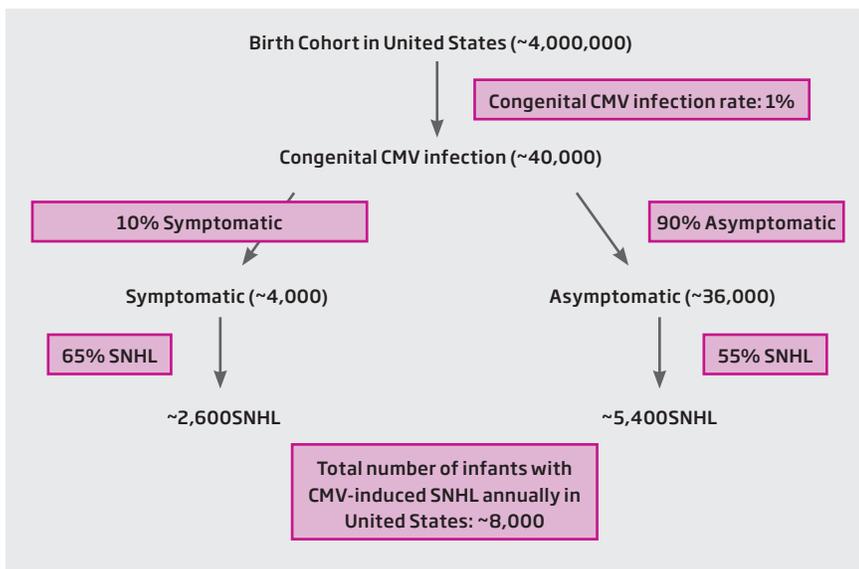


Figure 2. Epidemiology of CMV infection during and after pregnancy. (From: Cannon, 2009)



Figures 3. Average number of infants afflicted by CMV and consequential SNHL annually in the United States. (From: Schleiss & Choo, 2006)

SNHL in CMV: The mechanism by which CMV causes hearing loss in some kids and not others is not fully understood. Although most children with congenital CMV do not develop hearing loss, of those who do, the severity, configuration, and fluctuation of the loss is uncertain.

About 50% of all congenital CMV cases in children will have a fluctuating or progressive hearing loss. Thirty to 50% of symptomatic children are likely to develop sensorineural hearing loss whereas only eight to 12% of asymptomatic children would (Fowler & Boppana, 2006). CMV is the leading cause of SNHL in children, accounting for 1/3 of SNHL in young children.

Treatment: Hearing evaluations to determine severity, and if the loss is unilateral or bilateral. Testing should occur every six months, or more often if fluctuations or progressive loss is noted. Hearing aids with a large range of gain are beneficial in the event of fluctuating or progressive hearing loss. Cochlear implants are an option if the hearing loss becomes profound. FM systems or other ALDs should be considered when in environments where SNR is poor. American Sign Language can be used as a communication method.

Professional Considerations: Parents, most likely, have not heard of CMV. Provide basic information, but encourage parents to ask questions. The possibility of hearing loss or progression of hearing loss in the child should be discussed. A close relationship with the child's pediatrician and/or ENT will enable parents to be up to date on the latest CMV research. Speech-language pathologists and audiologists may interact with the child and assist in different aspects of habilitation, including speech/language therapy, use of hearing aid/cochlear implant and FM use.

Educational Considerations: The presence of congenital CMV should be indicated and addressed in the child's IEP. This includes allowing access to information, and effective strategies and approaches that teach environmental information. Integration in social environments could include methods to orient the child to other students and locations, and improve the number and quality of interactions and relationships that the child has with others.

Support and Other Online Sources:

- <http://www.mdjunction.com/cytomegalovirus>
- <http://www.bcm.edu/pediatrics/cmregistry/p2p.cfm>
- <http://www.congenitalcmv.org/parentinfo.htm>
- <http://congenitalcmv.blogspot.com/2008/04/help-protect-babies-from-cmv.html>
- <http://www.stopcmv.org/>
- <http://www.mayoclinic.com/health/cm/DS00938/DSECTION=symptoms>
- <http://www.cdc.gov/cm/index.html>
- http://kidshealth.org/parent/infections/bacterial_viral/cytomegalovirus.html

Other References:

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- Dahle, A.J., Fowley, K.B., Wright, J.R., Boppana, S.B., Britt, W.J., Pass, R.F. (2000). Longitudinal investigation of hearing disorders in children with congenital cytomegalovirus. *Journal of the American Academy of Audiology*, 11: 283-290.
- Fowler, K.B., & Boppana, C.B. (2006). Congenital cytomegalovirus (CMV) infection and hearing deficit. *Journal of Clinical Virology*, 35(2): 226-231.
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- Ross, D.S. & Fowler, K.B. (2008). Cytomegalovirus: A Major Cause of Hearing Loss in Children. *The ASHA Leader*. <http://www.asha.org/Publications/leader/2008/080506/f080506b/>
- Schleiss, M.R., & Choo, D.I. (2006). Mechanisms of congenital cytomegalovirus-induced deafness. *Drug Discovery Today: Disease Mechanisms*, 3(1): 105-113.