

FOR PEDIATRIC CARE PROVIDERS

The Role of the Primary Care Clinician in Reducing Disability Related to Cytomegalovirus-Associated Hearing Loss

House Bill 81, passed by the Utah legislature in 2013, was created to raise public awareness and provide education re: the prevention of congenital CMV infection to reduce the disability associated with hearing loss due to congenital cytomegalovirus (CMV) infection. This bill requires (1) that infants who fail the first newborn hearing screen undergo follow-up hearing screening before 2 weeks of age, and (2) that infants who do not pass follow-up screening be tested for congenital CMV before 21 days of age.

Why was HB 81 enacted?

- The national Joint Committee on Infant Hearing (JCIH) recommends that all infants failing the initial newborn hearing screen undergo a secondary screen by 1 month of age. Earlier screening (by 2 weeks of age as stated in HB 81) allows more timely determination of the cause and nature of hearing loss as well as education on research/possible intervention strategies if congenital CMV is involved.
- **Congenital CMV is the most common cause of nonhereditary sensorineural hearing loss (SNHL) and is thought to account for 20% of all childhood hearing loss in Utah.**
- Infants with asymptomatic CMV outnumber those that show symptoms three to one. In a large number of children with asymptomatic congenital CMV, hearing loss is the only sequela.
- Research has shown that approximately 50% of hearing loss from congenital CMV infection is either late-onset or progressive in nature.

What is the benefit of testing infants with hearing loss for CMV?

CMV-associated congenital hearing loss may be progressive in nature. Infants with known CMV-related hearing loss should undergo frequent audiologic follow up with an audiologist possessing expertise in the assessment and treatment of infant and pediatric hearing loss to monitor for worsening hearing loss. The timing and frequency of these visits should be individualized for each child based on the audiologist's recommendations. Although there is not a universal consensus, it would not be uncommon for audiologic evaluations to occur every 3 months during the first 3 years of life, and then every 6 months through age 6 years.

When and how should infants who have failed the second hearing screen be tested for CMV?

In compliance with Utah's HB 81, in order to identify infants at risk for congenital CMV-associated progressive hearing loss, infants who fail the second hearing screening, unilaterally or bilaterally, should be tested for CMV no later than 3 weeks of age. This can be performed with a PCR assay for CMV on urine or saliva. After 3 weeks of age, these tests cannot differentiate between congenital CMV and CMV acquired postnatally. Postnatal CMV rarely causes symptoms and is not associated with hearing loss.

If the clinic or hospital is a client of ARUP, they can order the OraCollect OC-100 swabs from ARUP client supplies (item #49295). If they are not ARUP clients, they should contact their reference lab for kit

supplies or contact the kit vendor directly (DNA Genotek). If kits for PCR testing on saliva are not available, a PCR for CMV can be sent on a urine sample. For more information, **please see “CMV PCR Testing June 2013”**.

ALL infants who fail the second newborn hearing screen should have a full audiologic evaluation **as soon as possible** with an audiologist possessing expertise in the evaluation and management of pediatric hearing loss. For help finding a pediatric audiologist in your area, you can contact the local hospital newborn hearing screening program or the Utah Department of Health Early Hearing Detection & Intervention (EHDI) program at (801)584-8215. You can also go to <http://www.ehdi-pals.org/>.

What action should be taken if an infant who has failed the second hearing screening has a positive CMV test?

These infants should undergo a **complete diagnostic audiologic evaluation** as soon as possible. Frequent audiologic re-assessment is also needed to promptly identify and treat progressive hearing loss. The frequency of this testing should be determined by the child’s audiologist.

- A general recommendation for **all** babies with congenital CMV (regardless of their newborn hearing screening results) is to have a hearing re-assessment every 3 months in the first three years of life, and then every six months through age six years; however, each child should be considered on an individual basis as timing of assessments may need to be more frequent or altered based on antiviral therapy, rehabilitation needs, pediatric audiologist guidance, or parent concerns.

There is no drug licensed to treat congenital CMV infection. There are limited data on the use of antiviral medications in infants with symptomatic congenital CMV infection. Studies are ongoing to determine what types of therapy are of greatest benefit to CMV-infected infants. Infants with suspected congenital CMV infections should be evaluated by physicians who specialize in these infections. Currently, there are **two treatment studies for congenital CMV in Utah**.

- Under the direction of Albert Park, MD, valganciclovir, an antiviral medication currently under investigation for the treatment of sensorineural hearing loss associated with congenital CMV, is currently being studied. Preliminary data suggests that early treatment with valganciclovir may slow progression of sensorineural hearing loss in children with congenital CMV. Valganciclovir is not yet licensed for this purpose and further study to ensure its safety and effectiveness is needed. For more information regarding valganciclovir and clinical trial participation, contact the department of Pediatric Otolaryngology at Primary Children’s Medical Center at (801) 662-1740.
- The Division of Pediatric Infectious Disease at the University of Utah has an NIH sponsored clinical trial pending approval:
A phase II, randomized, placebo-controlled, blinded investigation of six weeks of oral valganciclovir therapy versus placebo in infants with congenital cytomegalovirus infection and hearing loss.

Objectives

1. To define the response of CMV viral load in urine as a measure of the efficacy of ganciclovir
2. To estimate the response of CMV viral load in blood as a measure of the efficacy of ganciclovir.
3. To estimate if a six week course of oral valganciclovir syrup can stabilize the hearing of children with congenital CMV infection who present with hearing loss.
4. To estimate the safety and tolerability of valganciclovir syrup in children of this age.
5. To estimate the pharmacokinetics of ganciclovir when valganciclovir is administered to children of this age.

Inclusion

1. Sensorineural hearing loss (unilateral or bilateral).
2. CMV detected within 30 days of birth (urine tested as neonate, or Guthrie card-positive).
3. CMV detected in urine by PCR or culture within 2 weeks prior to study entry.
4. Children between 1 month and 18 months of age.

For more information regarding valganciclovir and the above clinical trial participation, contact the Division of Pediatric Infectious Disease at the University of Utah at (801) 581-6791.

Children with *symptomatic* congenital CMV are at risk for ophthalmologic problems. These children need **ophthalmologic evaluations** early and often due to risk of retinitis. Those without symptoms, however, are at very low risk. Asymptomatic infants should have at least one thorough eye exam by a pediatric ophthalmologist after a diagnosis of congenital CMV has been made.

As with all children that have a developmental concern present, appropriate referrals should be made to other specialists, as deemed necessary, should any concern arise.

What other conditions place a child at risk for late-onset or progressive hearing loss?

Other newborn risk factors for progressive or late-onset hearing loss include:

- NICU stay for more than 5 days (or exposure to ototoxic medications, mechanical ventilation, ECMO, or hyperbilirubinemia requiring exchange transfusion)
- Family history of permanent childhood hearing loss
- Other prenatal infections such as herpes, toxoplasmosis, syphilis, or rubella

The JCIH recommends that these infants should also undergo frequent assessment through early childhood by a pediatric audiologist beginning not later than 24 months of age, as the initial hearing screen may be passed with hearing loss developing over time. The timing and frequency of follow up should be individualized as recommended by a qualified pediatric audiologist.

How will I be notified if one of my patients does not pass their newborn hearing screening(s)?

State newborn hearing screening protocols have been amended to mandate notification of primary care providers after the failed **first** (before hospital discharge) newborn hearing screening.

Physicians who receive this notice should follow up with the family to ensure the timely completion of the second (outpatient) newborn hearing screening. The primary care provider will then be notified if an infant **fails the second (follow-up) newborn hearing screening. As HB 81 directs care providers to perform CMV testing by 3 weeks of age, it is important that this notification be forwarded to the covering physician if the primary care physician is not available.** To facilitate communication between facilities conducting hearing screening and primary care providers, it has been recommended that discharging hospitals/physicians provide families with a business card of the chosen primary care physician to bring to the follow-up hearing screening appointment.

Please see “Newborn Hearing Screening (NBHS) / CMV Testing Status” FAX form. NOTE that the primary care provider office will need to fax this form WITH THE CMV TESTING RESULTS (positive or negative) back to the hospital newborn hearing screening program, as well as to the Utah Department of Health Early Hearing Detection and Intervention (EHDI) Program at (801) 584-8492.

Please see “CMV NBHS and PCP Flowchart”.

Will insurance cover the cost of the CMV PCR assay testing?

Many insurance companies, including Medicaid, report that this testing is covered. In order to help with this effort, an email went out to all health insurers through the Utah Department of Insurance on June 17, 2013. This email sent from the Department of Health Early Hearing Detection and Intervention Program included information on what H.B. 81 mandates and the CPT codes for CMV testing that will likely increase on insurance claims after July 1, 2103. An excerpt is as follows,

CPT codes for CMV testing are likely to increase on claims. The CPT code for qualitative CMV detection by PCR (via urine or saliva) is 87496, which is considered to be the most sensitive for congenital CMV testing; this code may begin appearing on claims with increased frequency. CPT code 87497 represents quantitative CMV detection by PCR (via urine or saliva) and may be seen, as well. CPT codes for CMV culture testing, 87252 and 87254, may also appear.

Where can I get more information on CMV?

<http://www.MotherToBabyUT.org> or (800) 822-2229

<http://www.cdc.gov/cmV>

www.stopcmv.org

Where can I get more information on H.B. 81 / UAC 26-10-10?

<http://le.utah.gov/~2013/bills/hbillenr/HB0081.pdf>

Utah Early Hearing Detection and Intervention at (801) 584-8215 or smcvicar@utah.gov