

## iCAHE JC Critical Appraisal Summary

### Journal Club Details

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Journal Club location	Woman's and Children's
JC Facilitator	Katie Hamlyn (on behalf of Lisa Callahan)
JC Discipline	Audiology

### Question

Utility of CMV screening for children who refer on their newborn hearing screening/s

### Review Question/PICO/PACO

**P:** Infants, babies, newborns

**I:** CMV screening (cytomegalovirus) – usually via cheek swab + refer on hearing screening.

**C:** No CMV screening

**O:** How many children who refer on their hearing screening are found to test positive to CMV

### Article/Paper

Fowler KB, McCollister FP, Sabo DL, Shoup AG, Owen KE, Woodruff JL, Cox E, Mohamed LS, Choo DI, Boppana SB. A targeted approach for congenital cytomegalovirus screening within newborn hearing screening. *Pediatrics*. 2017 Jan 3:e20162128.

*Please note: due to copyright regulations CAHE is unable to supply a copy of the critically appraised paper/article. If you are an employee of the South Australian government you can obtain a copy of articles from the [DOHSA librarian](#).*

**Article Methodology:** Cohort Study



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Ques No.	Yes	Can't Tell	No	Comments
1	✓			<p><b>Did the study address a clearly focused issue?</b></p> <p>This study was undertaken to evaluate whether a targeted approach will identify infants with CMV-related sensorineural hearing loss (SNHL).</p>
2	✓			<p><b>Did the authors use an appropriate method to answer their question?</b></p> <p>As part of the CMV and Hearing Multicenter Screening (CHIMES) study, ~100 000 infants were tested for CMV and received a newborn hearing screening (NHS) while in the hospital nursery, thus allowing us to examine the effectiveness of a targeted approach in identifying infants with CMV-related hearing loss where only newborns who did not pass NHS would be tested for cCMV.</p> <p><b>Is it worth continuing?</b>                      YES</p>
3	✓			<p><b>Was the cohort recruited in an acceptable way?</b></p> <p>Between March 2007 and March 2012, 100 607 infants born at 7 US medical centres were consented and enrolled prospectively in the CHIMES Study. All live-born infants were eligible for participation. Mothers were approached postpartum to obtain written informed consent for their infant's enrolment in the study.</p>
4	✓			<p><b>Was the exposure accurately measured to minimize bias?</b></p> <p>Saliva specimens were collected from the newborn and additional dried blood spots were obtained at the time of routine newborn metabolic screening and tested for CMV as previously described.</p>
5	✓			<p><b>Was the outcome accurately measured to minimize bias?</b></p> <p>Infants with positive saliva or dried blood spots screening specimens were enrolled in the follow-up component of the study to confirm cCMV and to monitor their hearing outcome</p> <p>The CHIMES study diagnostic audiology protocol included a tone burst Auditory Brainstem Response with thresholds at 0.5, 1.0, 2.0, and 4.0 kHz and Distortion Product Otoacoustic Emissions for each ear. Bone conduction, tympanometry, and ipsilateral acoustic reflexes were performed with a 1000-Hz probe tone if hearing loss was suspected.</p>
6			✓	<p><b>Have the authors identified all important confounding factors?</b></p> <p>No</p> <p><b>Have they taken account of the confounding factors in the design and/or analysis?</b></p> <p>Confounding factors were not considered or acknowledged</p>

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7	✓			<p><b>Was the follow up of subjects complete enough?</b></p> <p>Most of the hospitals used a 2-stage protocol where infants who did not pass in the hospital were scheduled for an additional outpatient hearing screen, and infants not passing their outpatient hearing screen were scheduled for a follow-up diagnostic audiologic evaluation. Infants with cCMV, regardless of hearing screen status, received a diagnostic audiologic assessment at 3 to 8 weeks of age as part of the CHIMES study.</p>
8				<p><b>What are the results of this study?</b></p> <p>Between 2007 and 2012, 99 945 newborns were screened for both hearing impairment and cCMV. Overall, 7.0% of CMV-positive infants did not pass NHS compared with 0.9% of CMV-negative infants (<math>p &lt; .0001</math>). Among the cCMV infants who failed NHS, diagnostic testing confirmed that 65% had SNHL. In addition, 3.6% of CMV-infected infants who passed their NHS had SNHL confirmed by further evaluation during early infancy. NHS in this cohort identified 57% of all CMV-related SNHL that occurred in the neonatal period. A targeted CMV approach that tests newborns who fail their NHS identified the majority of infants with CMV-related SNHL at birth. However, 43% of the infants with CMV-related SNHL in the neonatal period and cCMV infants who are at risk for late onset SNHL were not identified by NHS.</p>
9				<p><b>How precise are the results?</b></p> <p>P values and 95% confidence intervals are provided</p>
10				<p><b>Do you believe the results?</b></p>
11			Journal Club to discuss	<p><b>Can the results be applied to the local population?</b></p> <p><b>CONTEXT ASSESSMENT (please refer to attached document)</b></p> <ul style="list-style-type: none"> <li>- Infrastructure</li> <li>- Available workforce (? Need for substitute workforce?)</li> <li>- Patient characteristics</li> <li>- Training and upskilling, accreditation, recognition</li> <li>- Ready access to information sources</li> <li>- Legislative, financial &amp; systems support</li> <li>- Health service system, referral processes and decision-makers</li> <li>- Communication</li> <li>- Best ways of presenting information to different end-users</li> <li>- Availability of relevant equipment</li> <li>- Cultural acceptability of recommendations</li> <li>- Others</li> </ul>
12				<p><b>Were all important outcomes considered?</b></p>
13				<p><b>Are the benefits worth the harms and costs?</b></p>
14				<p><b>What do the study findings mean to practice (i.e. clinical practice, systems or processes)?</b></p>

15		<p><b>What are your next steps?</b>  <b>ADOPT, CONTEXTUALISE, ADAPT</b></p> <p>And then (e.g. evaluate clinical practice against evidence-based recommendations; organise the next four journal club meetings around this topic to build the evidence base; organize training for staff, etc.)</p>
16		<p><b>What is required to implement these next steps?</b></p>

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