Referred Newborn Hearing Screening and Otologic Referral: Louisiana EHDI's Pilot of Specialized PCP Faxes for this Population

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Louisiana Early Hearing Detection and Intervention

Louisiana Early Hearing Detection and Intervention Program

ABSTRACT

Infants with middle ear fluid who refer on the newborn hearing screening present unique challenges to EHDI programs. An early otologic referral may result in the diagnostic evaluation being delayed until medical management is complete. We reviewed the records of all children born in Louisiana in 2017 and 2018 who were diagnosed with a permanent hearing loss to determine the proportion that exhibited co-existing middle ear fluid during the screening and diagnosis period. We found that 11% of those children diagnosed with a permanent hearing loss also had middle ear fluid noted in their records (22/196). This number increases to 20% when including those likely to have middle ear fluid due to findings of flat tympanometry and/or transient conductive hearing loss (39/196). In addition, 21 children (11%) from this cohort who were diagnosed late were either confirmed or suspected of having middle ear fluid. Most of these hearing losses were bilateral (17/21) and more than half were bilateral severe to profound (11/21). Thirteen were diagnosed after 6 months of age. To address this problem, we convened a learning community of various physicians and EHDI advisory council members for guidance on how to increase responsiveness from this group. The learning community members worked with EHDI staff to revise the content in the letters faxed to PCPs (primary care providers) to include information specific to timely diagnosis in infants with otologic referrals. We recently began piloting these new faxes. Preliminary results suggest improved responsiveness from PCPs. We are continuing to track responses and follow-up outcomes on these children.

BACKGROUND

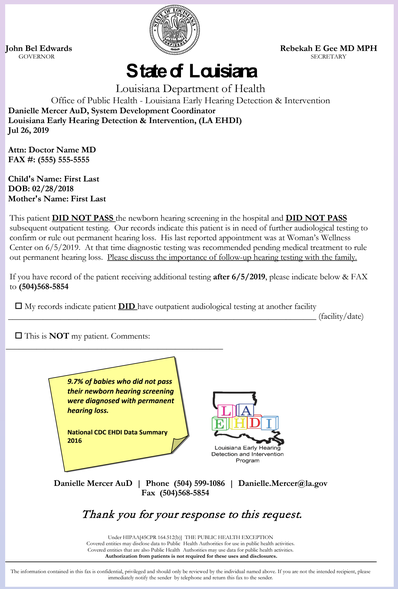
Infants receiving an otologic referral for middle ear fluid frequently do not complete recommended hearing tests. Diagnostic audiological evaluations may result in a determination of transient conductive hearing loss, or may be deferred altogether. Both scenarios can result in a late diagnosis for a child with permanent hearing loss. Actions taken by LA EHDI staff to encourage follow-up with this group include phone calls, text messages, and letters to families; and faxes to infants' primary care providers (PCPs). Though these are the same actions taken for our loss to follow-up/loss to documentation (LTF/LTD) group, our efforts have been far less successful for those who are being followed medically for otologic concerns.

METHODS

We convened a learning community consisting of two otolaryngologists and one pediatrician to review the faxes sent to PCPs (Figure 1). Additionally, we received feedback from the EHDI Advisory Council on the content contained in these faxes. This resulted in the following recommended changes:

- Change from paragraph to bulleted formatting
- Include a bold-print sentence specific to middle-ear management
- Include phone number of audiology facility to encourage scheduling appointment
- Cite statistic specific to otitis media
- Add stamp "DEVELOPMENTAL URGENCY" in red font at top of fax

Two revised templates were created for: 1) children referred for middle ear problems who have not had diagnostic testing (Figure 2), and 2) children who had a diagnosis of transient conductive hearing loss with no further hearing testing (Figure 3). These faxes were sent over a 6-month period to PCPs for children in process of diagnosis with middle ear fluid.



John Bel Edwards
GOVERNOR

Rebekah E Gee MD MPH
SECRETARY

State of Louisiana
Louisiana Department of Health
Office of Public Health - Louisiana Early Hearing Detection & Intervention

Danielle Mercer AuD, System Development Coordinator
Louisiana Early Hearing Detection & Intervention, (LA EHDI)
Jul 26, 2019

Attn: Doctor Name MD
FAX #: (555) 555-5555

Child's Name: First Last
DOB: 02/28/2018
Mother's Name: First Last

This patient **DID NOT PASS** the newborn hearing screening in the hospital and **DID NOT PASS** subsequent outpatient testing. Our records indicate this patient is in need of further audiological testing to confirm or rule out permanent hearing loss. His last reported appointment was at Woman's Wellness Center on 6/5/2019. At that time diagnostic testing was recommended pending medical treatment to rule out permanent hearing loss. Please discuss the importance of follow-up hearing testing with the family.

If you have record of the patient receiving additional testing **after 6/5/2019**, please indicate below & FAX to **(504)568-5854**

☐ My records indicate patient **DID** have outpatient audiological testing at another facility _____ (facility/date)

☐ This is **NOT** my patient. Comments: _____

9.7% of babies who did not pass their newborn hearing screening were diagnosed with permanent hearing loss.

National CDC EHDI Data Summary 2016

Louisiana Early Hearing Detection and Intervention Program

Danielle Mercer AuD | Phone (504) 599-1086 | Danielle.Mercer@la.gov
Fax (504)568-5854

Thank you for your response to this request.

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Covered entities may disclose data to Public Health Authorities for use in public health activities.
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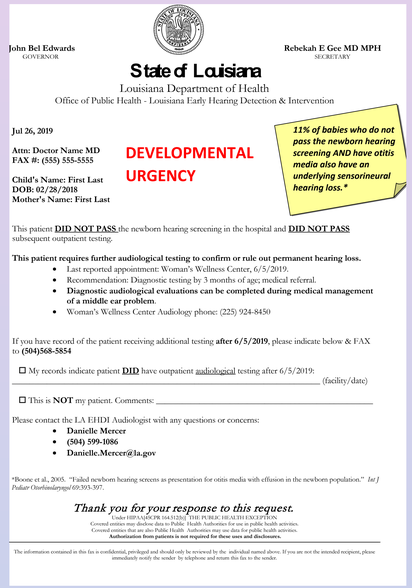
Figure 1. Original in process PCP fax template



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State of Louisiana
Louisiana Department of Health
Office of Public Health - Louisiana Early Hearing Detection & Intervention

Jul 26, 2019

Attn: Doctor Name MD
FAX #: (555) 555-5555

DEVELOPMENTAL URGENCY

Child's Name: First Last
DOB: 02/28/2018
Mother's Name: First Last

*11% of babies who do not pass the newborn hearing screening AND have otitis media also have an underlying sensorineural hearing loss.**

This patient **DID NOT PASS** the newborn hearing screening in the hospital and **DID NOT PASS** subsequent outpatient testing.

This patient requires further audiological testing to confirm or rule out permanent hearing loss.

- Last reported appointment: Woman's Wellness Center, 6/5/2019.
- Recommendation: Diagnostic testing by 3 months of age; medical referral.
- **Diagnostic audiological evaluations can be completed during medical management of a middle ear problem.**
- Woman's Wellness Center Audiology phone: (225) 924-8450

If you have record of the patient receiving additional testing **after 6/5/2019**, please indicate below & FAX to **(504)568-5854**

☐ My records indicate patient **DID** have outpatient audiological testing after 6/5/2019: _____ (facility/date)

☐ This is **NOT** my patient. Comments: _____

Please contact the LA EHDI Audiologist with any questions or concerns:

- **Danielle Mercer**
- **(504) 599-1086**
- **Danielle.Mercer@la.gov**

*Boone et al., 2005. "Failed newborn hearing screens as presentation for otitis media with effusion in the newborn population." *Int J Pediatr Otorhinolaryngol* 69:393-397.

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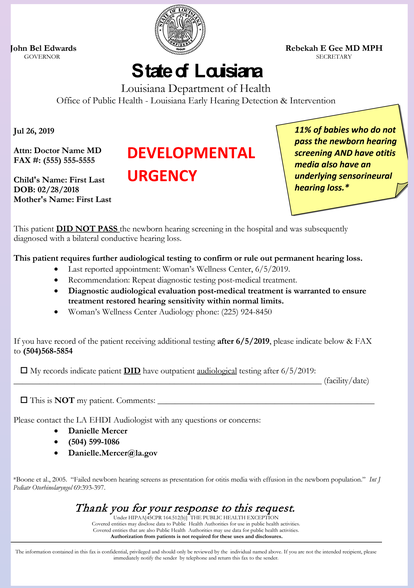
Figure 2. Revised template for children with middle ear fluid and no diagnostic testing (version 1)



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Jul 26, 2019

Attn: Doctor Name MD
FAX #: (555) 555-5555

DEVELOPMENTAL URGENCY

Child's Name: First Last
DOB: 02/28/2018
Mother's Name: First Last

*11% of babies who do not pass the newborn hearing screening AND have otitis media also have an underlying sensorineural hearing loss.**

This patient **DID NOT PASS** the newborn hearing screening in the hospital and was subsequently diagnosed with a bilateral conductive hearing loss.

This patient requires further audiological testing to confirm or rule out permanent hearing loss.

- Last reported appointment: Woman's Wellness Center, 6/5/2019.
- Recommendation: Repeat diagnostic testing post-medical treatment.
- **Diagnostic audiological evaluation post-medical treatment is warranted to ensure treatment restored hearing sensitivity within normal limits.**
- Woman's Wellness Center Audiology phone: (225) 924-8450

If you have record of the patient receiving additional testing **after 6/5/2019**, please indicate below & FAX to **(504)568-5854**

☐ My records indicate patient **DID** have outpatient audiological testing after 6/5/2019: _____ (facility/date)

☐ This is **NOT** my patient. Comments: _____

Please contact the LA EHDI Audiologist with any questions or concerns:

- **Danielle Mercer**
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Figure 3. Revised template for children diagnosed with transient conductive hearing loss (version 2)

RESULTS

A total of 23 specialized faxes were sent to PCPs (version 1: 5; version 2: 18). We gained additional information on 16 of these children, for a total response rate of 69.6% (Figure 4). Seven (30.4%) of these children completed testing (6 passed; 1 diagnosed with permanent hearing loss-Figure 5). Three children received additional follow-up but remain in process of diagnosis. This is a significant improvement over completion and response rates obtained from the original fax template (11.8% and 17.6%, respectively). Direct PCP responses are shown in Figure 6.

DISCUSSION

For children who do not pass newborn hearing screening and subsequently receive an otologic referral or are diagnosed with transient conductive hearing loss, a final diagnosis is frequently not obtained. In these cases, it is unknown whether results from previous testing attributed to middle ear fluid were accurate. Results from this study indicate substantially higher PCP response rates and higher test completion rates when faxes to PCPs contain targeted information toward children with middle ear fluid. Our data review indicated up to 20% of children diagnosed with permanent hearing loss exhibit concurrent middle ear fluid. Many of these children receive a late diagnosis and a late start into intervention services. In parallel with this project, we investigated all new diagnoses of permanent hearing loss for previous diagnoses of transient conductive hearing loss. We discovered that during this 6-month period, 9 children were diagnosed with permanent hearing loss after previously receiving a diagnosis of transient conductive hearing loss. All of these children were diagnosed later than the 3-month benchmark (range: 5 months-2 years, 5 months; median: 1 year, 2 months). Hearing loss degree ranged from mild to severe, and 6 were bilateral. Timely diagnosis and enrollment into early intervention are imperative to support opportunities for language development and academic outcomes for children who are deaf or hard of hearing to be similar to their peers. We will continue to adapt our communications to providers to encourage early identification of hearing loss and improve developmental outcomes for children who are deaf or hard of hearing and exhibit concurrent middle ear fluid.

Figure 4. Response and Completion Rates of Original vs. Revised Faxes

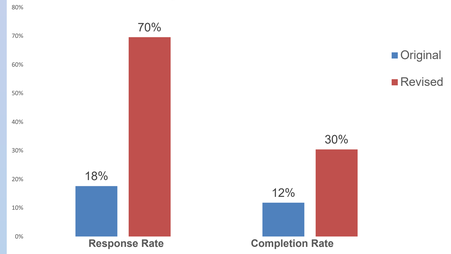

Figure 5. Outcomes of Children Receiving Additional Hearing Testing

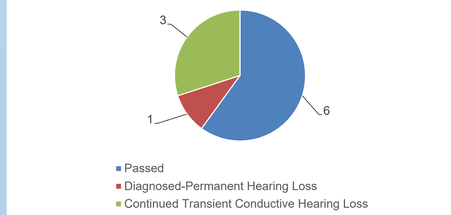

Figure 6. Direct Responses from PCPs