Indiana’s EHDI Alert Response System (EARS)

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Alan Schoeff, Data Analyst
Overview

- Background
- Indiana Operational Data Store (ODS)
- EHDI Program in Indiana
- EHDI Alert Response System (EARS)
Historic Background of Data Integration in Indiana

- In 1974, the Regenstrief Institute began working on data integration.

- In the mid-1980s, ISDH started moving forward with data integration.
Recent Background of Data Integration in Indiana

- In 1993, the Indiana Legislature passed a law mandating the creation of the State Health Data Center.

- The Data Center was charged with “improving data quality and collecting, using, and sharing data about the health status of Indiana residents.”
Recent Background of Data Integration in Indiana

Mid-to-late 1990s

- Lack of data standards were a national problem.
The Operational Data Store was developed to meet PHIN requirements and to allow other program areas to include their data in the Data Store.

The process of collecting and utilizing real-time data was piloted by the Indiana Birth Defects and Problems Registry.
ODS Data Sources

- IU Lab Data – Newborn Screening/Hearing
- Hospital (Reportable Birth Defects – UB92)
- Vital Records Birth
- Vital Records Death
- Vital Records Fetal Death
- Electronic Lab Reports (Regenstrief)
ODS Users

- Newborn Screening
- Vital Records
- Data & Statistics
- IBDPR
- Epi Resource Center
EHDI Program in Indiana
In 1999, the State Legislature passed PL91-1999 which mandates screening of babies in Indiana for hearing loss.

16-41-17-10 states that ISDH is responsible for “A centralized program that provides tracking, follow-up, diagnosis, management, and family counseling and support.”
EHDI in Indiana

- Approximately 88,000 live births per year
- 103 Hospitals & 3 Birthing Facilities
- Approximately 800 Home Births Annually
Indiana EHDI Data 2006

- 97.8% received UNHS
- 1.9% did not pass n=1665

- Normal hearing 73%
- Hearing loss 7%
- In process 2%
- Died/moved/refused 3%
- LTF/LTD 15%

Prevalence of Hearing Loss 1.3 per 1000 screened

Data calculated Jan 2008
EHDI Alert Response System (EARS)
What is EARS?

EARS is a web-based application that:

- allows hospitals and audiologists to quickly and accurately enter information directly into a data store;
- allows Indiana NBS staff to view these entries almost instantaneously; and
- generates alerts and informs the appropriate staff member that the next follow-up action should be taken.
Current Data Management System

- Developed in 2003
- Time-consuming data entry by ISDH staff from handwritten hospital and audiologist reports
- Access-based, “stand alone” program
- Generation of letters
- Reporting capability
- Passive system-User “acts” upon the system
The Case for EARS

- Improve accuracy and reporting by hospitals and audiologists (direct data entry)
- Increase timeliness of data sharing
- Improve communication between EHDI partners
- Interact with larger database (ODS)
- Reduce loss to follow-up and documentation of children
- Easy to access, paperless, “active” system that “works” for the user
- System acts as platform for other applications
History of EARS

2005 to Present

- **2005** – received grant from the CDC to fund the development of EARS

- **2006** – began development of EARS

- **2007** – began pilot testing EARS with the help of 4 central Indiana hospitals

- **Early 2008** – EARS moved to production and scheduled training of additional hospitals
Working EARS

- Health Data Center Gateway
- Log on to system
- Step by step-Hospital Data Entry
- Checking an EARS Alert
- Processing an EARS Alert
- Communicating by secure E-mail
- Step by step-DAE entry
- Backdoor Information
Working EARS
Health Data Center
Working EARS Log-in Screen
Working EARS
Home Page

Early Hearing Detection And Intervention

Welcome to the
Indiana State
Department of Health

Early Hearing Detection and Intervention Program

Online Reporting system.
Please make a selection from the menu items on the left.
Working EARS
Data Entry
Working EARS
Babies R Fun MSR Update
### Working EARS Data Entry Holdovers

**Early Hearing Detection And Intervention**

**UNIVERSAL NEWBORN HEARING SCREENING**

**Monthly Summary Reporting 2 - 2008**

**HOLD OVER CHILDREN FROM PREVIOUS MONTH**

Use the most relevant of the UNHS Exception CODES to define why the child is listed on this page. If the child was transferred in to or out from your facility be sure to indicate so (this may be in addition to another reason code).

<table>
<thead>
<tr>
<th>MRN</th>
<th>Child Name</th>
<th>Sex</th>
<th>DOB</th>
<th>R/O Code</th>
<th>New Code</th>
<th>Facility Transfers</th>
<th>Refer To</th>
<th>Screen Date</th>
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<td>SMITH, LAYLA</td>
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<td>HIGGINS, ROBERT</td>
<td>M</td>
<td>7/26/2007</td>
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<td>A A B</td>
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<td>WALLING, STONE</td>
<td>M</td>
<td>1/30/2008</td>
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<td>9</td>
<td>Select Facility</td>
<td>A A B</td>
<td>A A B</td>
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</tbody>
</table>
## Working EARS Exceptions

### Universal Newborn Hearing Screening

**BABIES R FUN**

**MONTHLY SUMMARY REPORTING JAN - 2008**

**UNHS EXCEPTIONS REPORTING**

Use the most relevant of the UNHS Exception CODES to define why the child is listed on this page. If the child was transferred in to or out from your facility be sure to indicate so (this may be in ADDITION to another reason code).

<table>
<thead>
<tr>
<th>Reason Code</th>
<th>Facility Transfer</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Out (code 2) 1 In (code 10) 0 No Transfer</td>
</tr>
</tbody>
</table>

**Medical Record #**

**Infant: Last Name**

**First Name**

**DOB**

<table>
<thead>
<tr>
<th>Sex</th>
<th>Birth Order</th>
</tr>
</thead>
</table>

**Mother: Last Name**

**First Name**

**Phone**

**Primary Care Physician**

CONRAD, MICHAEL

### Comments

Only One

Save and Add New Exception

<table>
<thead>
<tr>
<th>ID</th>
<th>Code</th>
<th>MRN</th>
<th>InName</th>
<th>DOB</th>
<th>Mother</th>
<th>Mother Name</th>
<th>Mother Phone</th>
<th>Physician</th>
<th>Physician Phone</th>
<th>Referred To</th>
<th>Screen Date</th>
<th>Comments</th>
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<th>PID</th>
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<tbody>
<tr>
<td>2940</td>
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<td>1/25/2008</td>
<td>OMAYA, HEATHER</td>
<td>99969787</td>
<td>ABEL, ROBERT</td>
<td>654-862-2165</td>
<td>1/26/2008</td>
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<td>2947</td>
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<td>SMITH, KIMBERLY</td>
<td>999-243-3335</td>
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<td>812-522-1613</td>
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<td>F</td>
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<td>WALLING, DRI</td>
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<td>Judge, Robert</td>
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<td>M</td>
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<td></td>
</tr>
</tbody>
</table>
Early Hearing Detection And Intervention

UNIVERSAL NEWBORN HEARING SCREENING

MONTHLY SUMMARY REPORTING FEB - 2008

Statistical Data

After setting the new codes for "Hold Over" children from the previous reporting period and after entering information on the Exception Reporting Form for this reporting period, please respond to the following four questions.

1. Total Number of Live Births in your facility during the data month/year indicated.
2. Total Number of Home Births receiving UNHS at your facility during data month/year indicated.
3. Total Number of Walk-ins (not including Home Births) receiving Newborn Hearing Screening at your facility during data month/year indicated.
4. Subtotal of lines 1 - 2 + 3.
5. Total number of children who:
   a. were included in lines 1, 2, or 3 above and
   b. passed their UNHS screening and
   c. had no risk factors

Go To: << Back | 1) Hold Overs | 2) Exceptions | 3) Statistical Data | 4) Summary Data | Next >> | HOME
# Early Hearing Detection And Intervention

**UNIVERSAL NEWBORN HEARING SCREENING**

**Babies R Fun**

**MONTHLY SUMMARY REPORTING FEB - 2008**

You have not set the New Codes for one or more of the Hold overs from previous MSR.  
You cannot submit an MSR before the first of the month following the reporting period. 
You cannot submit an MSR before the previous MSR is submitted. 
The number of possible screens does not match the actual screens completed. 

**DATA CONFIRMATION AND SUBMISSION**

### Possible Screenings

1. + Number of Live Births in your facility during this reporting period.  
   - 0
2. + Number of Home Births receiving Universal Newborn Hearing Screening at your facility during this reporting period.  
   - 0
3. + Number of Walk-ins (not including Home Births) receiving UNHS at your facility during this reporting period.  
   - 0
4. + Number of Hold-Overs from last reporting period.  
   - 4
5. + Number of unscreened children Transferred in (to your facility, from another facility) this reporting period.  
   - 0
6. TOTAL Potential Universal Newborn Hearing Screenings your facility could have conducted during this reporting period.  
   - 4
7. - Number of children reported this reporting period that should be screened next reporting period.  
   - 0
8. - Number of deaths reported this reporting period.  
   - 0
9. TOTAL Possible Universal Newborn Hearing Screenings your facility should have conducted during this reporting period.  
   - 4

### Actual Screenings

1. Number of children who:  
   - are included in lines 1, 2, or 3 above and  
   - passed their UNHS screening and  
   - had no risk factors.  
   - 5
2. + Number of children reported this reporting period that PASSED EARS.  
   - 0
3. + Number of children reported this reporting period that PASSED UNHS but have Risk Factors for delayed onset hearing loss.  
   - 0
4. + Number of children reported this reporting period that Did NOT PASS EARS.  
   - 0
Working EARS
My Alerts
Working EARS
Child Health Profile
Working EARS
Alert Response Center

Early Hearing Detection And Intervention

Alert Response Center

Priority: MSR
Source: Did Not Pass - AMMAYH OMMAYA
Alert Date: 2/4/2008
Protocol: Did Not Pass Step #1

To: aschoeff@isdh.in.gov
CC: 
Body: This is a referral for baby Ammayh Om Maya.

Notify me to follow-up in 1 days.

Send
Working EARS
Secured Email Center

Early Hearing Detection And Intervention

<table>
<thead>
<tr>
<th>Sender</th>
<th>Reply To</th>
<th>Sent Date</th>
<th>Subject</th>
<th>Message Snippet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alan Schoeff</td>
<td><a href="mailto:aschoeff@isdh.in.gov">aschoeff@isdh.in.gov</a></td>
<td>2/4/2006 10:32:02 AM</td>
<td>response to fred</td>
<td>testing</td>
</tr>
<tr>
<td>Gayla Hutsell</td>
<td><a href="mailto:ghutsell@isdh.in.gov">ghutsell@isdh.in.gov</a></td>
<td>12/21/2007 12:08:13 PM</td>
<td>Take care of this baby......please</td>
<td>Baby, baby, baby.....</td>
</tr>
<tr>
<td>Alan Schoeff</td>
<td><a href="mailto:aschoeff@isdh.in.gov">aschoeff@isdh.in.gov</a></td>
<td>12/14/2006 4:43:17 PM</td>
<td>testing zero delay</td>
<td>xxxx</td>
</tr>
<tr>
<td>Alan Schoeff</td>
<td><a href="mailto:aschoeff@isdh.in.gov">aschoeff@isdh.in.gov</a></td>
<td>12/14/2006 4:37:21 PM</td>
<td>fred</td>
<td>testing new click here and a bunch of text</td>
</tr>
</tbody>
</table>

This is a referral for baby Ammayh Ommaya.
Working EARS
Secured Email
Working EARS Email Notice

ISDH, Early Hearing Detection and Intervention - Alert - Message (HTML)

This message was sent with High importance:

From:  Aschoeff@isdh.in.gov
To:    Schoeff, Alan
Cc:    
Subject:  ISDH, Early Hearing Detection and Intervention - Alert

Alan Schoeff has sent you a secured email.

To Access your message, simply follow these steps:

1. Click here to login to the EHDI Alert Response System (EARS) to view the contents of this secured email.
2. Enter your EARS user name and password when prompted.
3. Access your inbox to view the message.

If your Email Software does not support the 'Click Here' link above, copy the URL below and paste it into the address bar on your web browser.

http://healthdatacenter.isdh.in.gov/EARS/dataentry/responses/SecuredEmail.aspx?Response_ID=435&Mailed_To=aschoeff@isdh.in.gov
Working EARS
Alert Response Center

Early Hearing Detection And Intervention

Alert Response Center

Priority | Source | Message | Alert Date | Protocol
--- | --- | --- | --- | ---
* | MSR | Did Not Pass - ANMAYIOMAYA | 2/4/2009 4:00:00 PM | Did Not Pass Step #1

_email_ _fax_ _phone_ _letters_ _finalize case_

Letter Creation

Step 1 - Select A Letter Group:

1st Letters At Risk
1st Letters Not Passing
1st Letters - Equip Probl
1st Letters - Unauthorized
Parent Tool Kit
2nd Letter - Hospital Error
2nd Letter Not Passing
2nd Letter At Risk
2nd Letter - Unauthorized
1st Letters - Hospital Error
2nd Letter - Equipment Fix
Early Hearing Detection And Intervention

Group Identifiers

- Enter New Group Identifier Here
- Add New Group Identifier

Letter Groupings

- Assigned Letters
- Available Letters

Delete Selected Group Identifier

1st Letters At Risk
1st Letters Not Passing
1st Letters - Equipment Problems
1st Letters - Unauthorized Refusal
Parent Tool Kit
2nd Letter - Hospital Error
2nd Letter Not Passing
2nd Letter at Risk
2nd Letter - Unauthorized Refusal
1st Letters - Hospital Error
2nd Letter - Equipment Problems

<< Assign
Remove >>
Working EARS

Letter Screen

Congratulations on the arrival of your new baby! I am contacting you from Indiana’s Early Hearing Detection and Intervention Program (EHDI). According to our records, your baby received a hearing screening at the hospital and did not pass that screening. This may have happened for many reasons, but the next thing you need to do is have your baby receive a hearing evaluation. It is difficult to tell if a baby hears just by observing the baby. If your baby has not received the recommended evaluation, you may contact First Steps Early Intervention Program at (800) 441-7037 or call your baby’s audiologist. Follow-up hearing evaluations are covered by First Steps Children’s Special Healthcare Services for children who qualify. Private insurance may also cover testing. If your baby has already received the recommended hearing evaluation, please fill out the enclosed form and return it in the envelope provided. If you need more help, please call (800) 715-9006 and ask to talk to Bess Godard. Enclosed please find the EHDI brochure called “What is My Baby’s Hearing?”

Letter Body

<table>
<thead>
<tr>
<th>ID</th>
<th>Recipient</th>
<th>Delay Days</th>
<th>Letter Body</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Mother</td>
<td>14</td>
<td>According to our records, your baby may not have received a hearing screening before leaving the hospital. Screening checks to see if your baby’s hearing is normal. If more testing is needed, your baby born in 1994 has a hearing screening. If your baby has already received a hearing screening, please fill out the enclosed form and return it in the envelope provided. If your baby did not receive a hearing screening, please contact the hospital where your baby was born and set up a time to go back as soon as possible. There should be an additional charge for the hearing screening. If your baby returns to your baby’s birthing hospital, the hearing screening is normal. If more testing is needed, please call (800) 015-0006 and ask to talk to Bess Godard. Enclosed please find the EHDI brochure called “What is My Baby’s Hearing?”</td>
</tr>
</tbody>
</table>
Early Hearing Detection And Intervention

Please identify the Audiologist & clinic for whom this report is being submitted.
Working EARS
Diagnostic Audiology Evaluation

Early Hearing Detection And Intervention

Diagnostic Audiologic Evaluation (DAE) Results

- Initial Report
- Follow-Up Report

Child's Information:
- Office ID (MRN)
- Last Name: Ommagaya
- First Name: Imagaya
- Birth Date
- Gender: M
- Birth Facility
- UNHS Results: Pass

Birth Mother's Information:
- Last Name: Ommagaya
- Address
- City/State/Zip: IN
- Phone
- Email

Cancel Next
### Early Hearing Detection And Intervention

#### Diagnostic Audiologic Evaluation (dae) Results

**Primary Care Physician for (Ommaya, Ammayh):**
- No Name Selected

**Audiologist:** Koziel, Valeri

**Clinic Name:** Babies R Fun Audiology Center

**Address:** Babies R Fun Way

**City/State/Zip:** Babies R Fun Land, JN 46320

**Case History/Risk Factors:** Yes

#### Methods of Evaluation:

- Click ABR
- Toneburst ABR
- Bone Conduction ABR
- Screening ABR
- TEOAE
- BOA
- High Frequency Tympanometry
- CPOAE
- VRA
- Tympanometry (220/226)
- CPA
- MEMR
Working EARS
Diagnostic Audiology Evaluation

Early Hearing Detection And Intervention

Diagnostic Audiologic Evaluation (DAE) Results

Ear: Type Degree
Left: --Select One-- --Select One--
Right: --Select One-- --Select One--

Comments:

Additional Recommendations/Resources:
- Medical Follow-up with PCP: Yes No
- Medical Follow-up with ENT: Yes No
- Referral for Genetics: Yes No
- Enrolled in First Steps: Yes No
- Referred to First Steps: Yes No
- ENT Provider: No Name Selected
- Genetics Provider: No Name Selected

- Medical Follow-Up with PCP
- Hearing Aid(s)
- Audiologic Monitoring in weeks?
- Cochlear Implant
- Communication Assessment (Spoken/Visual)
- Referral for Vision Screening/Evaluation

Scheduled Follow-up Date:

Results Communicated to:
- ISDH
- PCP
- ENT
- Parent/Family
- First Steps
- Other:

Cancel Back Submit
(H)EARS a Conclusion

- Improves accuracy and reporting by hospitals and audiologists (direct data entry)
- Increases timeliness of data sharing
- Improves communication between EHDI partners
- Interacts with larger database (ODS)
- Reduces loss to follow-up and documentation of children
- Easy to access, paperless, “active” system that “works” for the user
- System acts as platform for other applications
(H)EARS the Real Conclusion