Indiana’s EHDI Alert Response System (EARS): A Year Later: Successes and Challenges

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Overview

- Background: Integrated Data System (IDS) and the EHDI Alert Response System (EARS)
- EARS - Improved Communication
- Successes and Challenges
Landmarks in Data Integration in Indiana

- 1974- Regenstrief Institute began working on data integration.
- Mid-1980s- ISDH started moving forward with data integration.
- 1993- Indiana Legislature mandated the creation of the State Health Data Center.
- 2001- Operational Data Store developed.
IDS 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)
- Cystic Fibrosis
IDS Users

- Newborn Screening
- Vital Records
- Data & Statistics
- IBDPR
- Epi Resource Center
EHDI Program in Indiana
EHDI 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 2007

- 98% received UNHS
- 1.95% did not pass  
  - Normal hearing 65%
  - Hearing loss 7.6%
  - In process 2%
  - Died/moved/refused 4.6%
  - LTF/LTD (screen to eval) 20.8%
  - LTF/LTD (HL dx to EI) 20.9%

Prevalence of Hearing Loss 1.5 per 1000 screened

Data calculated Jan 2009
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 EHDI staff to view these entries almost instantaneously; and
  - generates alerts and responses that improve communication among hospitals, EHDI, audiologists, physicians and others.
History of EARS

- **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
- **2008** — EARS moved to production and trained 80% of hospitals — began pilot testing of audiology reporting section — conversion from ODS to IDS began
- **2009** — ODS/IDS conversion almost complete - additional hospital training scheduled — begin development of web-based audiology training
Working EARS

- Health Data Center Gateway
- EARS Welcome
- EARS Exceptions
- EARS Hold-Overs
- Processing an EARS Alert
- Child Health Information Profile (CHIP)
- Communicating by secure E-mail
- Alert Response Center (ARC)
- Diagnostic Audiology Evaluation (DAE)
- Case Determination
- Backdoor Information
Indiana Health Data Center Portal

Health Portal Announcements

Claim Mgmt transitioning to new ACIS system
2/2/2009
As of February 2, 2009, the Indiana State Department of Health will be transitioning to a new claims system. The change currently only affects Bio-Terrorism/Preparedness claims. To access the new claims system on February 9th you will need to click on the "ACIS" tab in the portal as the "Claim Mgmt" tab will no longer be available. All previous claims and user access for each organization will be transitioned over to the new system on February 9th.

Web Mail Access
Access your Indiana State email remotely via browser-based mail client interfaces. Click the "read more" link to access the Indiana State Web Mail Service.

JHAN - How to sign up additional contacts
3/13/2009
To sign up additional JHAN contacts that you want to receive alert the same time as your JHAN Coordinator, add those users through the registration process just as if you were the user. Access the registration process by clicking on the 'Register' button on the left hand menu (only visible if you're logged off). Use the contacts security code you received in the email.

Indiana Safety Net
5/7/2009
Get the health and safety tips you need in one convenient location! Tips for Consumers, Children, Recreation, and More!

The Bioterreornism Threat: Indiana Responds
5/5/2009
The Bioterreornism Threat: Indiana Responds - a collection of three public broadcasting reports -- will detail specific bioterreornism threats in Indiana, examine our preparedness for an attack, and outline the ways in which Hoosiers should respond in the event of an attack.
read more...
Welcome to the
Indiana State Department of Health

Early Hearing Detection and Intervention (E-HDI)

Online Reporting system. Please make a selection from the menu items on the left.
EARS

- Enables Improved Communication between EHDI Staff and ....
  - Hospital Staff
  - First Steps - System Points of Entry
  - Audiologists
  - Physicians

- And here’s how....
Hospital Staff Report “Exceptions”

- Not Screened
  - Deceased
  - Transferred
  - Hospital Error
  - NICU
  - Unauthorized Refusal
  - Religious Objection
  - Equipment Problems
  - Screening Next Month

- Did Not Pass UNHS

- Passed but At Risk
- Did Not Pass
- Passed At Risk
- Rescreen Next Month
- NICU
EARS “Hold Overs”

- Babies who have not been screened

“Hold overs” must have an updated code to complete final submission of report

- If screened, results will be displayed
Exceptions Create Alerts

- High Priority
- Medium Priority
**EARS**

**Child Health Information Profile**

### Child Demographics

<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>Gender</th>
<th>Race</th>
<th>Ethnicity</th>
<th>Siblings</th>
<th>Facility Type</th>
<th>Gestational Age</th>
<th>ODS ID</th>
<th>Birth Order</th>
<th>Plurality</th>
<th>Transfused?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M</td>
<td></td>
<td></td>
<td>No Siblings</td>
<td></td>
<td></td>
<td>6205466</td>
<td>1</td>
<td></td>
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</table>

### Mother's Information

<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Father's Information

<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

### Hearing Data

### Alerts

<table>
<thead>
<tr>
<th>Priority</th>
<th>Source</th>
<th>Message</th>
<th>Created</th>
<th>Delay To</th>
<th>Assigned To</th>
<th>Resolved</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MSR</td>
<td>Did Not Pass</td>
<td>1/21/2009</td>
<td>1/21/2009</td>
<td>JULIE SCHMUTE</td>
<td></td>
</tr>
</tbody>
</table>
### EARS

**Child Health Information Profile**

#### Hearing Data

<table>
<thead>
<tr>
<th>Priority</th>
<th>Source</th>
<th>Message</th>
<th>Created</th>
<th>Delay To</th>
<th>Assigned To</th>
<th>Resolved</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MSR</td>
<td>Did Not Pass</td>
<td>1/21/2009</td>
<td>1/21/2009</td>
<td>JULIE SCHULTE</td>
<td></td>
</tr>
</tbody>
</table>

#### MSR Exception Data

<table>
<thead>
<tr>
<th>Period</th>
<th>Facility</th>
<th>FLC Code</th>
<th>Screened</th>
<th>Referred</th>
<th>Transfers</th>
<th>Physician</th>
<th>Phone</th>
<th>EM Created</th>
<th>Last Created</th>
<th>Comments</th>
</tr>
</thead>
</table>

#### IU LAB Data

<table>
<thead>
<tr>
<th>L Screen</th>
<th>Result</th>
<th>R Screen</th>
<th>Result</th>
<th>Risk Factor</th>
<th>Not Screened</th>
<th>Mother</th>
<th>Physician</th>
<th>Violated</th>
<th>CORR. REQ.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/12/2009</td>
<td>Pass</td>
<td>1/12/2009</td>
<td>Did Not Pass</td>
<td>Unknown</td>
<td></td>
<td>DEBORAH RACELKI</td>
<td>5</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

#### Notes

You can type a note here.

Add To Log
Alert or CHiP Questions....
Alert or CHiP Questions....

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

This message was sent with High Importance.

Sent: Wed 2/6/2008 11:23 PM

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/dataentryresponses/secureemail.aspx?Response_ID=435&mailing_To=aschoeff@isdh.in.gov
### Alert Response Center

<table>
<thead>
<tr>
<th>Priority</th>
<th>Source</th>
<th>Message</th>
<th>Alert Date</th>
<th>Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="error_icon" alt="" /></td>
<td>MSR</td>
<td>Did Not Pass</td>
<td>1/21/2009 2:10:34 PM</td>
<td>Did Not Pass Step #1</td>
</tr>
</tbody>
</table>

- **Email**
- **Fax**
- **Phone**
- **Letters**
- **Finalize Case**

---

#### Letter Creation

**Step 1 - Select A Letter Group:**

1. 1st Letter - At Risk
2. 1st Letter - Did Not Pass
3. 1st Letter - Equipment Problems
4. 1st Letter - Unauthorized Refusal
5. Diagnosed Hearing Loss
6. 2nd Letter - Hospital Error
7. 2nd Letter - Did Not Pass
8. 2nd Letter - At Risk
9. 2nd Letter - Unauthorized Refusal
10. 1st Letter - Hospital Error
11. 2nd Letter - Equipment Problems
12. 3rd Letter - At Risk
13. 3rd Letter - Unauthorized Refusal

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*Opening page: [https://healthnet.sdhin.org/Ears/DATENTRY/Response/ASPP/ResponseAlertID=11839]*
Alerts Create Responses (ARC)
### Early Hearing Detection And Intervention

#### Diagnostic Audiology Evaluation (DAE) Results

**Initial Report**

<table>
<thead>
<tr>
<th>Child's Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office ID (MRN)</td>
</tr>
<tr>
<td>Last Name: Ommagaya</td>
</tr>
<tr>
<td>First Name: Imagaya</td>
</tr>
<tr>
<td>Birth Date:</td>
</tr>
<tr>
<td>Gender: M</td>
</tr>
<tr>
<td>Birth Facility:</td>
</tr>
<tr>
<td>UNHS Results: Pass</td>
</tr>
</tbody>
</table>

**Birth Mother's Information**

<table>
<thead>
<tr>
<th>Last Name: Ommagaya</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address:</td>
</tr>
<tr>
<td>City/State/Zip:</td>
</tr>
</tbody>
</table>

**Contact Information**

- First Name: 
- Phone: 
- Email: 

---

**Cancel Next**
Diagnostic Audiology Evaluation

Early Hearing Detection And Intervention

Diagnostic Audiologic Evaluation (DAE) Results

Primary Care Physician for: Omaya, Ammayh:
- No Name Selected

Audiologic Evaluation Date: 02/02/2009

Audiologist: KOZIEL, VALERI

Clinic Name: Babies R Fun Audiology Center

Address: Babies R Fun Way

City/ST/Zip: Babies R Fun Land, IN 46320

Case History/Risk Factors: Yes

Methods of Evaluation:
- Click: ABR
- Toneburst ABR
- Bone Conduction ABR
- Screening ABR
- TEOAE
- OAE
- BOA
- High Frequency Tympanometry
- Tympanometry (220/226)
- CPA
- DPOAE
- VRA
- CPA

Cancel Continue
Diagnostic Audiology Evaluation

Early Hearing Detection And Intervention

Diagnostic Audiologic Evaluation (DAE) Results

Audiologic Results for (Ommaya, Ammayah):

- Left: --Select One--
- Right: --Select One--

Additional Recommendations/Resources:
- Medical Follow-up with PCP: Yes No
- Medical Follow-up with ENT: Yes No
- Refer to First Steps: Yes No
- Referred to First Steps: Yes No
- Referral for Vision Screening/Evaluation

Scheduled Follow-up Date:

Results Communicated to:
- ISDH
- PCP
- ENT
- Parent/Family
- First Steps
- Other ( )
Responses Enable Case Determination

Early Hearing Detection And Intervention

Alert Response Center

File Status: Closed
Delete

UNHS Results
Left Ear: Pass
Right Ear: Did Not Pass

Diagnosed Hearing Outcome
Normal

Degree
Normal (0-20 dB HL)

Risk Factors

Update

Protocol
Pass Step #1
Pass Step #1
1/23/2009
7:56:04 AM

Email
Fax
Phone
Letters
Finalize Case

Internet
(H)EARS Challenges

- Buy-in, training, and use of the system
- Increased technical support to end users
- Increased internal workload
- Data Integration
  - Conversion
  - New HIPAA-covered entity
  - Communication with the data system
  - Evolution of the EARS application
(H)EARS Successes

- Improved accuracy and reporting by hospitals (direct data entry)
- Increased timeliness of data sharing
- Improved relationships in EHDI system
- More accurate identification of children through larger database (IDS)
- Reduced loss to follow-up
- and documentation of children
- Easy to access, paperless, “active” system that “works” for the user
- Foundation for other Newborn Screening applications
(H)EARS the Real Conclusion