


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

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Overview

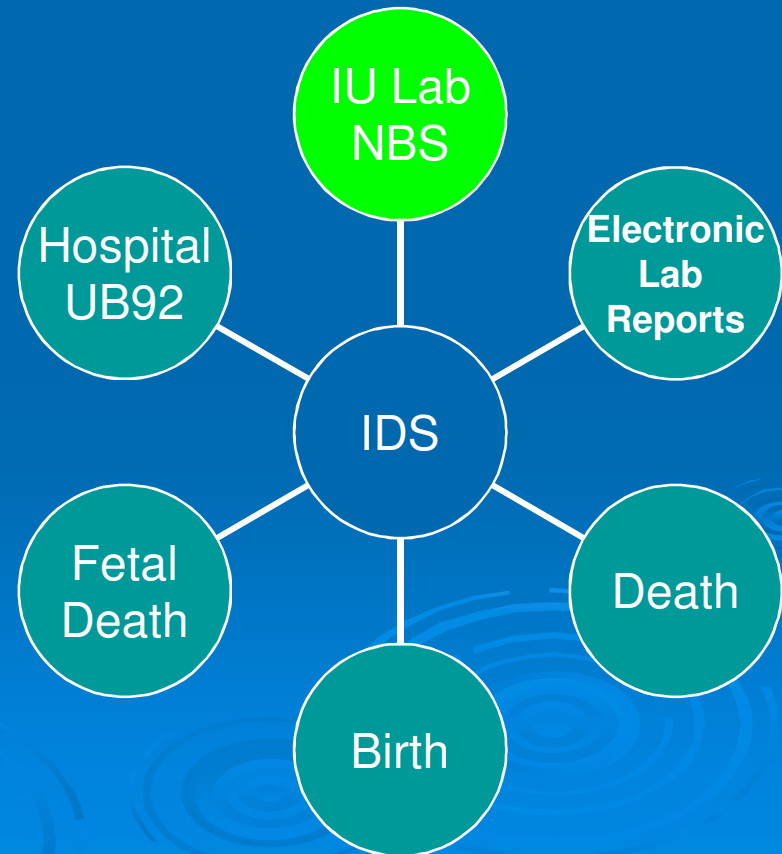
- Background: Integrated Data System (IDS) and the EHDI Alert Response System (EARS)
 - Working in the EARS environment
 - Successes and Challenges
- 

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.

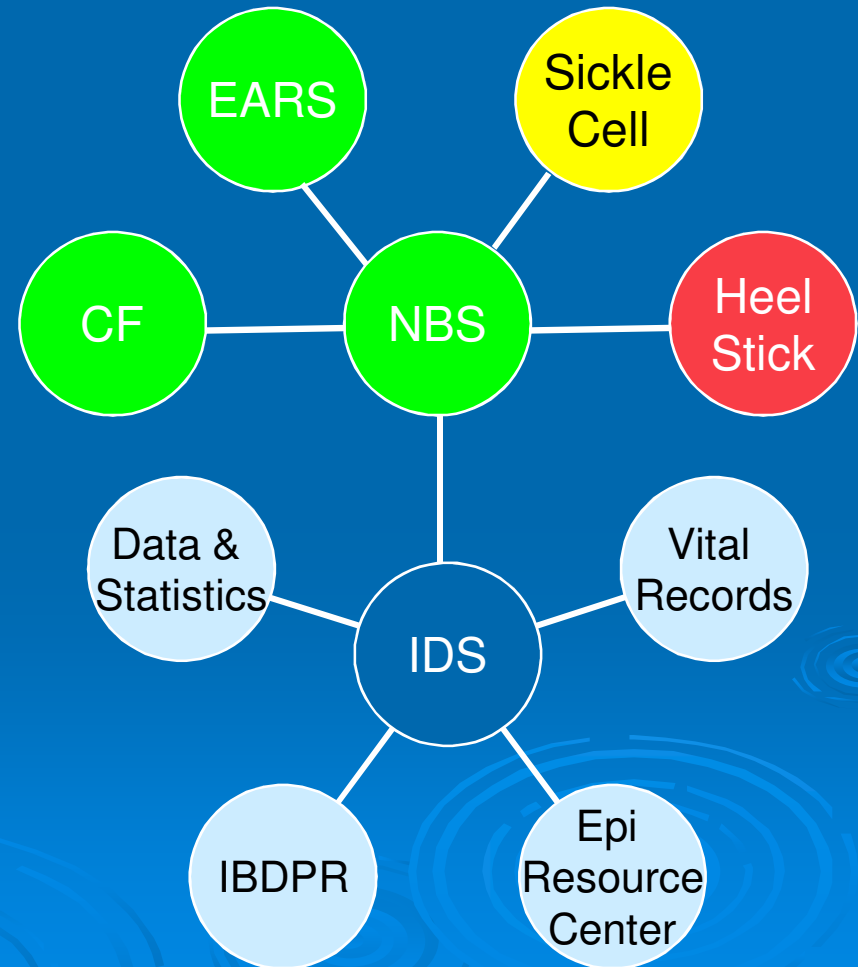
IDS Data Sources

- 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 n=1743
 - 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

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 informs the appropriate staff member that the next follow-up action should be taken.

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
- 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

Health Data Center Portal

The screenshot shows the Indiana Health Data Center Portal in a Windows Internet Explorer browser window. The browser's address bar displays the URL <https://healthnet.isdh.in.gov/datacenter/main.aspx>. The page title is "ISDH Healthnet Datacenter Portal - Windows Internet Explorer".

The main content area is titled "Indiana Health Data Center Portal" and features a "Main" tab. On the left side, there is an "Account Login" section with fields for "Username" and "Password", and buttons for "Sign In", "Register", and "About". Below the login section is a "Forgot Your Password?" link.

The main content area displays "Healthnet Portal Announcements" with the following items:

- Claim Mgmt transitioning to new ACIS system** (2/2/2009): As of February 9, 2009, the Indiana State Department of Health will be transitioning to a new claims system. This 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** (7/2/2008): 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. --> [read more...](#)
- IHAN - How to sign up additional contacts** (8/10/2005): To sign up additional IHAN contacts that you want to receive an alert the same time as your IHAN Coordinator, add those users through the registration processes 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** (5/5/2004): Get the health and safety tips you need in one convenient location! Tips for Consumers, Children, Recreation and more! [read more...](#)
- The Bioterrorism Threat: Indiana Responds** (5/5/2004): The Bioterrorism Threat: Indiana Responds -- a collection of three public broadcasting reports -- will detail specific bioterrorism 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...](#)

At the bottom of the page, there are links for "Register | About | Request Password".

The Windows taskbar at the bottom shows the system tray with the time 11:46 AM and the system clock. The taskbar includes the Start button and several open applications: (118 unread) Yahoo..., Microsoft Outlook..., ISDH Healthnet Dat..., and Microsoft PowerPo... The system tray also shows "Internet | Protected Mode: On" and "100%" zoom level.

EARS Welcome

The screenshot shows a web browser window titled "ExternalWelcome - Windows Internet Explorer". The address bar contains the URL "https://healthnet.isdh.in.gov/Ears/ExternalWelcome.aspx". The page header features the text "Early Hearing Detection And Intervention" in yellow on a blue background. Below this, the "Healthnet Portal" navigation menu is visible on the left, listing items such as "My Alerts!", "My Account", "My EMail", "Data Entry", "Reports", "EHD Admin", "DAE", "MSR - New", "MSR - Update", "MSR - Report", and "Log Off". The main content area displays the "Indiana State Department of Health" logo and the "Early Hearing Detection and Intervention Program" logo. A red text message reads: "Online Reporting system. Please make a selection from the menu items on the left." The browser's taskbar at the bottom shows several open applications, including Yahoo!, Microsoft Outlook, ExternalWelcome, and Microsoft PowerPoint, along with the system clock showing 11:49 AM.

ExternalWelcome - Windows Internet Explorer
https://healthnet.isdh.in.gov/Ears/ExternalWelcome.aspx

Early Hearing Detection And Intervention

Healthnet Portal

- My Alerts!
- My Account
- My EMail
- Data Entry
- Reports
- EHD Admin
- DAE
- MSR - New
- MSR - Update
- MSR - Report
- Log Off

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.

Enter PID go

Internet | Protected Mode: On 100% 11:49 AM

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

Exceptions - Windows Internet Explorer
http://healthdatacenter.isdh.in.gov/EARS/DataEntryFaster/Exceptions.aspx?UPDATES=1

Google

Exceptions

Early Hearing Detection And Intervention

UNIVERSAL NEWBORN HEARING SCREENING WISHARD MEMORIAL

MONTHLY SUMMARY REPORTING DEC - 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).

Not Screened Due To:				
1. Deceased/Terminal	2. Transferred Out	3. Hospital Error	4. NICU	5. Unauthorized Refusal
6. Religious Refusal	7. Equipment Failure	8. Initial Screen Next Month	9. Rescreen Next Month	

New Patient Intake:		Pass UNHS: (previously reported as not screened or transferred IN)		Did Not Pass UNHS: (complete Refer To section)	
10. Transferred IN	11. Passed	12. Passed At Risk	13. Did Not Pass	14. Did Not Pass At Risk	

Use the following values to define to whom the child was referred, check all that apply.

A. First Steps	B. Primary Care Physician	C. Audiologist	D. Ear, Nose & Throat Physician
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Reason Code: 4 NICU

Facility Transfer: Out (code 2) In (code 10) No Transfer

Direction	Location	Date
In From	CLARIAN NORTH MEDICAL CENTER	12/03/2008 X

Medical Record #: t8392788 QS

Infant: Last Name Higgins First Name Robert Birth Order 1
Male DOB 11/01/2008
 Previously Unreported Child

Mother: Last Name Higgins First Name Kelly Phone (317) 839 - 7888

Primary Care Physician: BERGSTEIN, STEPHANIE

Comments: Reset

Only One Save and Add New Exception

Done

Internet | Protected Mode: On 100%

(118 unread) Yahoo!... Microsoft Outlook... Exceptions - Windo... Microsoft PowerPoi...

12:00 PM

EARS Exceptions

• Did Not Pass

• Passed At Risk

• Rescreen Next Month

• NICU

Exceptions - Windows Internet Explorer
 http://healthdatacenter.isdh.in.gov/EARS/DataEntryFaster/Exceptions.aspx?UPDATES=1

WISHARD MEMORIAL
 MONTHLY SUMMARY REPORTING DEC - 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).

Not Screened Due To:
 1. Deceased/Terminal 2. Transferred Out 3. Hospital Error 4. NICU 5. Unauthorized Refusal
 6. Religious Refusal 7. Equipment Failure 8. Initial Screen Next Month 9. Rescreen Next Month

New Patient Intake: Pass UNHS: (previously reported as not screened or transferred IN) Did Not Pass UNHS: (complete Refer To section)
 10. Transferred IN 11. Passed 12. Passed At Risk 13. Did Not Pass 14. Did Not Pass At Risk

Use the following values to define to whom the child was referred, check all that apply.
 A. First Steps B. Primary Care Physician C. Audiologist D. Ear, Nose & Throat Physician

Reason Code
 Facility Transfer: Out (code 2) In (code 10) No Transfer

Medical Record # QS

Infant: Last Name First Name Birth Order
 Sex DOB Previously Unreported Child

Mother: Last Name First Name Phone () - -

Primary Care Physician: MISHRA, PRAGYA

Comments Reset

Only One Save and Add New Exception

ID	Code	MRN	Infant Name	DOB	Mother Name	Mother Phone	Physician Name	Physician Phone	Referred To	Screen Date	Comments	Sex	PID	MB
2932	13	172433647	OMMYA, OMMIA	12/20/2008	,	317-869-7877	HO, CHESTER	765-448-8000	<input checked="" type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D	12/21/2008		F	6189938	X 0
2937	12	13548965	HEAR, EDDY	12/19/2008	HEAR, MOMMA	317-769-1111	MISHRA, PRAGYA	317-554-4600	<input checked="" type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D	12/20/2008		M	6189944	X 0
2930	9	172433708	WALLING, DRY	12/10/2008	WALLING, STONE	317-666-6666	WEAN, LAUREN	317-467-4500	<input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D			M	6189942	X 0
2933	4	18392788	HIGGINS, ROBERT	11/1/2008	HIGGINS, KELLY	999-839-2788	RICHESON, COBY	317-278-3200	<input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D			M	6189858	X 0
2934	4	172433710	SMITH, LAYLA	11/5/2008	,	999-924-8335	LORANT, DIANA	999-622-0000	<input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D			F	6189742	X 0
2935	4	172433437	RABBITS, CHASE	11/4/2008	,	999-408-6602	BAIN, DR	999-999-9999	<input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D			M	6189734	X 0

Internet | Protected Mode: On 100% 12:58 PM

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

HoldOvers - Windows Internet Explorer
http://healthdatacenter.isdh.in.gov/EARS/DataEntryFaster/Exceptions.aspx?UPDATES=1

Early Hearing Detection And Intervention
UNIVERSAL NEWBORN HEARING SCREENING
WISHARD MEMORIAL
MONTHLY SUMMARY REPORTING DEC - 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).

Save Changes Search

MRN	Child Name	Sex	DOB	B/O	Prev Code	New Code	Facility Transfers	Refer To:	Screen Date
t8392788	HIGGINS, ROBERT	M	11/1/2008		4		<input type="radio"/> Out (code 2) <input type="radio"/> In (code 10) Trans. Date: <input type="text"/> Select Facility: <input type="text"/>	<input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D	
t72433710	SMITH, LAYLA	F	11/5/2008	1	4		<input type="radio"/> Out (code 2) <input type="radio"/> In (code 10) Trans. Date: <input type="text"/> Select Facility: <input type="text"/>	<input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D	
t72433437	RABBITS, CHASE	M	11/4/2008	1	2		<input type="radio"/> Out (code 2) <input type="radio"/> In (code 10) Trans. Date: <input type="text"/> Select Facility: <input type="text"/>	<input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D	
t72433708	WALLING, DRY	F	11/10/2008	1	9		<input type="radio"/> Out (code 2) <input type="radio"/> In (code 10) Trans. Date: <input type="text"/> Select Facility: <input type="text"/>	<input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D	

Go To: << Back | 1) Hold Overs | 2) Exceptions | 3) Statistical Data | 4) Summary Data | Next >> | HOME

Exceptions Create Alerts

- High Priority

- Medium Priority

The screenshot shows a web browser window titled 'My Alerts - Windows Internet Explorer' with the URL 'http://healthdatacenter.isdh.in.gov/EARS/myalerts.aspx'. The page header includes 'Early Hearing Detection And Intervention' and 'EARS'. A table of alerts is displayed with the following data:

Priority	Source	Message	Alert Date	PI
High	MSR	Unauthorized Refusal - JULIE RUPPERT	2/20/2009	61
High	MSR	Did Not Pass - OMMIA OMMYA	2/19/2009	61
Medium	MSR	Passed At Risk - EDDY HEAR	2/19/2009	61

Red arrows point from the 'High Priority' text to the first two rows of the table. A yellow arrow points from the 'Medium Priority' text to the third row. The table also includes a 'Send Alert' button and a search field for 'Enter PID'.

EARS Child Health Information Profile CHIP

➤ To be added

Alerts Create Responses

ARC

- To be added



Diagnostic Audiology Evaluation

➤ To be added



Responses Enable Case Determination

- To be added



(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

