Using Program Evaluation to Improve the Iowa EHDI System

Early Hearing Detection and Intervention Conference

February 21, 2011
LEARNING OBJECTIVES

- Have a working knowledge of the steps needed to complete an evaluation
- Have the tools needed to create an EHDI logic model
- Know how to evaluate an EHDI surveillance system
OUTLINE

- Iowa EHDI background
- Iowa’s evaluation plan
- Evaluation methods and tools
- Preliminary findings
- Next steps
IOWA EHDI BACKGROUND
Iowa EHDI Structure

- IA Department of Public Health (IDPH)
  - CDC Grant
  - Surveillance
  - Short term follow up
  - Program evaluation, data analysis

- Child Health Specialty Clinics (CHSC)
  - HRSA Grant
  - Long term follow up
  - Family support, EI referrals
  - Medical home education

- Audiology Technical Assistance
**Legislative Mandate**

- Legislature went into effect January 1, 2004
  - Universal newborn hearing screening
  - Results reported within 6 days for kids 0 – 3
  - Communicate with other states for follow-up purposes
**Data System**

- Web based eScreener Plus (eSP™)
  - Optimization Zorn Corporation (OZ)
  - Two level login
    - IDPH security token
    - eSP™
  - Used by hospitals, Area Education Agencies (AEAs), private audiologists, ENTs, CHSC
ESP™

- Demographics
- Risk factors
- Hearing screens
- Diagnostic assessments
- Amplification
- Healthcare provider contacts
- Data summary reports
- Development of case management module
DEMOGRAPHICS

- Iowa has approximately 40,000 occurrence births each year
  - 1% home births
- 82 birthing hospitals
  - 60 level I hospitals
  - 19 level II hospitals
  - 3 level III hospitals
EHDI Process

- Birth screens
  - Most screens completed by nurses at the hospital
  - Most hospitals use OAE equipment
- Outpatient follow up screens
  - Hospitals, area education agencies, private audiologists, ENTs, CHSC regional centers
- Few diagnostic centers
  - 10 centers in Iowa
  - 4 centers along borders
Iowa EHDI Program Evaluation
Previous Evaluation Process

- No comprehensive evaluation plan
- Some data analysis
- EHDI program indicators
- Hospital survey
- Brief parent survey
CURRENT EVALUATION PROCESS

- Develop a comprehensive evaluation plan
- Program evaluation
- Improve EHDI system
- Secure additional funding for sustainability
Evaluation Goals

- Develop a comprehensive evaluation plan
- Help with program planning and prioritization
  - Identify program strengths and areas for improvement
- Ensure children/families are being served
- Track progress towards “1-3-6” goals
- Improve Iowa EHDI system of care through quality improvement
- Secure additional funding for program sustainability
- CDC/HRSA grant requirements
IOWA EHDI’S EVALUATION STEPS

- Form Steering Committee
- Assess current evaluation tools
  - Data analysis
  - Program Indicators
  - Logic model
- Identify evaluation questions of interest
- Prioritize evaluation focus areas
- Develop evaluation tools
  - Surveys
- Evaluate program components
- Provide results/feedback to stakeholders
EVALUATION STEERING COMMITTEE

- Representatives from:
  - Center for Congenital and Inherited Disorders Coordinator
  - EHDI lead audiologist
  - EHDI coordinator
  - CHSC EHDI program (Follow Up/GBYS grant)
  - EHDI program evaluator
ROLE OF STEERING COMMITTEE

- Advise/assist program evaluation
  - Review program indicators
  - Create logic model
  - Identify evaluation questions
EHDI Program Indicators

- Based on selected National EHDI Goals & Objectives
- Tracks program progress over time
- Prioritized indicators based on reporting requirements
  - Tier 1 - required for CDC/HRSA grants, reporting
  - Tier 2 - useful for program
  - Tier 3 - unable to report at this time
## Program Indicators
**Updated May 2010**

### Tier 1: NEED TO KNOW (high priority)

<table>
<thead>
<tr>
<th>#</th>
<th>Performance Indicator</th>
<th>Related National/ State Program Objective*</th>
<th>Data Source (*Potential)</th>
<th>Calculation</th>
<th>2008 Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Number and percent of infants screened before hospital discharge.</td>
<td>State</td>
<td>eSP</td>
<td>All births with completed initial screen by hospital discharge/all births</td>
<td>39643/40528 98%</td>
</tr>
<tr>
<td>3</td>
<td>Number and percent of infants screened before 1 month of age.</td>
<td>1.1</td>
<td>eSP</td>
<td>All births with completed initial screen by 1 month of age/all births</td>
<td>39117/40528 97%</td>
</tr>
<tr>
<td>4</td>
<td>Number and percent of infants whose families refuse screening.</td>
<td>1.1</td>
<td>eSP</td>
<td>All births where family refuse initial screen/all births</td>
<td>233/40528 .6%</td>
</tr>
</tbody>
</table>

Goal 1: All newborns will be screened for hearing loss before 1 month of age, preferably before hospital discharge.
Logic Model Purpose

- Visual description of program’s work
- Links program’s activities to outcomes
- Guide program decisions
- Ensure all stakeholders on “same page”
Logic Model Components

- Problem
- Inputs
- Activities
- Outputs
- Outcomes
- Impact
- Values
IOWA EHDI LOGIC MODEL

- Draft created by EHDI staff
- Revised by Evaluation Steering Committee
- Revised/Approved by EHDI Advisory Committee
EHDI Logic Model

**Problem**
Identification of hearing loss after six months of age results in a child’s language skills at age three to be about half those of a child with normal hearing.\(^1\),\(^2\)

**Newborns and children** identified with risk factors for delayed onset hearing loss are at risk for language delay.\(^3\),\(^4\)


**Newborns and children** who are deaf, hard-of-hearing or at risk for delayed onset hearing loss are identified early and provided with timely and appropriate intervention and support.

**Values**
- Relationships with hospitals, healthcare providers, audiologists and educators to provide screens, rescreens, diagnostic evaluation and referral for family support and intervention
- Capacity and/or experience to perform activities related to newborn hearing screening and follow up
- Political will
- Families participation in newborn hearing screening system
- Families have a right to choose a communication mode for their child

**Inputs**
- What we invest
  - Statutory authority
  - Federal funding
  - CDC, HRSA
  - Trained staff with experience in provision of services to children with hearing loss
  - Partnerships with healthcare providers, educators and audiologists
  - Partnerships with state leaders, families and other stakeholders
  - Relationships with national partners
  - In-kind staff
  - Surveillance database
  - Relationship with IDPH Bureau of Health Statistics

**Activities**
- What we do
  - Screen/Rescreen
  - Referral and follow-up
  - Diagnose
  - Family support
  - Report/Evaluate
  - Train
  - Educate
  - Raise public awareness
  - Surveillance
  - Capacity development
  - Communication
  - Data Sharing

**Outputs**
- Products of our activities
  - Children will be connected to a medical home by 1 month of age
  - Children receive initial screen by 1 month of age
  - Children who do not pass initial screen receive a rescreen by 1 month of age
  - Children who do not pass rescreen receive diagnosis by 3 months of age
  - Children diagnosed with hearing loss receive family support upon diagnosis
  - Children with hearing loss receive amplification (if appropriate) by 3 months of age
  - Children diagnosed with hearing loss are enrolled in Early ACCESS (early intervention) within 6 months of age
  - Audiolists and health care providers implement/demonstrate evidence based practices
  - Engagement of healthcare providers, educators, families, policy makers in the statewide EHDI system
  - The general public has an increased awareness of newborn hearing screening, diagnosis and family support
  - Timely, complete and accurate data
  - Newsletter and website are used as a resource for newborn hearing screening, diagnosis, risk factors, and family support

**Impact**
- Results
  - Comprehensive, coordinated statewide system for children who are deaf or hard of hearing
  - Families have awareness of newborn hearing screening, follow up and family support
  - Children and families receive support they need/want
  - Improved resources for screening, detection, family support and intervention
  - Minimize the impact of disability associated with hearing loss including the economic implications
  - Improved academic performance
  - Improved quality of life
  - Effective surveillance system for early hearing detection and intervention
  - Data informs policy decisions and evidence based practice
  - Critical program activities are identified and sustained

**Revised June 2010**

WHAT TO EVALUATE?

- Screen/Rescreen
- Referral and follow up
- Diagnose
- Family Support
- Report/Evaluate
- Train

- Educate
- Raise public awareness
- Surveillance
- Communication
- Funding/Sustainability
- Other questions
Evaluation Questions

Screen/Rescreen

1. Are screening personnel communicating the importance of timely hearing screens (both initial and follow-up) to families and PCPs?
2. How effective is the communication between the hospital providing the screens and the child’s medical home?
3. Is the hospital communicating the importance of birth screens and outpatient follow-up screens to families and PCPs?
4. Are personnel at birthing facilities being trained on the screening procedures?
5. Are personnel at birthing facilities communicating with the families regarding the hearing screen and the process?
6. Are personnel at birthing facilities communicating the results of the screens to the families?
7. Are the hospitals, midwives, AEAs and audiologists helping families to make appointments for initial screens, follow-up screens, or medical referrals?
8. Are the hospitals, midwives, AEAs and audiologists educating families regarding next steps?
9. Are their insurance, transportation, time, or financial barriers to inhibit families from getting to their outpatient screens or diagnostic assessments?
## Prioritization

<table>
<thead>
<tr>
<th>Focus Area</th>
<th>Process Status (0-5)</th>
<th>Predicted Impact (0-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screen/Rescreen</td>
<td></td>
<td></td>
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<tr>
<td>Referral and follow up</td>
<td></td>
<td></td>
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<tr>
<td>Diagnose</td>
<td></td>
<td></td>
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<tr>
<td>Family Support</td>
<td></td>
<td></td>
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<tr>
<td>Report/Evaluate</td>
<td></td>
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<td>Train</td>
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<td>Educate</td>
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<td>Raise public awareness</td>
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<td>Surveillance</td>
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<td>Communication</td>
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<td></td>
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<tr>
<td>Funding/Sustainability</td>
<td></td>
<td></td>
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</tbody>
</table>

* Definitions taken from NICHQ Improving the System of Care Learning Collaborative, Learning Session 3, January 27-28, 2010*
<table>
<thead>
<tr>
<th>Level</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Process is not defined or status is unknown</td>
</tr>
<tr>
<td>1</td>
<td>There is an informal understanding about the process by some of the people who do the work. No widely recognized or formal written description of the process.</td>
</tr>
<tr>
<td>2</td>
<td>Process is documented. Process description includes all required participants (including families where appropriate). The process is understood by all.</td>
</tr>
<tr>
<td>3</td>
<td>The process is well-defined and enacted reliably. Quality measures are identified to monitor outcomes of the process and may be in use by few/some.</td>
</tr>
<tr>
<td>4</td>
<td>Ongoing measures of the process are monitored routinely by key stakeholders and used to improve the process. Documentation is revised as the process is improved.</td>
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<tr>
<td>5</td>
<td>Process outcomes are predictable. Processes are fully embedded in operational systems. The process consistently meets the needs and expectations of all families and/or providers.</td>
</tr>
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</thead>
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<tr>
<td>0</td>
<td>This process has only minimal or indirect impact on patient services and outcomes</td>
</tr>
<tr>
<td>1</td>
<td>This process will improve services for our patients, but other processes are more important</td>
</tr>
<tr>
<td>2</td>
<td>This process has significant impact on outcomes for our patients</td>
</tr>
<tr>
<td>3</td>
<td>This process is necessary for delivering patient services it has a major, direct impact on the outcomes</td>
</tr>
<tr>
<td>4</td>
<td>This process is absolutely essential for achieving results. Improvement in this process alone will have a direct, immediate impact on outcomes</td>
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<tbody>
<tr>
<td>5</td>
</tr>
<tr>
<td>4</td>
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<tr>
<td>3</td>
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<td>2</td>
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<th>0</th>
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**Process status**

*Topic areas in upper left made the list of focus areas*
# Evaluation: Phase 1

<table>
<thead>
<tr>
<th>Focus Areas</th>
<th>Evaluation Method</th>
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<tbody>
<tr>
<td>Surveillance</td>
<td>Surveillance Survey</td>
</tr>
<tr>
<td>Referral Processes</td>
<td>Hospital Survey</td>
</tr>
<tr>
<td></td>
<td>Parent Survey</td>
</tr>
<tr>
<td></td>
<td>Processes Survey</td>
</tr>
<tr>
<td>Family Communication</td>
<td>Parent Survey</td>
</tr>
</tbody>
</table>
SURVEILLANCE SURVEY DESIGN

- SurveyMonkey™
- 33 multiple choice and open-ended questions
- Distributed to eSP™ users by
  - Email
  - Posting on system login screen
  - Announcement at EHDI symposium
SURVEILLANCE SURVEY

6. How are demographics entered into the EHDI data system? (select all that apply)

☐ Demographics are manually entered into the EHDI data system

☐ Demographics are imported into the EHDI data system from another data source (electronic medical record, etc)

☐ Unknown

☐ Other (please specify)

* 7. What results are entered into the EHDI data system?

☐ Birth/outpatient hearing screens

☐ Diagnostic hearing assessments only

☐ Both hearing screens and assessments

8. How are results entered into the EHDI data system? (select all that apply)

☐ Results are manually entered into the EHDI data system

☐ Results are automatically imported from hearing screening/audiologic equipment

☐ Results are imported into the EHDI data system from another data source

☐ Unknown
Hospital Survey Design

- Hard copy
- 18 multiple choice and open-ended questions
- Distributed to EHDI contacts at Iowa birthing hospitals by email
HOSPITAL SURVEY

2) What hearing screening technique do you currently use? (select all that apply)
   - DPOAE
   - TEOAE
   - AABR

3) What technology does your facility employ? Please list. (AudX, ILO88, Echoport, Algo 3, etc)
   ____________________________

4) What was the date your hearing screening equipment was purchased?
   ____________________________

5) Do you have policies and procedures to support your newborn hearing screening program?
   - Yes
   - No

6) Do you use an electronic medical record system?
   - Yes, please list name of system used ____________________________
   - No

7) If you use the EMR (electronic medical record), please describe how a PCP (primary care provider) that does not belong to your health system receives the screening results.
   - eSP letter, by fax or mail
   - Discharge summary, by fax or mail
   - Electronic medical record
   - Other, please list ____________________________
PARENT SURVEY DESIGN

- SurveyMonkey™ and hard copy
- 2 versions
  - Hospital births
  - Home births
- Skip patterns
- 24 or 30 multiple choice and open-ended questions
- Distributed to 2116 parents by mail
PARENT SURVEY SAMPLING METHOD

- DOB of January 1, 2010 to June 30, 2010
- Only patients with contact information
- Exclude patient outcome of deceased or moved out of state
- Hospital births stratified sample
  - Pass birth screen with/without diagnostics
  - Refer/miss birth screen with/without diagnostics
- Home births sample
  - Place of birth as home
Hospital Birth Survey

5. Before you went to the hospital to have your baby, did you know that the hospital screens all babies for hearing loss?
   - Yes
   - No

6. If you were given written information about the newborn hearing screening, when was it given to you? [Select all that apply]
   - While I was in the hospital
   - Before I left the hospital
   - No written information was given
   - Other, please explain ____________________________
HOME BIRTH SURVEY

5. Before you had your baby, did you know there is a law that requires hearing screening of all newborns and infants in Iowa?

- Yes
- No

6. If you were given written information about the newborn hearing screening, when was it given to you? Select all that apply

- Information was included in my birth packet
- I received a letter from the Iowa Department of Public Health
- I received a letter from my medical provider (OB/GYN, midwife, primary care provider)
- No written information was given to me
- I don’t remember
- Other, please explain ______________________
SURVEILLANCE SURVEY FINDINGS

- Most users enter demographics/results manually
- Timeliness of data entry is okay
- Data system is easy to use and appropriate
- QA activities can be improved
- Retraining is necessary
- Suggestions for data system improvements
  - Populating city, county when zip code is entered
  - Using birth certificate to populate state data systems
Hospital Survey Findings

- More hospitals have AABR equipment since 2009
- More hospitals provide OP screens since 2009
- Majority of hospitals use OAE equipment
- Many hospitals use old equipment
- \( \frac{1}{4} \) of hospitals do not provide OP screens
- Many hospitals help schedule OP appointments
NEXT STEPS

- Parent Survey
- Processes survey
- Hospital quarterly QA reports
- Summarize phase 1 findings
- Develop future evaluation plan
ACKNOWLEDGEMENTS

- CDC Team
  - Marcus Gaffney
  - Xidong Deng
  - Jill Glidewell, CDC EIS Officer
- EHDI Steering Committee
- EHDI Advisory Committee
LOGIC MODEL/EVALUATION RESOURCES

- CDC Framework for Program Evaluation in Public Health
- CDC Updating Guidelines for Evaluating Public Health Surveillance Systems
- W.K. Kellogg Foundation Logic Model Development Guide
CONTACT INFORMATION

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