“Like a Good Neighbor…..”
Integrate with Other State Databases to Help Improve Follow-Up

2008 National EHDI Conference
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Erin Estrada, BS

Michigan Department of Community Health
Early Hearing Detection and Intervention Program
Overview

• Background on Michigan
• Integration with other state databases
  – Newborn Screening
  – Vital Records
    • Electronic Birth Certificate (EBC)
    • Birth Defects Registry (BDR)
  – Children’s Special Health Care Services (CSHCS)
  – Michigan Care Improvement Registry (MCIR)
Michigan Legislation

- **Screening**
  - Medicaid policy
    - More than 15 Medicaid births then hospitals required to screen infants
  - Standard of care

- **Reporting**
  - Mandated reporting as of February 23, 2006
2006 Michigan Data

- 126,338 births
- 123,754 screened (97.9%)
- 1,882 infants did not pass final hearing screen
- 101 children have permanent hearing loss
- 25 children late onset hearing loss
- 33/101 children enrolled in Part C
Reporting Hearing Screening
95 Michigan Birthing Hospitals

Hospital can report initial hearing screens two ways
1. Metabolic blood card
   - 90 hospitals
2. Electronic Birth Certificate
   – 5 pilot hospitals
Newborn Screening

• Share Database

• Benefits
  – Demographic Information
  – Primary Care Physician
  – Hearing Results
  – Automated Follow-Up System
  – Improve Metabolic Quality Assurance
Screening Data
Diagnostic Data

Specimen

Main

Query Screen

Demographics

Demographics [OLD]

Supervisor Review

Configuration

Hearing

First name: [BLANK] Last name: [BLANK]

< Kit no: 0083657 Ascn: no: [BLANK] >

DOB: 05/28/2004 NICU Gender: Male

Intial and Rescreen results

Diagnostic results

Date diagnosed: 01/26/2005 Date entered: 02/10/2005

Test Method

1. OAE
2. Immittance
3. Click ABR
4. Tone Brust ABR
5. Bone ABR

Test Results

RE LE
Within Normal Limit
Sensorineural
Conductive
Mixed
Mild
Moderate
Severe
Profound
Auditory Dys-synchronus
Undetermined

Diagnosis Code

BSNSEV
Newborn Hearing Screening

- **Automated Follow-Up System**
  - Follow-up database allows tracking of all referrals (missed, incomplete, unilateral and bilateral referrals)
  - Action tree allowing to contact primary care provider, re-screen site, and if needed public health nurse to help with follow-up
## All Actions

### Status

<table>
<thead>
<tr>
<th>Status</th>
<th>Name</th>
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<th>Activation</th>
<th>Timeout</th>
<th>Completed</th>
<th>Determination</th>
<th>Assigned</th>
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<td>Hearing - Screen Referred</td>
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<td>1/30/2005</td>
<td>1/30/2005</td>
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<td>Hearing - Screen Referred</td>
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<td>1/30/2005</td>
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<td>Completed</td>
<td>Hearing PCP 2</td>
<td>1/15/2005</td>
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<td>Completed</td>
<td>Hearing PCP 1</td>
<td>12/22/2004</td>
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<td>Hearing - Screen Referred</td>
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<tr>
<td>Unsuccessfully completed</td>
<td>Hearing Rescreen received already?</td>
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<td>12/22/2004</td>
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<td></td>
<td>Hearing - Screen Referred</td>
<td></td>
</tr>
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</table>
How Well is it Working?

Figure 1b: Percent Rescreened among Referred for Follow-Up, 2001-2005

<table>
<thead>
<tr>
<th>Year</th>
<th>No. Re-Screened</th>
<th>No. Referred</th>
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<tbody>
<tr>
<td>2001</td>
<td>608</td>
<td>3,597</td>
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<tr>
<td>2002</td>
<td>492</td>
<td>3,248</td>
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<tr>
<td>2003</td>
<td>582</td>
<td>3,536</td>
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<td>2004</td>
<td>2,975</td>
<td>4,356</td>
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<tr>
<td>2005</td>
<td>3,598</td>
<td>4,442</td>
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</table>
New Follow-Up Actions

- Undetermined and Conductive Transient
  - 5 months after initial diagnostic
  - 1 month after the first letter

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
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<tbody>
<tr>
<td>Undetermined</td>
<td>79</td>
<td>122</td>
<td>62</td>
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<tr>
<td>Conductive</td>
<td>72</td>
<td>73</td>
<td>168</td>
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<tr>
<td>Transient</td>
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New Follow-Up Actions

• 2 Letters in 2007
  – In other state database
    • Notification that child has a suspected hearing loss
  – Loss to follow-up
    • Loss to follow-up report twice per year
    • If child in another database send new letter
Electronic Birth Certificate (EBC)

Hospital Level
- Reporting hearing screens
- Collection of risk indicators

State Level
- Verifies child has both metabolic and birth certificate
- Gathers new demographic information
- Follow-up on risk indicators
Advantages of linking with EBC

- Gather New Demographic Data
  - Infant First and Last Name
  - Maternal and Paternal Race and Ethnicity
  - Maternal and Paternal Education
  - Pay Source
  - Mother’s Maiden Name
  - Attendant Physician First and Last Name

- Hearing Screen Results (initial and re-screen)
Advantages of linking with EBC

Risk Indicators

- 30 Risk Indicators
- Includes
  - NICU Admission
  - Seizures or Serious Neurological Dysfunction
  - Birthweight < 1500 grams
  - 5 Minute APGAR Score < 6
  - Congenital Heart Condition
  - Cleft Palate/Cleft Lip
  - Down Syndrome
  - Cytomegalovirus
Birth Defects Registry Overview

- Established by Act 236 of 1988
- Requires passive reporting by hospitals
- Defined list of reportable conditions
- Limited to under 2 years
- Purpose is for a source of statistical data and surveillance of birth defects trends
Information Collected

• **Case Specifics**
  - Name and address
  - SSN, Medical Record Number
  - Mother’s Information

• **Reportable Diagnostics**

• **Procedures Provided**

• **Live Birth Data**

• **Mortality Data**
Other Projects for BDR

• Evaluation of Case Referrals
  – Review of Cases
  – Early On, CSHCS Referrals
  – Survey Families and Physicians

• Additional Collaborations with Early ON, CSHCS, Medicaid
  – Basic Statistical and Comparison Data

• Program Evaluation
• Coverage
• Trends/Outcomes
• Quality Improvement Activities
Collaboration with the BDR

- Matches have been completed between EHDI/BDR databases
  - Use Hearing Loss Codes
    - ICD 389
  - Notify BDR if EHDI has confirmed hearing loss
    - Helps validate information
    - Complete follow-up for babies we don’t have confirmed hearing loss but BD has hearing loss
Children’s Special Health Care Services (CSHCS)

- Created to find, diagnose and treat children in Michigan who have chronic illness or disabling conditions
- Provides for a wide range of specialty health care and community support services. Promotes the development of service structures which offer health care that is:
  - Family centered
  - Coordinated
  - Community based
  - Culturally competent
• Serves eligible children from birth to age 21 and individuals over age 21 who have Cystic Fibrosis or certain blood coagulation disorders (Hemophilia).

• Approximately 28,000 persons enrolled in the CSHCS Program
How does CSHCS Help Improve Follow-Up?

• Access to database
• If child is enrolled in CSHCS, copy the report and complete follow-up
Biannual Matching

- **December 2007**
  - CSHCS Query, DOB of 2006 only 389 codes
  - 64 hearing loss cases in CSHCS
  - EHDI had 54 cases
  - Need to complete on a quarterly/annual basis
CSHCS

- Able to document some intervention information
  - Enrolled into CSHCS
  - Hearing Aid
  - Cochlear Implant
Michigan Care Improvement Registry (MCIR)

- 4.7 million records
- Over 55 million shot records
- 9,000 user log-ins to MCIR every day
- 2,227 provider sites submitted data in 2006
### General Information

**Person**: John Jacob Jingleheimer-Schmidt  
**Birth Date**: 02/09/1997  
**Provider**: Overdue

### Person Information

<table>
<thead>
<tr>
<th>Name</th>
<th>DOB</th>
<th>Gender</th>
<th>Age</th>
<th>County</th>
<th>Contact</th>
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<tr>
<td>John Jacob Jingleheimer-Schmidt</td>
<td>02/09/1997</td>
<td>Male</td>
<td>10yrs 4mos</td>
<td>Kalamazoo</td>
<td>Andy Warhol (P/G)</td>
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</tbody>
</table>
| Address: 312 South First Street NW  
Apt 3E  
Kalamazoo, MI 49009-1773 |           |        |           |          |                       |
| Phone: (517)555-1212         |           |        |           |          |                       |

### Immunizations

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<tr>
<th>Vaccine</th>
<th>Series</th>
<th>Dose 1</th>
<th>Dose 2</th>
<th>Dose 3</th>
<th>Dose 4</th>
<th>Dose 5</th>
<th>Dose 6</th>
<th>Status</th>
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<td>DTaP</td>
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<td>06/11/1997</td>
<td>08/27/1997</td>
<td>05/07/1998</td>
<td>08/26/2002</td>
<td>DTaP 5yrs 6mos</td>
<td>Due 08/26/2009 Tdap Up-to-date</td>
<td></td>
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<tr>
<td></td>
<td>DTaP 8wks 3days</td>
<td>DTaP 16wks 3days</td>
<td>DTaP 27wks 3days</td>
<td>DTaP 1yr 2mos</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>OPV 8wks 3days</td>
<td>OPV 16wks 3days</td>
<td>OPV 27wks 3days</td>
<td>IPV 5yrs 6mos</td>
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<tr>
<td></td>
<td>Hib-PedvaxHIB 8wks 3days</td>
<td>Hib-PedvaxHIB</td>
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<td>Hib-PedvaxHIB</td>
<td></td>
<td></td>
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<td></td>
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<tr>
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<td>04/16/1997</td>
<td>08/27/1997</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Series Complete</td>
</tr>
<tr>
<td></td>
<td>HepB (Ped) 3days</td>
<td>HepB (Ped)</td>
<td>HepB (Ped)</td>
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<td></td>
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</tr>
<tr>
<td>Varicella</td>
<td>10/22/1998</td>
<td>Varicella 1yr 8mos</td>
<td>Varicella 27wks 3days</td>
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<td></td>
<td></td>
<td></td>
<td>DUE NOW Varicella</td>
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</tbody>
</table>

### High Risk Conditions

- Influenza Screening Notification
  - None
### General Information

*Person: Deising, Lucy*
*Birth Date: 07/04/2003*
*Provider: Eligible*

#### Personal Information:
- **MCIR ID:** 30230280077
- **Legal Last:** Deising
- **Legal First:** Lucy
- **Middle:** Kristine
- **Suffix:** Gallert

#### Responsible Party:
- **Nancy Deising:** 439 Thomas St Se Grand Rapids MI 49503
- **(616)241-2725**
- **Kent County**

#### High Risk Conditions:
- **Influenza Screening Notification**

#### Additional Information:

<table>
<thead>
<tr>
<th>Spec. Date</th>
<th>Spec. Id</th>
<th>Reported</th>
<th>Sample Type</th>
<th>Result (µg/dL)</th>
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<tr>
<td>05/15/2006</td>
<td>06-135-02988</td>
<td>05/23/2006</td>
<td>Venous</td>
<td>11</td>
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<td>03/10/2006</td>
<td>Venous</td>
<td>15</td>
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<tr>
<td>12/20/2005</td>
<td>05-354-02430</td>
<td>01/06/2006</td>
<td>Venous</td>
<td>18</td>
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<td>09/15/2005</td>
<td>0525802893</td>
<td>09/29/2005</td>
<td>Venous</td>
<td>37</td>
</tr>
<tr>
<td>09/14/2005</td>
<td>6732</td>
<td>09/20/2005</td>
<td>Capillary</td>
<td>46</td>
</tr>
</tbody>
</table>

#### Birth Facility Information:
- **Name:** Spectrum Hlth-Butterworth
- **State:** MI
- **County:**

#### MCIR options:
- Person does not receive medical care in Michigan
- Person is deceased
- Person is migrant
- Use alias name on reports
### General Information

- **Person:** Deising, Lucy
- **Birth Date:** 07/04/2003
- **Provider:** Eligible
- **Legal Last:** Deising
- **Legal First:** Lucy
- **Middle:** Kristine
- **Suffix:**
- **Alias Last:**
- **Alias First:**
- **Mother's Maiden Name:** Gallert
- **Gender:** Female
- **Gender Multiple Birth:**
- **Birthdate:** 07/04/2003
- **MCIR ID:** 30230280077

### Responsible Party
- Nancy Deising, 420 Thomas St, SE Grand Rapids, MI 49503

### Specimen Information

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<th>Sample Type</th>
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<tr>
<td>05/15/2006</td>
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<td>06-062-03084</td>
<td>03/10/2006</td>
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<td>12/20/2005</td>
<td>05-354-02430</td>
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<td>Venous</td>
<td>18</td>
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<tr>
<td>09/15/2005</td>
<td>0525802893</td>
<td>09/29/2005</td>
<td>Venous</td>
<td>37</td>
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<tr>
<td>09/14/2005</td>
<td>6732</td>
<td>09/20/2005</td>
<td>Capillary</td>
<td>46</td>
</tr>
</tbody>
</table>

### Birth Facility Information
- **Name:** Spectrum Hlth-Butterworth
- **State:** MI
- **County:**

### MCIR options:
- **Person does not receive medical care in Michigan:**
- **Person is deceased:**
- **Person is migrant:**
- **Use alias name on reports:**

**Done**
### PHYSICIAN and HEALTH DEPARTMENT FOLLOW-UP According to Diagnostic Blood Lead Level

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 10</td>
<td>- Reassess and test again (if age appropriate) in 1 year. Provide anticipatory guidance (at appropriate language and reading level) to eliminate exposure sources. - Confirm test results with another venous blood lead level (BLL). - Provide lead poisoning prevention pamphlets and anticipatory guidance to prevent further exposure to lead. - Venous BLL again in 3 months. - Refer to local PH for family nursing visits for lead assessment and education. (Timeline determined by local resources; suggested within 2 weeks.)</td>
</tr>
<tr>
<td>10-14</td>
<td>- Confirm test results with a venous blood lead level (BLL). - Refer to local PH for family nursing visits. - Confirm test results with another venous blood lead level (BLL). - Refer to local PH for family nursing visits.</td>
</tr>
<tr>
<td>15-19</td>
<td>- Confirm test results with a venous blood lead level (BLL). - Refer to local PH for family nursing visits. - Confirm test results with another venous blood lead level (BLL). - Refer to local PH for family nursing visits.</td>
</tr>
<tr>
<td>20-29</td>
<td>- Confirm test results with a venous blood lead level (BLL). - Refer to local PH for family nursing visits. - Confirm test results with another venous blood lead level (BLL). - Refer to local PH for family nursing visits.</td>
</tr>
<tr>
<td>30-59</td>
<td>- Confirm test results with a venous blood lead level (BLL). - Refer to local PH for family nursing visits. - Confirm test results with another venous blood lead level (BLL). - Refer to local PH for family nursing visits.</td>
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<tr>
<td>60+</td>
<td>- Confirm test results with a venous blood lead level (BLL). - Refer to local PH for family nursing visits. - Confirm test results with another venous blood lead level (BLL). - Refer to local PH for family nursing visits.</td>
</tr>
</tbody>
</table>

**A CHILD, LESS THAN 6 YEARS-OLD, WITH A VENOUS BLL ≥ 20 SHOULD RECEIVE A THOROUGH MEDICAL AND DEVELOPMENTAL EVALUATION BY HIS/HER PRIMARY CARE PROVIDER**

**CLINICAL EVALUATION COMPONENTS**

1. **MEDICAL HISTORY**
   - Symptoms?
   - Developmental history — include mounding activities and pica.
   - Previous BLL measurements?
   - Family history of lead poisoning?

2. **ENVIRONMENTAL HISTORY**
   - Age, condition, and ongoing remodeling or repairing of primary residence and other places where the child spends time (including secondary homes and daycare centers). Determine whether the child may be exposed to lead-based paint hazards at any or all of these places.
   - Order, and do not instruct, to assess the child's environment.
   - Other local sources of potential lead exposure. (See “Possible Sources of Exposure” list reverse side.)

3. **NUTRITIONAL HISTORY**
   - Evaluate the child's diet and nutritional status using 24-hour recall.
   - Evaluate the child's iron status using appropriate laboratory tests.
   - Ask about the need for food stamps and WIC participation.

4. **PHYSICAL EXAMINATION**
   - Pay particular attention to the neurological examination and to the child's psychosocial and language development. This should be re-evaluated on a regular basis. **Refer to Early On**.
   - (Automatic referral for “Toxic Exposure”)

**Lead Advisory Committee Recommendations**

**Screening Young Children for Lead Poisoning**, CDC, Nov 1997, pg 106.
### General Information

**Person:** Garnett, Michael  
**Birth Date:** [redacted]  
**Provider:** Up-to-Date

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
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<tbody>
<tr>
<td>Legal Last</td>
<td>Garnett</td>
</tr>
<tr>
<td>Legal First</td>
<td>Michael</td>
</tr>
<tr>
<td>Middle</td>
<td>Vincent Christopher</td>
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<td>[redacted]</td>
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<tr>
<td>Birthdate</td>
<td>[redacted]</td>
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<tr>
<td>Gender*</td>
<td>Male</td>
</tr>
<tr>
<td>Mother's Maiden Name</td>
<td>[redacted]</td>
</tr>
<tr>
<td>Ingham County</td>
<td>Ingham County</td>
</tr>
</tbody>
</table>

### Responsible Party: Add New

BRIGID GARNETT

### High Risk Conditions:

- [ ] Influenza Screening Notification

### Additional Information

- **Lead:** [yellow]
- **EPSDT:** [red]

**Patient ID:** [empty]

*If medical status shows RED, then this patient is due for EPSDT. The color coding shows status based on EPSDT.
### Personal Information:

- **Last Name**: Garnett
- **Legal First Name**: Michael
- **Middle Name**: Vincent
- **Gender**: Male
- **Date of Birth**: [Obfuscated]
- **Epidemiologist's Name**: [Obfuscated]
- **Institution**: [Obfuscated]
- **County**: Ingham County

### Risk Conditions:

- **Influenza Screening Notification**: Patient is due/overdue for EPSDT

### EPSDT Details:

- **Age-Time Factor (mos)**: 3
- **Label Date**: 02/06/2007
- **Dates of Service**:
  - 03/2006
    - **Code**: V70.3
    - **Description**: Other general medical examination for administrative purposes
  - 99213
    - **Description**: Office or other outpatient visit for the evaluation and management of an established patient
  - 99391
    - **Description**: Periodic comprehensive preventive medicine reevaluation and management; established patient; infant (age under 1 year)
  - 30/2006
    - **Code**: V20.1
    - **Description**: Other healthy infant or child receiving care
    - **Code**: 99201
      - **Description**: Office or other outpatient visit for the evaluation and management of a new patient

### Facility Information:

- **Facility Name**: Mich Capital Med Ctr, Penn Campus, Lansing
- **State**: MI
- **County**: [Obfuscated]
Michigan Care Improvement Registry (MCIR)

- Advantages
  - Medical home information after 90 days
- Reaching primary care providers for babies to reduce loss to follow-up
  - Real name after 7 days
  - Verification of deceased information and moved out of state
  - Demographic information
MCIR

• In the future
  – Hearing Screen Results
  – Tabs that explain how to complete follow-up
Linkage with Other State Database

- Michigan Department of Education
  - Early Intervention Data Possibilities
    - Back door to get intervention information
    - Through HI supervisors group
    - Study to match data on annual basis and get aggregate data
Michigan EHDI projects

- **Web-Based Reporting**
  - Audiologist/ENT will be the only professionals that can enter diagnostic information
  - Audiologist will be able to look up child using 2 or more identifiers

- **Online Training Module**
  - Screeners and nurse managers
  - Nursing CEU’s offered
  - Available state-wide
EHDI Contacts

Michelle Garcia, Au.D., CCC-A, Follow-Up Consultant  
517/335-8878 or garciam@michigan.gov

Erin Estrada, BA, Data Analyst  
517/335-8916 or estradae@michigan.gov

Kylie Sharp, Parent Consultant  
517/335-8273 or sharpk@michigan.gov

Lorie Lang, MA, CCC-A, Audiology Consultant  
517/335-9125 or langlo@michigan.gov