Developing a Statewide Web-Based EHDI Tracking and Referral System

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Today's Topics

- Simulation of Wisconsin's WE-TRAC system
  - All sample data!
- Considerations when building a custom web-based system
- Real-Life Example: Applying these considerations to Wisconsin's enhancement plans

WE-TRAC
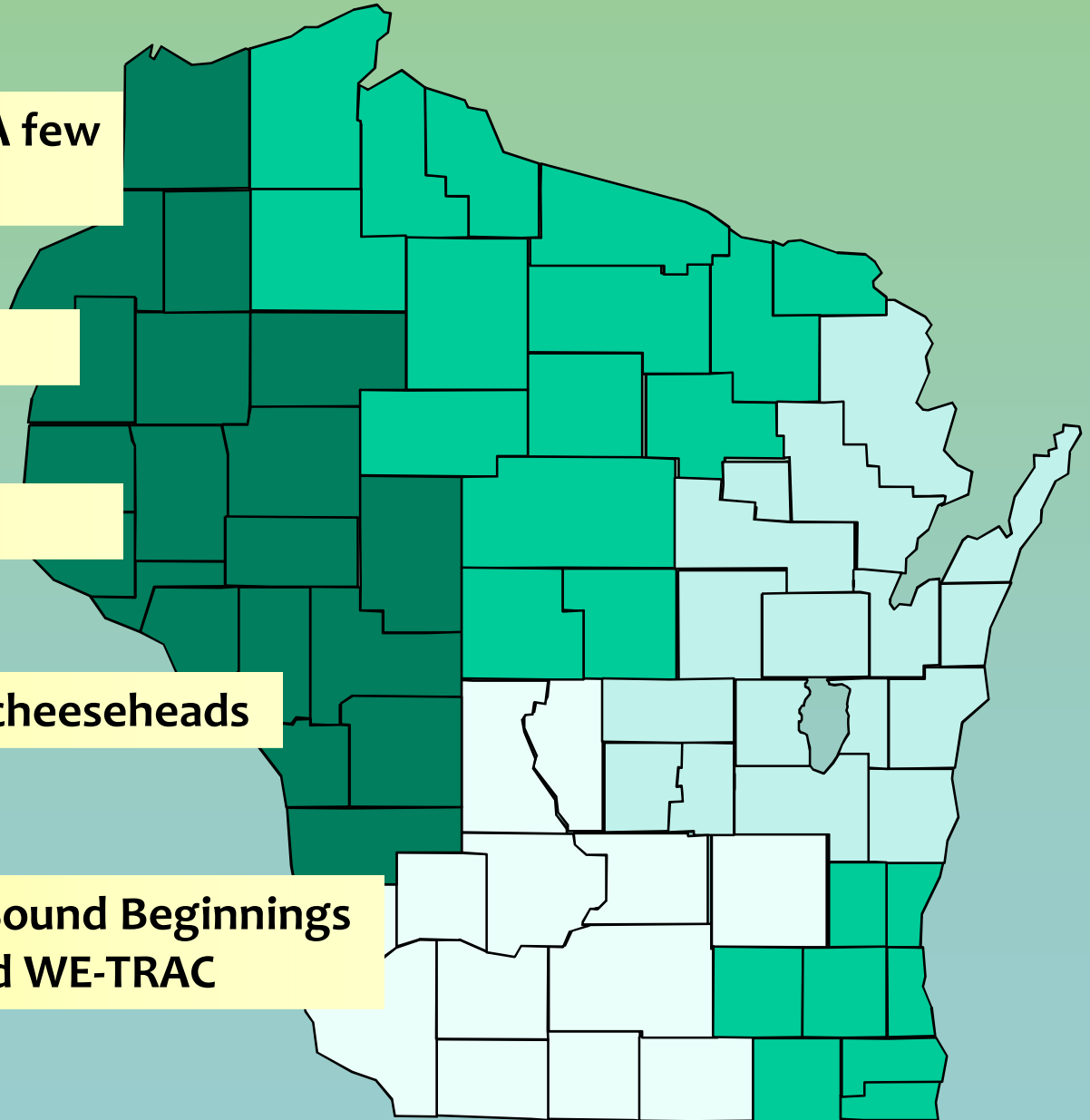Wisconsin EHDI - Tracking Referral and Coordination

Welcome to Wisconsin! A few facts to get us started:

Births ~ 72,000/year

Birthing Hospitals = 100

Population ~ 5.4 million cheeseheads

Home of the Wisconsin Sound Beginnings (WSB) EHDI program and WE-TRAC

WE-TRAC, the **W**isconsin **E**HDI **T**racking **R**eferral **a**nd **C**oordination System:

- supports the 1-3-6 goals of the national EHDI algorithm.

- allows electronic referrals to appropriate organizations.

- denotes a clear transfer of responsibility for follow-up activities.

- acts as a safety net assuring timely and appropriate coordination of care throughout the EHDI continuum.

- provides a mechanism for the tracking and reporting of individual, hospital, and statewide aggregate hearing screening data.

WE-TRAC is a part of the WI PHIN, which

- Is the portal into applications supporting public health in Wisconsin, including WE-TRAC, West Nile Virus, SPHERE (public health records), and Birth Defects Surveillance PAMs.

- Hosts a centralized directory of users and organizations

- Brings together:

  - The WI Health Alert Network (HAN),

  - PAMs

  - Wisconsin State Lab of Hygiene (SLH) Electronic Laboratory Reporting, and

  - The WEDSS system.

- Will be the platform for integrated public health data in Wisconsin

WE-TRAC
Wisconsin EHDI - Tracking Referral and Coordination

WE-TRAC is a **workflow** system that allows hearing care coordination.

- WE-TRAC currently has 170 active user organizations
  - 92 birthing units, 18 NICUs, 60 audiology clinics
  - 99.7% of WI births occur at WE-TRAC hospitals.
- A **common intuitive interface** is shared by nursery staff, NICU staff, and audiologists, and may be shared by physicians in the future.
- Organizations have "look-back, look-ahead" capability to see the **status** of a baby for which they have provided care
- Users can monitor that timely and appropriate hearing-related care is provided to all babies associated with their organization and can generate org. specific reports.

WE-TRAC
Wisconsin EHDI - Tracking Referral and Coordination

WE-TRAC uses data collected on the SLH newborn blood card.

To ensure timely reporting, please PRINT and COMPLETE the entire form | [SN] T 200010

| Baby's Name | LAST | FIRST | Mother's Name | LAST | FIRST |

Baby's Birthdate: MM / DD / YY   Time (Military) :

Specimen Collection Date: MM / DD / YY   Time (Military) :

SEX: F M   Baby's ID No.

Gest. Age _____ Wks

Transfusion(s) N Y   Last TXN Date _____

Birth Weight _____ lb . _____ oz **or** _____ grams

Baby's Race: Black Asian/Pacific Isle Native American White   Hispanic? N Y

Repeat Specimen? N Y   Reason for repeat: 17-OHP TSH FAO Unsat. Specimen OA

Routine TPN Other _____

Child on TPN now? N Y

Hospital/ City of Birth:

Send Report to: (IF DIFFERENT FROM HOSPITAL OF BIRTH)

Baby's Physician: LAST FIRST

Physician's Phone # ( )

Mother's Hepatitis B Surface Antigen   NEG   POS

Hearing Screening Date (If different from Specimen Collection Date)

Right Ear ☐ Pass ☐ Refer
Left Ear ☐ Pass ☐ Refer

Mark Hearing Risk Factors: (See blue sheet) ☐ O₂ ☐ CFA ☐ Meds ☐ Fam Hx ☐ Other _____

Hearing Screening Method: ☐ ABR ☐ OAE ☐ Both

Not Screened: (Circle Reason) NICU Deceased Refused Transferred Other _____

Newborn Screening Laboratory use ONLY
WI State Laboratory of Hygiene
465 Henry Mall
Madison, WI 53706

Whatman 903® EXP. DATE: June 2011

C.D. Brokopp, Dr. P.H., Director
D. Kurtycz, M.D., Med Director
WSS 253.13 HYG:213

REF 10534307 Rev.1   LOT 6808508 W071

FORM EXPIRATION DATE: June 2011

BIOHAZARD

Behind the Scenes…

- WE-TRAC hearing screening data is **entered at the SLH**.

- Blood card data used by WE-TRAC is sent from the SLH by **secure messaging** to the WE-TRAC server.

- Records are sent **nightly**.

- Records for babies passing the hearing screening are **archived** in WE-TRAC.

- Babies who refer or were not screened are placed in the WE-TRAC birth **hospital "queue" for follow-up**.

- At this point, only the birth hospital (and State WE-TRAC Administrators) can view or manage records for babies born at their organization.

Role-Based Security

- Three roles: User, Local Administrator, WE-TRAC Administrator

- **Users** can view site news, modify their individual profile and preference information, view records and manage care for babies associated with their organization, manage hearing-related care of these babies, and enter other information about the baby.

- **Local Administrators** can in addition: modify organization profile and preferences, manage organization user information and roles, and approve or reject requests for secondary authorization to the organization.

- **WE-TRAC Administrators** can in addition: manage site news, role-based system access, and user feedback; create, manage, and "map" organizations; manage ALL cases needing additional follow-up.

WE-TRAC
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WE-TRAC users must obtain a WAMS ID and register for the WI HAN.

- The State of Wisconsin's Web Access Management System provides a single user ID for user authentication to all state sites for which the user has authorization.

- The HAN stores user information in a central directory.

WE-TRAC Login

Please enter your Wisconsin User ID (WAMS ID).

Username:

Password:

Login

If you forgot your Username or Password, click here for WAMS account recovery.

First time users: If you do not have a WAMS account, you must register for WAMS and the Wisconsin Health Alert Network (HAN) before using WE-TRAC.
Click here to begin WAMS registration.
Click here to begin HAN registration (do this after completing WAMS registration).
Click here to download complete instructions for WAMS and HAN registration.

WE-TRAC
Wisconsin EHDI - Tracking Referral and Coordination

WE-TRAC queues ensure secure case management.

Home | Cases | Administration | Wetrac Administration | Forms | Search | Reports | Log Out | Feedback

Cases > Case Management

Case Management

WE-TRAC Birthing Unit - Open Cases

4 Cases - Merge Cases

NICU	Child's Name	DOB Sex	Days on List	Last Procedure	Recommended Next Procedure	Manage Cases
☐ ! NICU	Conway , Beth	11/09/03 Female	1	Not Screened: Other - NICU	Outpatient Screen by: **02/07/2004**	-------------------- ▼
☐ NICU	Dearborn , Vanessa	11/17/03 Female	1	Not Screened: Other - NICU	Outpatient Screen by: 02/15/2004	-------------------- ▼
☐ NICU	Harlow , Jacob	11/18/03 Male	1	Not Screened: Other - NICU	Outpatient Screen by: 02/16/2004	
☐ !	Mouse , Michael	11/19/03 Male	1	Inpatient Screen	Outpatient Screen by: **12/19/2003**	

Dropdown options:
- --------------------
- Enter Outpatient Screening
- Enter NICU Transfer
- **Enter Referral to Org**
- Enter Referral to Ind
- View/Modify Chart
- Enter Refusal
- Administrative Transfer
- Administrative Close

WE-TRAC Queue and Case Management Options (Birthing Unit)

WE-TRAC
Wisconsin EHDI - Tracking Referral and Coordination

WE-TRAC allows users to enter screening results.

- NICU organizations can enter repeat inpatient screening results, other organizations enter outpatient re-screening results

Home   Cases   Administration   Wetrac Administration   Forms   Search   Reports   Log Out   Feedback
Cases > Case Management > Cases - Hearing Screen Report

Cases - Hearing Screen Report

Procedure:	Outpatient Screen
Today's Date:	02/12/2004
Screening Date:	02 / 12 / 2004
Child's Name:	Michael Mouse
DOB:	11/19/2003
Age:	2.9 month(s) - (86 days)
Gender:	Male
Mother's Name:	Minerva Mouse
Screening Facility:	WE-TRAC Birthing Unit
Screening Technology:	ABR
Right Ear:	○ Pass ⦿ Refer
Left Ear:	⦿ Pass ○ Refer
	Reset Submit

WE-TRAC Screening Form

WE-TRAC
Wisconsin EHDI - Tracking Referral and Coordination

WE-TRAC supports timely and appropriate hearing follow-up.

- System prompts guide users to complete the next step (referrals, CHL form) immediately after test results are entered.

Cases > Case Management > Screening Results Sucessfully Entered

Screening Results Sucessfully Entered

Screening results have successfully been entered.

Enter a referral to an Organization
Enter a referral to an Individual

Return to Case List

WE-TRAC "Last Action, Next Suggested Action" Display

WE-TRAC
Wisconsin EHDI - Tracking Referral and Coordination

WE-TRAC allows easy **transfers and referrals** to follow-up organizations.

WE-TRAC Referral Screen

WE-TRAC
Wisconsin EHDI - Tracking Referral and Coordination

WE-TRAC allows entry of diagnostic audiology results.

Cases – Diagnostic Audiology Report

Date:	02 / 16 / 2004
Baby's Name:	ANGELO GOMEZ
DOB:	01/27/2004
Age:	.7 month(s) - (21 days)
Gender:	Male
Mother's Name:	MARIA GOMEZ
Audiologist:	felstehausen, susan
Exam Facility:	Children's Hospital of Wisconsin - Audiology
Diagnostic Approach:	☑ Behavioral ☑ Bone Conduction Auditory Brainstem ☑ Click Auditory Brainstem ☑ Distortion Product Otoacoustic Emissions ☑ Tone Burst Auditory Brainstem ☑ Transient Evoked Otoacoustic Emissions ☑ Tympanometry and/or Acoustic Reflex ☑ Other
Right Ear:	○ Within Normal Limits ◉ Hearing Loss
Left Ear:	○ Within Normal Limits ◉ Hearing Loss
	Reset Submit

WE-TRAC Audiology Report

WE-TRAC allows completion of the Confirmed Hearing Loss form (CHL).

- The CHL Report is the first place WI collects Risk Factors
- At this point, audiologists will enter a referral to Early Intervention and, with parental consent, notify others, including the
  - Birth Hospital
  - Guide-By-Your-Side Program
  - and Primary Care Physician

See Handouts →

Confirmation of Hearing Loss Report

Child's Information

Child's Name: Andrew Savier   **Gender:** M   **Birth Date:** 01/07/2004

Mother's Name: Ann Savier

Child's Primary Address: 123 Fast Times Lane

   City: Ridgemont   **State:** WI   **Zip:** 53901

   Phone: (920) 256-6552

Birth Hospital: WE-TRAC Birthing Unit   **Primary Care Provider:** LILY HWANG

Hearing Screening: None

Diagnostic Information

Audiologist: susan felstehausen   **Report Date:** 02/16/2004

Facility: WE-TRAC Audiology Clinic

Address:

   City: **State:** WI   **Zip:**

   Phone:

Risk Factors: ☑ Family History ☑ Parent\Caregiver Concern ☑ Admission into the NICU (75 days) Admission to the NICU for > 48 hours, Cytomegalovirus, Eustachian Tube Dysfunction, Down Syndrome

Birth Weight: 3425g

Diagnostic Approach: Bone Conduction Auditory Brainstem, Click Auditory Brainstem, Distortion Product Otoacoustic Emissions, Other, Tone Burst Auditory Brainstem, Transient Evoked Otoacoustic Emissions, Tympanometry and/or Acoustic Reflex

Results:	Right Ear	Left Ear
Pure Tone Average:	95 db	55 db
Degree of Hearing Loss:	Profound	Moderate
Type of Hearing Loss:	Mixed	Mixed

Reporting

Summary data or individual data will be fowarded to the *Wisconsin Sound Begnnings* program and the Jefferson county *Birth to Three* Service Coordinator for the following purposes:

1. To facilitate counseling or other follow-up services that may be required.
2. To forward this information to another provider if a referral for additional testing if necessary.
3. To forward this information to the school district and/or state agencies as needed.

Check any persons/agencies that you wish to receive information about your child's hearing. Include name and address if possible.

Birth Hospital   WE-TRAC Birthing Unit

Other   Guide-By-Your-Side Program

WE-TRAC "time-outs" promote timely and appropriate care.

- A next recommended procedure and date appear by each baby's name in the queue.

- If the procedure does not occur by the "time-out date," the baby's name and the date will turn red.

| ! | Mouse , Michael | 11/19/03 Male | 1 | Inpatient Screen | Outpatient Screen by: 12/19/2003 |

WE-TRAC Timed-out Queue Item Detail

- On time-out, an e-mail is sent to providers, and a copy of the baby's record is placed in the WE-TRAC "timed-out queue" for follow-up.

WE-TRAC
Wisconsin EHDI - Tracking Referral and Coordination

PCP/Medical Home

- **Frequent system prompts remind users to enter PCP/Medical Home information.**

WE-TRAC — Child's Medical Home/PCP Information

Changes Saved. Close Window | Save Changes

Child Information

Last Name:	Addams ,
First:	Wednesday
Gender:	Female
DOB:	01/21/2004
Birth Weight:	3714 g
Birth Hospital:	WE-TRAC Birthing Unit
Blood Card #:	Q019048

PCP/Medical Home

Medical Home:	Meriter Hospital Inc. - Birthing Unit - Birthing Unit
Address:	202 South Park Street, Madison, 53715-1599
Admin Email:	nhagan@meriter.com dsonnenberg@meriter.com
Telephone:	608-267-6296
Fax:	608-267-6517
PCP:	Dr. Wackum
PCP Specialty:	Pediatrics
PCP Notes:	The family has selected him as the baby's primary care provider.

Child's Chart

Includes:

- **Parent Information**
  - adoption (hides birth parent information)
  - foster care (allows addition of guardian information)
- **Hearing screening & follow-up history**
- **Address and Medical Home information**
- **Blood Card Information**
  - Includes graphic representation

WE-TRAC   Child's Chart   ❓

Close Window

Print | Save Changes

Child Information

Last Name:	DOYLE
First:	KOLIN
Gender:	Male
DOB:	05/04/2004
Birth Weight:	2722 g
Birth Hospital:	WE-TRAC Birthing Unit
Blood Card #:	Q028435

Blood Card History - 1 Blood Card

☐ NICU   60 days in the NICU

Parent Information

Mother's Last:	DOYLE
First:	KAREN
Father's Last:	DOYLE
First:	JAMES

Add New Guardian

☐ **Adopted**

☐ **Foster Care**

Accurate address and PCP/Medical Home information are essential in ensuring timely follow-up care. Please make sure that this information is current.

Address - Add/Update

WI

PCP/Medical Home - Update/View

WE-TRAC Clinical Practice
Telephone:	
Fax:	
PCP:	Dr. Feelgood
PCP Specialty:	Family Practice

WE-TRAC
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WETRAC - Microsoft Internet Explorer provided by DHFS - State of Wisconsin

File Edit View Favorites Tools Help

Back | Search Favorites | Links »

Address https://wetracdemo.han.wisc.edu/index.html Go

WE-TRAC
Wisconsin EHDI - Tracking
Referral and Coordination

WE-TRAC Login

Please Note: To meet security standards, PHIN applications do not allow your web browser to store your password. If you have forgotten your password, use the WAMS Account Recovery by clicking on this link to it.

Enter your Wisconsin Web Access Management System (WAMS) ID and password.

Username: [   ]
Password: [   ]
[Login]

If you forgot your Username or Password, click here for WAMS account recovery.

First time users: If you do not have a WAMS account, you must register for WAMS and the Wisconsin Health Alert Network (HAN) before using WE-TRAC.
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Internet

Reporting Capabilities

Development:
Challenges, Considerations, and Tips

- System needs
- Developing workflow around real life, to handle the exceptions
- Standards and interoperability
- Integration with other systems
- Vision – there are many directions to go

Funding:
Challenges, Considerations, and Tips

- Sustainability

- Keeping up with technology

- Developer resources

- Good specs and estimates before requesting money

- Funding from different sources

- Development costs more than you expect!

Prioritizing: Considerations

- Available resources (developer time, money)
- Integration timelines
- End user ease vs. administrator ease
- New functionality vs. user interface & reporting enhancements
- User needs/wants vs. sponsor needs/wants

Basic Specification Design

1. Workflow (all possible scenarios)
   - Include user consultation
2. Data elements
3. Validation checks
4. Screen mockups
5. Detailed description of functionality
6. Back-and-forth with developers

WE-TRAC Future Directions

- Automated referrals to Birth to Three providers (integrating with the state Early Intervention system)

- Continue integration efforts (Immunization Registry, Vital Records)

- Expand risk factor collection for late onset cases

- Expand collection of lost-to-follow-up data

- Continue to develop reporting capabilities

- Expand child chart and case notes information

- Improve diagnostic audiology data collection

Prioritizing WE-TRAC Development

- **Automated referrals to Birth to Three providers**

- **Continue integration efforts (WIR, SVRO)**

- **Expand risk factor collection for late onset cases**

- **Expand collection of lost-to-follow-up data**

- **Continue to develop reporting capabilities**

- **Expand child chart and case notes information**

- **Improve diagnostic audiology data collection**

Available resources (developer time, money)

Integration timelines

End user ease vs. administrator ease

New functionality vs. user interface & reporting enhancements

User needs/wants vs. sponsor needs/wants

Early Intervention Referral Specs: Workflow

Audiologist confirms HL → "Success Screen"

"Success Screen":
- Goes to Case List
- Refer to EI in dropdown

→ Goes to EI Referral

Goes to EI Referral:
- Refers out-of-state
- Refers to in-state org. → Messaged to B to 3
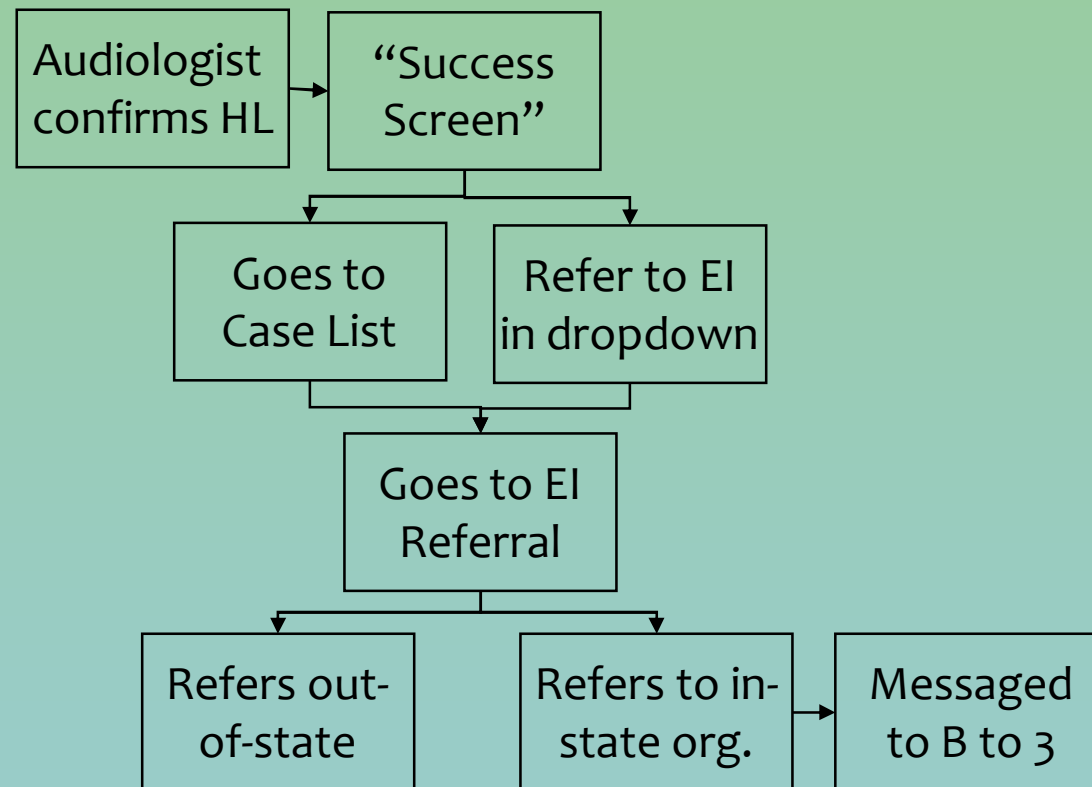
- Must occur within 48 hours of diagnosis

Early Intervention Referral Specs: Validations

- If a child is adopted, send primary guardian's first and last name instead of mother's.

- If demographic information is not complete, send user to child chart and request completion.

- If hearing loss is not specified, send user to diagnostic audiology exam results and request completion.

Early Intervention Referral Specs: Data Elements
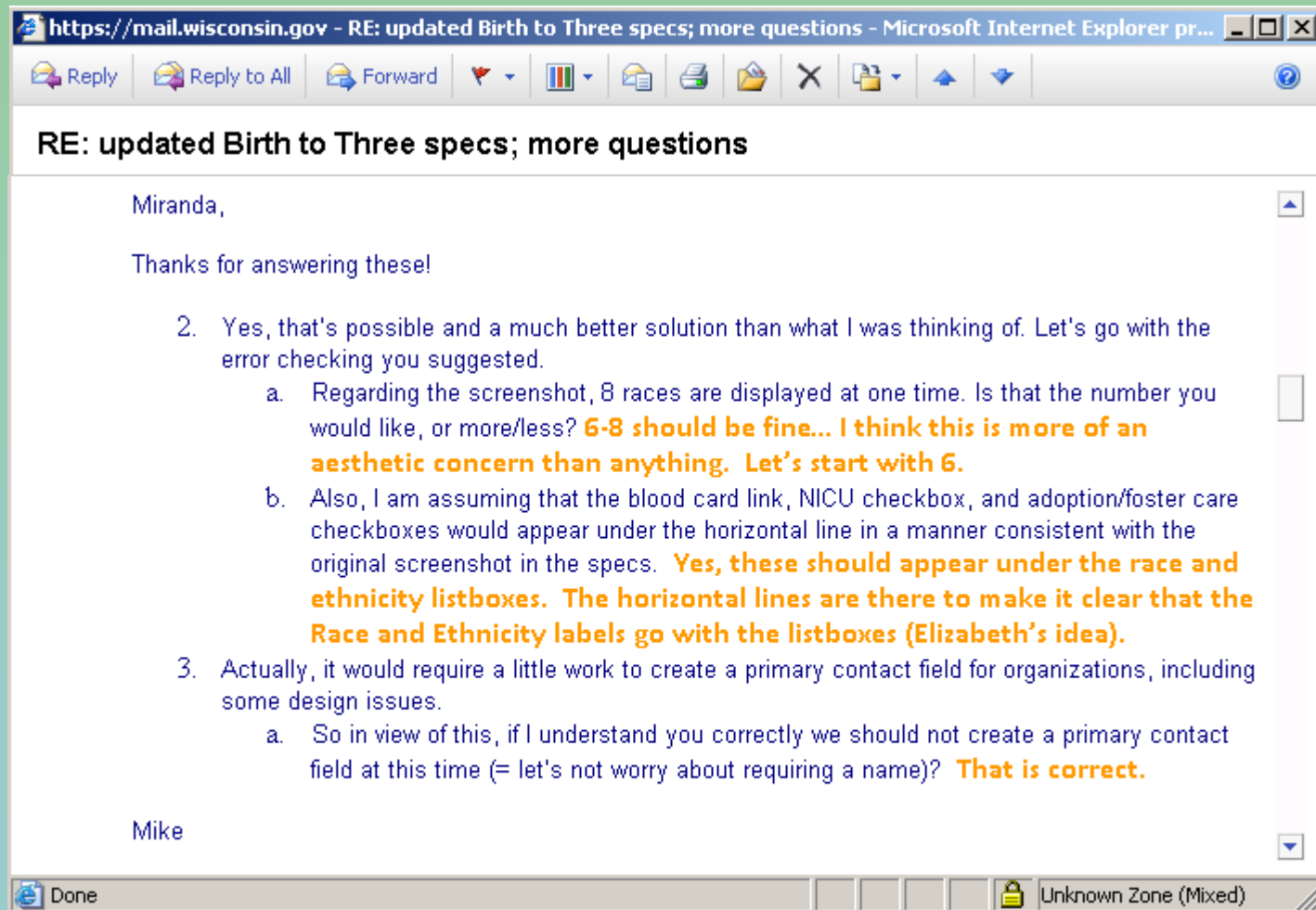
- Child's first and last name
- Mother's first and last name
- Address
- Primary Phone
- Race
- Ethnicity
- County of Referral

Early Intervention Referral Specs: Screen Mockup

2nd Dx Aud 4 - EI Referral Form.bmp

Early Intervention Referral Specs: Details

Early Intervention Referral Specs: Details

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