Lessons Learned Through a Recent Connecticut EHDI Program - Diagnostic Audiology Center Collaboration: One Small Change at a Time

Amy Mirizzi, MPH, CPH – Early Hearing Detection & Intervention (EHDI) Program Coordinator, Connecticut Department of Public Health
Nancy S. Bruno, Au.D. – Connecticut Children's’ Medical Center Audiology Department

Learning Objectives:

• Identify the benefits of collaboration between an EHDI program and a diagnostic audiology center working together to test small change strategies

• Understand the value in both successful and unsuccessful tests of change

• Examine ideas to advance quality improvement work in home state
Where are children lost?
In the connections...In the process

**SCREENING** 2012 — 37,294 births
0.67% lost (no screening on record)
1.56% / 577 babies did not pass

**DIAGNOSIS** 2012 — 577 babies did not pass
63% / 365 completed Diagnostic Audiology
13.7% / 50 of 365 had confirmed hearing loss

**INTERVENTION** 2012 — 50 babies with confirmed hearing loss
84% / 42 of 50 referred to Birth to Three EI
70% / 35 of 50 Enrolled in Birth to Three EI

Loss to follow-up?
Lost in the diagnostic process?
Loss to documentation?
Connections
Screening ➔ Diagnostic follow-up

When is the referral made?
- At Discharge; 1\textsuperscript{st} and 2\textsuperscript{nd} screen prior to discharge
- 2 weeks post-discharge; 1\textsuperscript{st} and 2\textsuperscript{nd} screen prior to discharge, final screen post-discharge

Who makes the referral?
- Hospital staff
- MD following baby post-discharge

Where is the baby referred?
- Audiology services available within the same system
  - Yes - refer baby directly
  - No – contact audiology diagnostic center
Connecticut Birth Facilities and Diagnostic Audiology Centers
Screening ➔ Diagnostic follow-up
Reducing loss to follow-up

PLAN: Improve referring hospitals' ability to connect families directly to a diagnostic audiology center
DO: Provided packets to hospitals without audiology services, including:
  – Contact information for scheduling and for clinical questions
  – Appointment cards for patients
  – Patient information – importance of follow-up, how to prepare, etc.

STUDY: State EHDI program monitored referrals from individual hospitals and CT Children’s tracked number of appointments scheduled via newly established protocol
  – 4 Community hospitals without audiology services
  – Recruited by CT EHDI program & Audiology Department at Connecticut Children’s Medical Center; Spoke with staff in newborn units, provided materials

ACT: Did this new protocol lead to an increase in the number of babies referred for diagnostic follow-up at the hospital-level?
Small test but not a short one!
Screening ➔ Diagnostic follow-up
Reducing loss to follow-up

PLAN: Motivate birth facilities to make improvements to their UNHS program, especially their referral protocol, by providing their annual statistics in an easy to read report card format.

DO: Developed a Connecticut EHDI report card template for the 28 birth facilities comparing:
- Individual facility 2013 statistics to other CT hospitals (ranking system)

STUDY: Nine birth facilities contacted the EHDI program looking at ways to improve their UNHS program and improve follow-up; 4 have initiated new referral protocol as a result.

ACT: Adopt – Annual Hearing Screening and Follow-up Report Cards
Screening ➔ Diagnostic follow-up
Reducing loss to follow-up

PLAN: Improve communication with the medical home in order to facilitate follow-up. Mail tracking letters to the mother/resp. party of babies who do not pass newborn hearing screening and copy the PCP of record; 7 weeks post-screening.

DO: Multiple PDSA cycles for learning. Sent 147 tracking and outreach letters to health care providers and families of babies who are “lost to follow-up” over a 15 month period (7/1/2013 - 9/30/2014).

STUDY: 99 (67%) could be classified as complete; 2/3 reduction in LTF/D

ACT: Adopt! Great example of what happens when a support system changes and build in sustainability.
Where are children lost?
In the connections...In the process

SCREENING

DIAGNOSIS
7/1/2012 - 6/30/2013: 30% LTF/D
7/1/2013 - 6/30/2014: 12% LTF/D

INTERVENTION

Loss to follow-up?
Lost in the diagnostic process?
Loss to documentation?
Lost in the Diagnostic Process?

Multiple Visits

Why does diagnosis take multiple visits?

– Appointments not kept / Cancellation & No show
– Incomplete results / Infant sleep schedules
– Complex medical needs
– Delayed referral
– Indirect referral
Lost in the Diagnostic Process:
Decreasing appointments required to diagnose
Appointments Not Kept

Plan: Decrease appointments not kept through live phone confirmation of appointments.
DO: Expand current appointment confirmation process with addition of a live phone call to patients 1 week prior to appointment.

STUDY: Average number of appointments needed to make a diagnosis / Cancellation & No Show rates for scheduled appointments.

- Baseline 1.6 appointments to diagnose 27% Cancel; 8% No Show
- Post 4 week trial of change 1.9 appointments to diagnose 26% Cancel ;7% No Show
- Number of phone calls was reasonable and judged to be sustainable
- Insufficient success connecting with patients– 10% or less

ACT: Abandon current change - Investigate reasons for appointment cancellation.
Lost in the Diagnostic Process:
Decreasing appointments required to diagnose
Appointments Not Kept

Plan: Investigate reasons for appointment cancellation.

What do you think?

- 52% Need a different time or location
- 10% Weather
- 10% Patient ill or hospitalized
- 5% Family report follow-up not needed – Education?
- 5% Audiology provider un-planned absence
- 4% Transportation unavailable
- 4% Insurance not active
Lost in the Diagnostic Process:
Decreasing appointments required to diagnose
Incomplete results

Plan: Decrease appointments needed to diagnose by optimizing test administration based on knowledge of screening results. Plan weekly exchange of information between CT Children’s Audiology and state EHDI program.

DO: CT Children’s provides a list of children with upcoming appointments in the next 2 weeks. DPH provides NBHS results.

STUDY: Number of appointments needed to diagnose.
- Baseline 1.6 appointments to diagnose / 19% of patients >2 appointments to complete diagnostic testing
- Post 6 week study of change 1.9 appointments to diagnose / 20% of patients >2 appointments to complete diagnostic testing
- Positive audiologist response to additional information
- Inability to sustain workload involved in information exchange

ACT: Abandon change.
Connections
Diagnostic follow-up $\rightarrow$ CT EHDI

• Why was this baby referred?
  • Referral from Newborn Hearing Screening
  • Other reasons for referral?

• Which appointment results should be reported?
  • All

• Remembering to report.
• Locating the reporting form.
Diagnostic follow-up → CT EHDI
Reducing loss to documentation

PLAN: Improve diagnostic center processes to facilitate reporting to CT EHDI

DO: Attach CT EHDI Diagnostic Reporting Form to Connecticut Children’s Audiology Department report template for evoked potential procedures.

- Most patients scheduled for evoked potential procedures in natural sleep are babies who referred on newborn hearing screening.
- Form being attached is a reminder and eliminates need to locate the form.
- Audiologist can delete form if not needed.

STUDY: Percent of babies referred for NBHS with DPH reporting form completed

- Baseline for 50-60% of babies referred
- Result post change 80-84% of babies referred
- Positive audiologist response to change

ACT: Adopt! Adapt
Where are children lost? In the connections...In the process
Where are we now?

**SCREENING** 2013 — 36,851 births
- 0.55% lost (no screening on record)
- 1.41% / 515 babies did not pass

**DIAGNOSIS** 2013 — 515 babies did not pass
- 79% / 409 completed Diagnostic Audiology
- 22% / 91 of 409 had confirmed hearing loss

**INTERVENTION** 2013 — 91 babies with confirmed hearing loss
- 88% / 80 of 91 referred to Birth to Three EI
- 73% / 66 of 91 Enrolled in Birth to Three EI
Next Steps?

• Further focus on increasing reporting to DPH EHDI via electronic information exchange (i.e. CT Children’s electronic health system, changes to DPH EHDI-Information System)

• Explore ways to leverage involvement of the medical home in follow-up (i.e. cc: PCP on CT Children’s informational letters, identify primary points of contact at large clinics)

• Recruiting additional birth facility and audiology partners
Amy Mirizzi, MPH, CPH
Connecticut EHDI Coordinator
amy.mirizzi@ct.gov
860.509.8175

Nancy S. Bruno, Au.D.
Connecticut Children's Medical Center
Audiology Department
Nbruno01@connecticutchildrens.org
860.545.8145