

Outcomes from COACHing: Implementation of a Statewide Audiologic Protocol

Coalition of Ohio Audiologists and Children's Hospitals (COACH)

EHDI 2018

Denver, Colorado

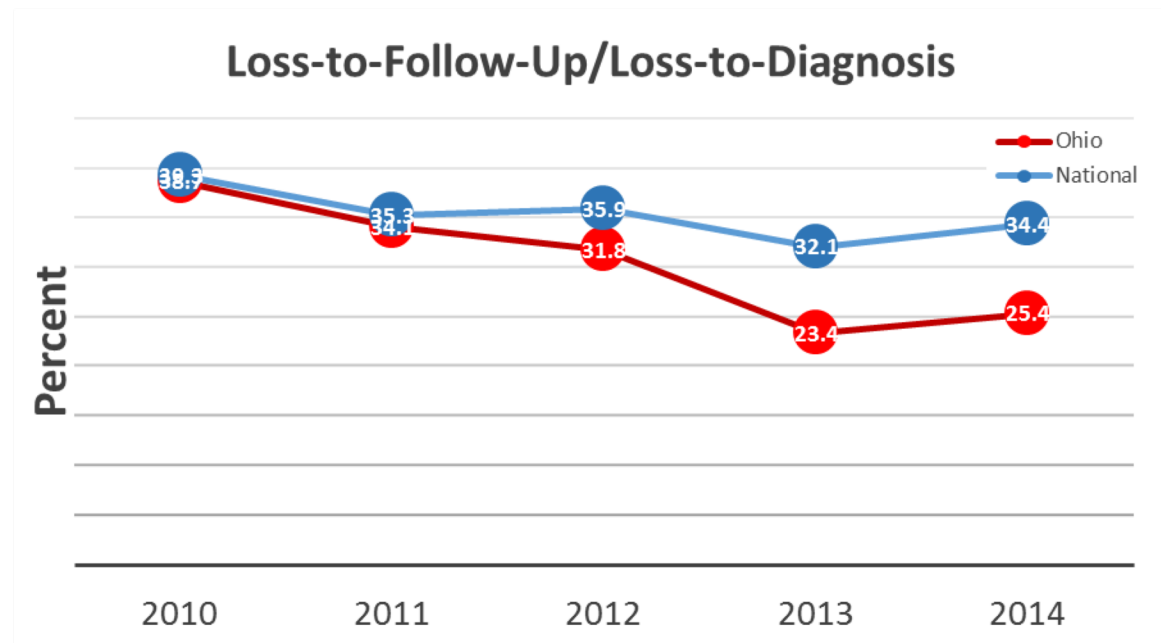
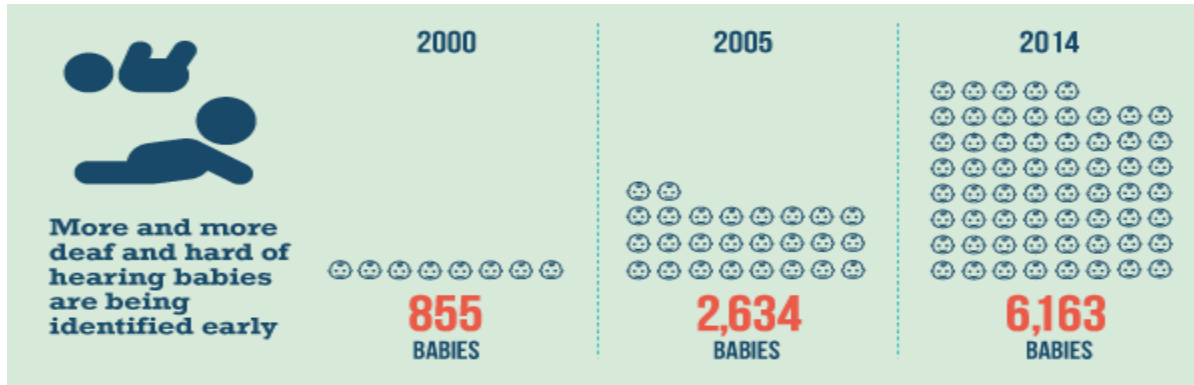


Who we are, how we got here...

- Gina Hounam, Ph.D. - Program Manager of Audiology ²
- Lisa Hunter, Ph.D. - Scientific Director, Audiology and Professor of Otolaryngology ¹
- Reena Kothari, Au.D - Public Health Audiology Consultant and Newborn Hearing Screening contact³
- Wendy Steuerwald, Au.D . - Clinical Program Manager of Audiology¹
- Ursula Findlen, Ph.D., Research Audiologist²
- Kelly Baroch, Au.D., Coordinator, Newborn Screening Program¹
 - 1) Cincinnati Children's Hospital Medical Center, Cincinnati, OH
 - 2) Nationwide Children's Hospital, Columbus, OH
 - 3) Ohio Department of Health, Columbus, OH

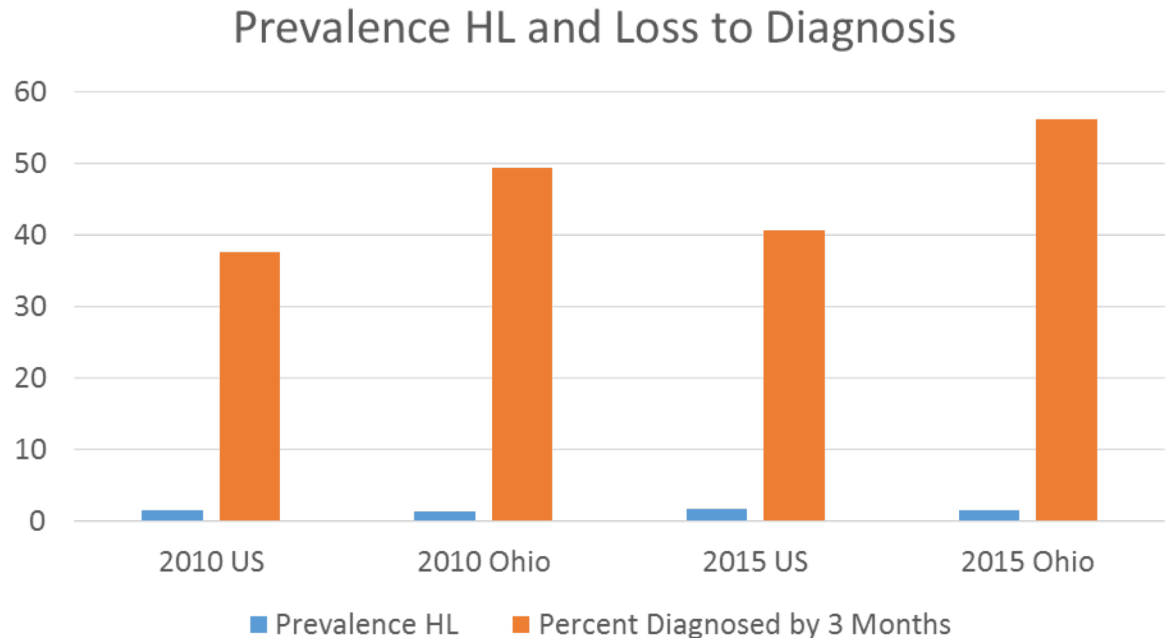


Establishing Need



* <https://www.cdc.gov/ncbddd/hearingloss/ehdi-data.html>

Loss to Diagnosis – The Hidden Problem!



- 2015: 3.6 million births, 1.7 per thousand diagnosed
- 6,151 babies diagnosed with hearing loss
- 56,632 not pass; 32,019 diagnosed by 3 months
- 44% total loss (loss to follow-up plus loss to diagnosis)

Reasons for No Diagnosis?

- Lack of sleep
- Middle ear disease
- Referral to ENT without return to audiology
- Complex medical status
- Insufficient or inefficient audiologic protocol



How can Audiologists Move the Diagnostic Needle?

Johnny's Journey



UNHS

- Referred bilaterally
- Risk Factors: 33 weeks, 24 days in NICU

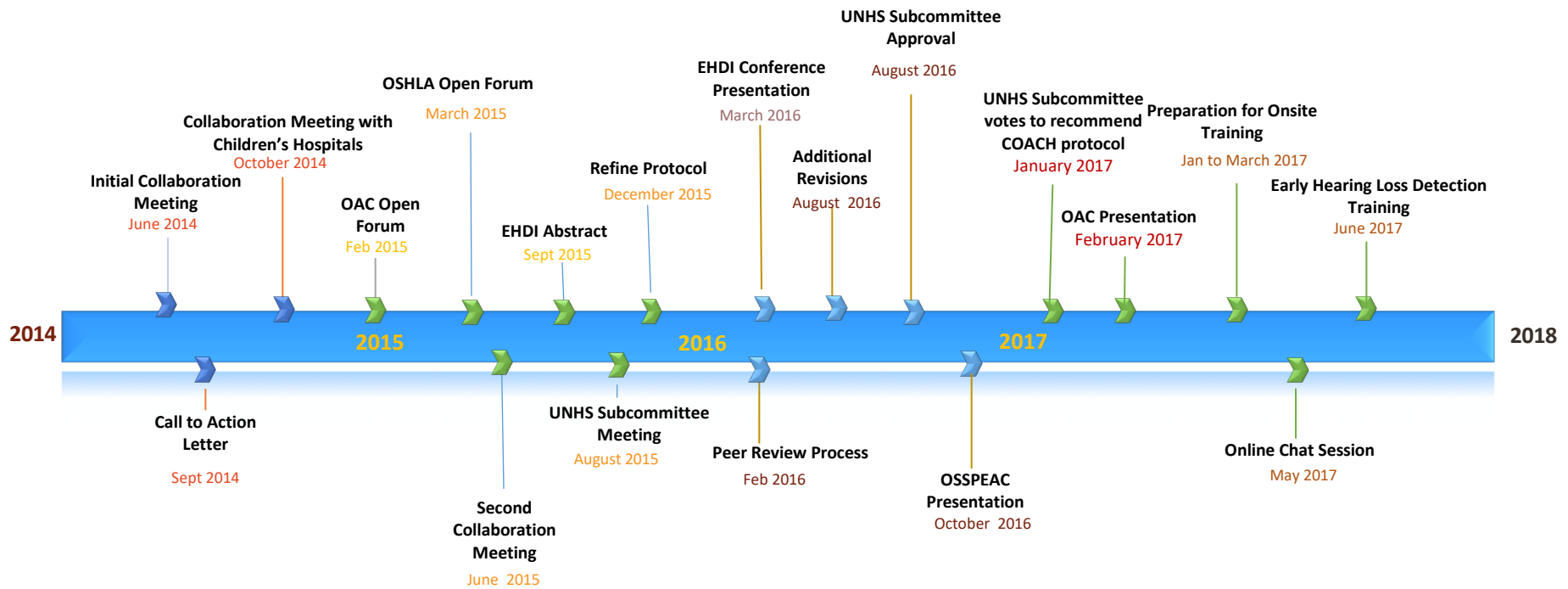
Follow-up by
3 months

- Could not complete ABR due to sleep state
- Only OAE Rescreen Completed (Passed bilaterally)

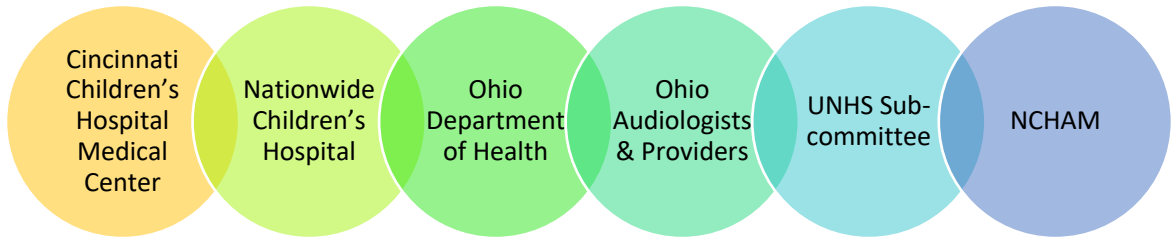
Diagnostic at
14 months

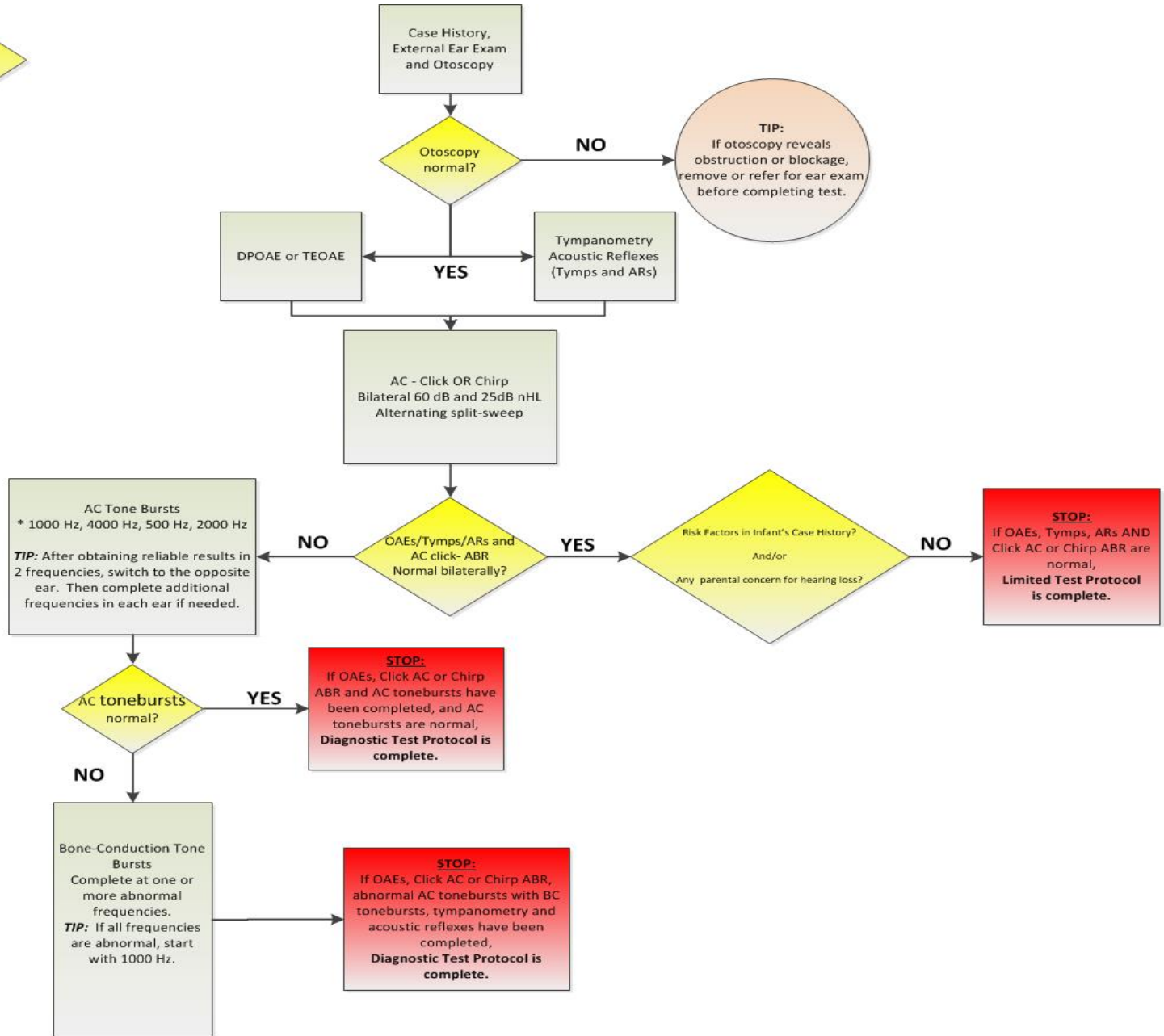
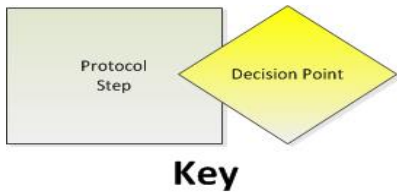
- Behavioral testing- Limited results obtained
- Sedated ABR revealed mild to Moderate SNHL bilaterally

COACH Protocol Development/Implementation



-OAC- Ohio Academy of Audiology Conference
 -OSHLA- Ohio Speech, Hearing and Language Association
 -OSSPEAC- Ohio School Speech Pathology and Educational Audiology Coalition






Preliminary Indications of Change


- ODH seeing increase in diagnostic test battery components reported electronically
 - ✓ Tone burst ABR
 - ✓ Diagnostic OAEs
 - ✓ Tympanometry
 - Data surveillance will continue
- Hospital Specific Initiatives
 - Nationwide Children's Hospital (NCH)
 - Cincinnati Children's Hospital and Medical Center (CCHMC)



Purpose of Infant Assessment

A blue speech bubble with a white outline and a tail pointing towards the bottom left.

To make sure
the baby has
normal
hearing...

A green speech bubble with a white outline and a tail pointing towards the bottom right.

To see if the
baby has a
hearing loss...

Purpose of Infant Assessment

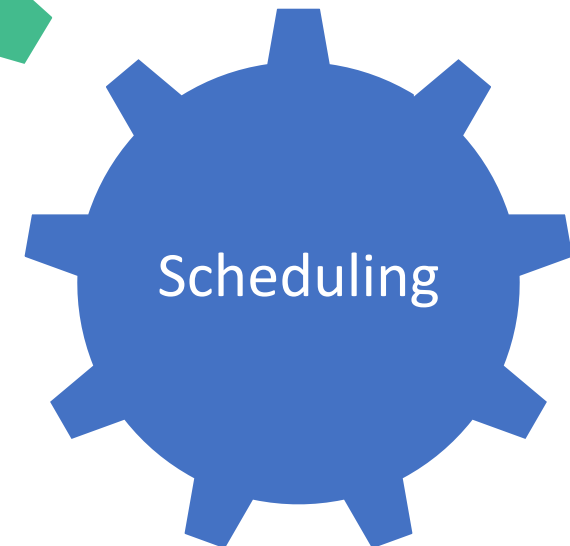
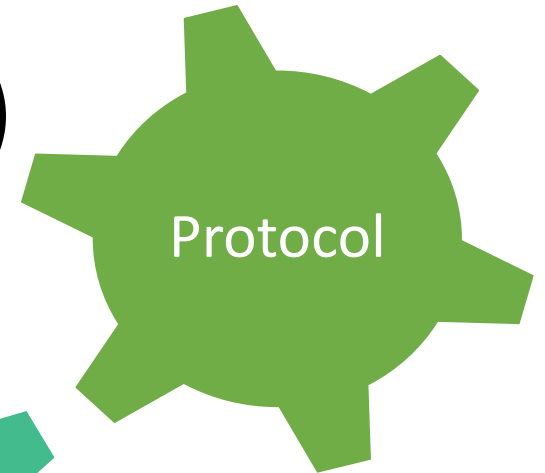
Is hearing optimal for speech and language development?

- To establish adequacy for speech and language development, you need:
 1. Frequency-specific information
 2. Valid and reliable results (as evidenced by the cross-check principle)

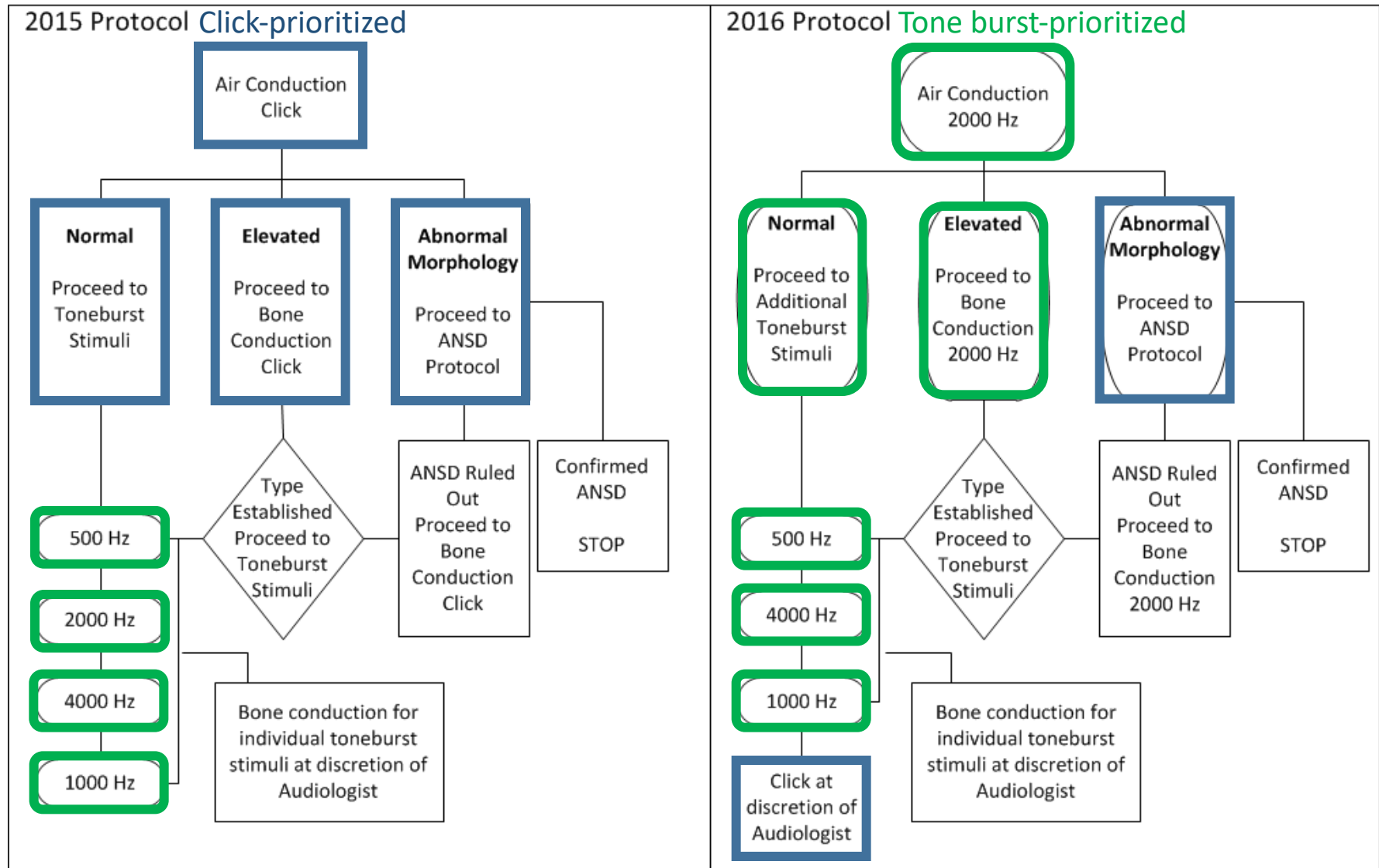
Changes at Nationwide Children's Hospital (NCH)

Keeping in mind:

- Frequency-specific information
- Valid and reliable results

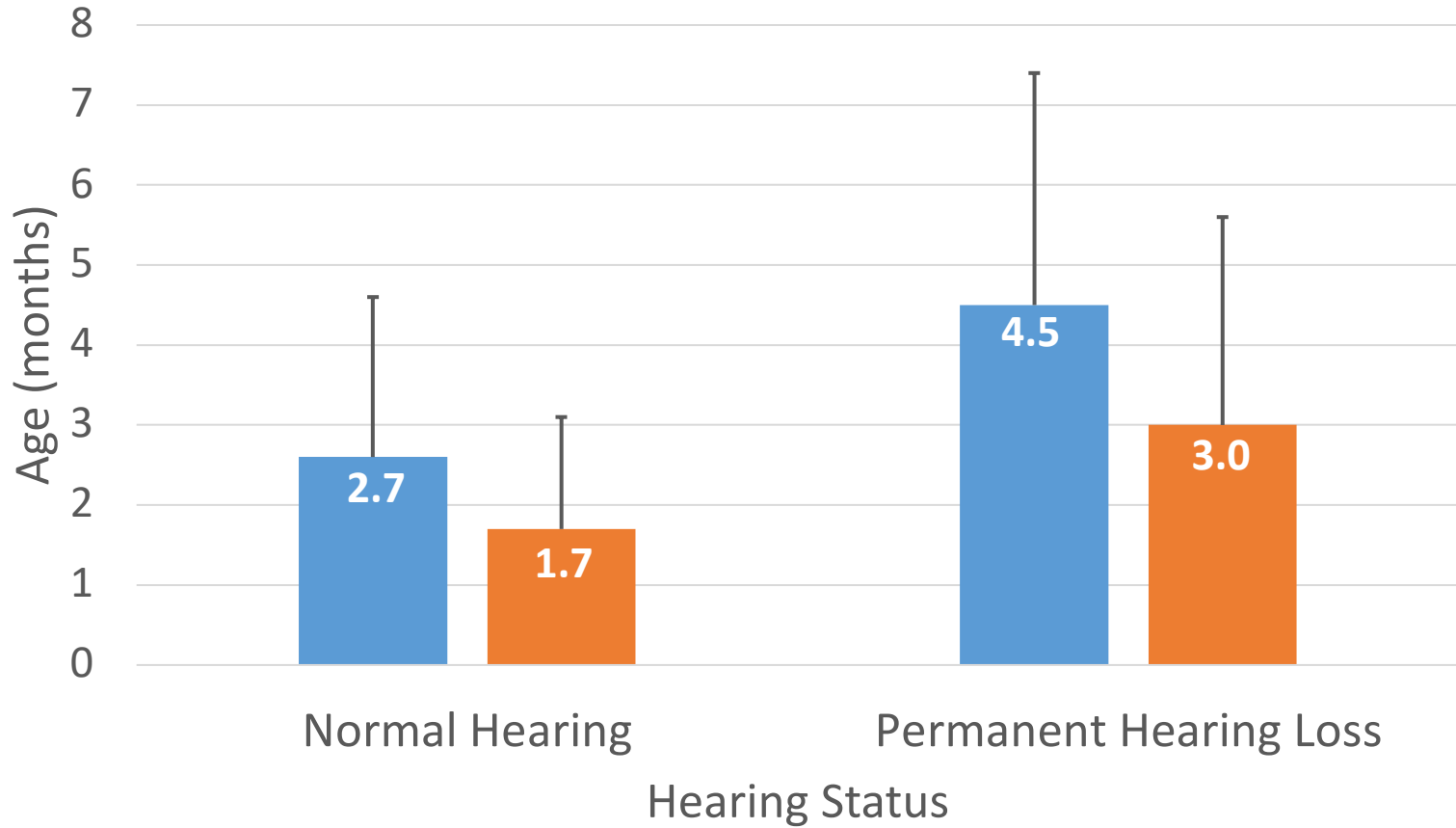


NCH Protocol Changes

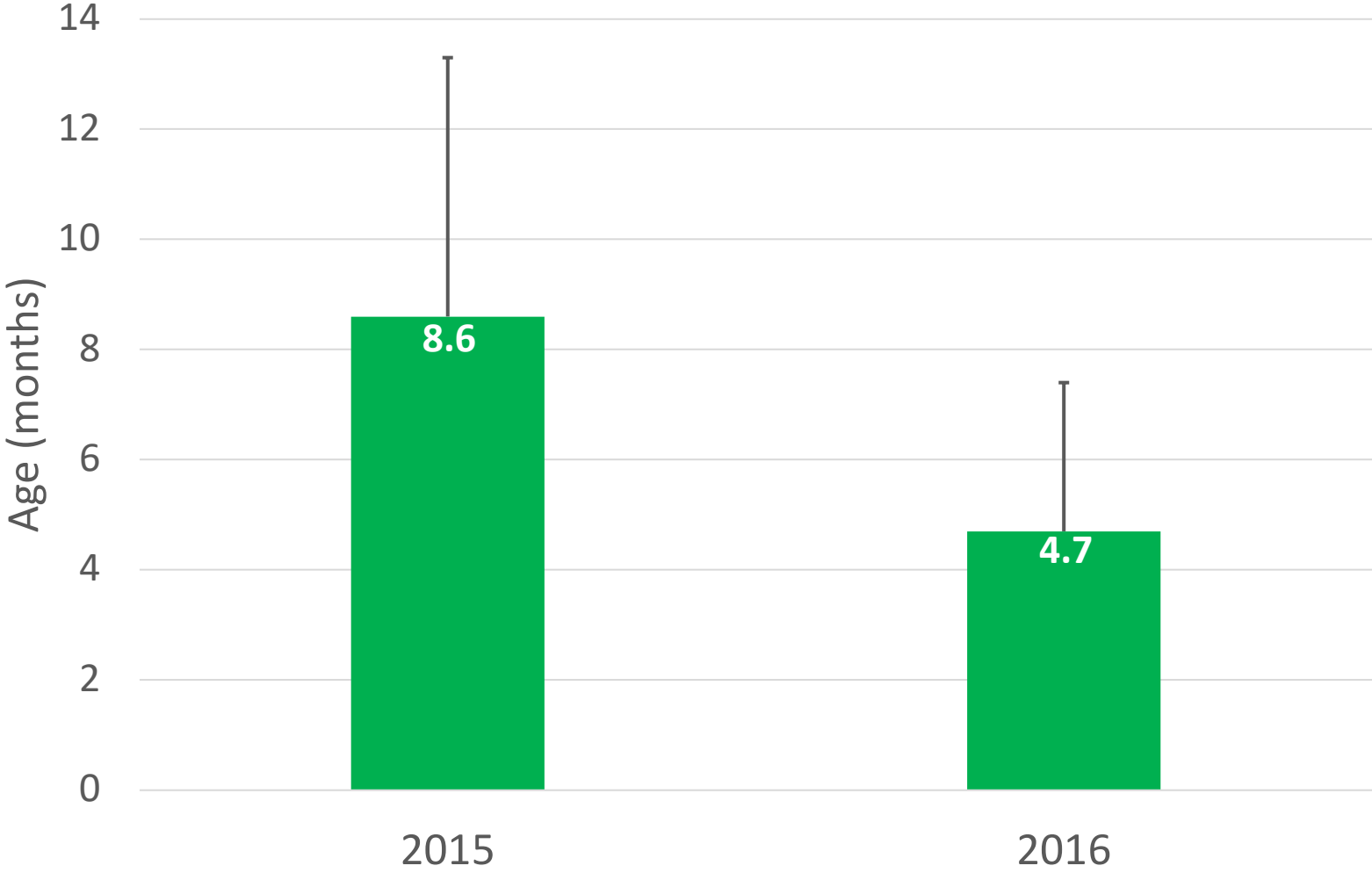


Mean Age at Diagnosis

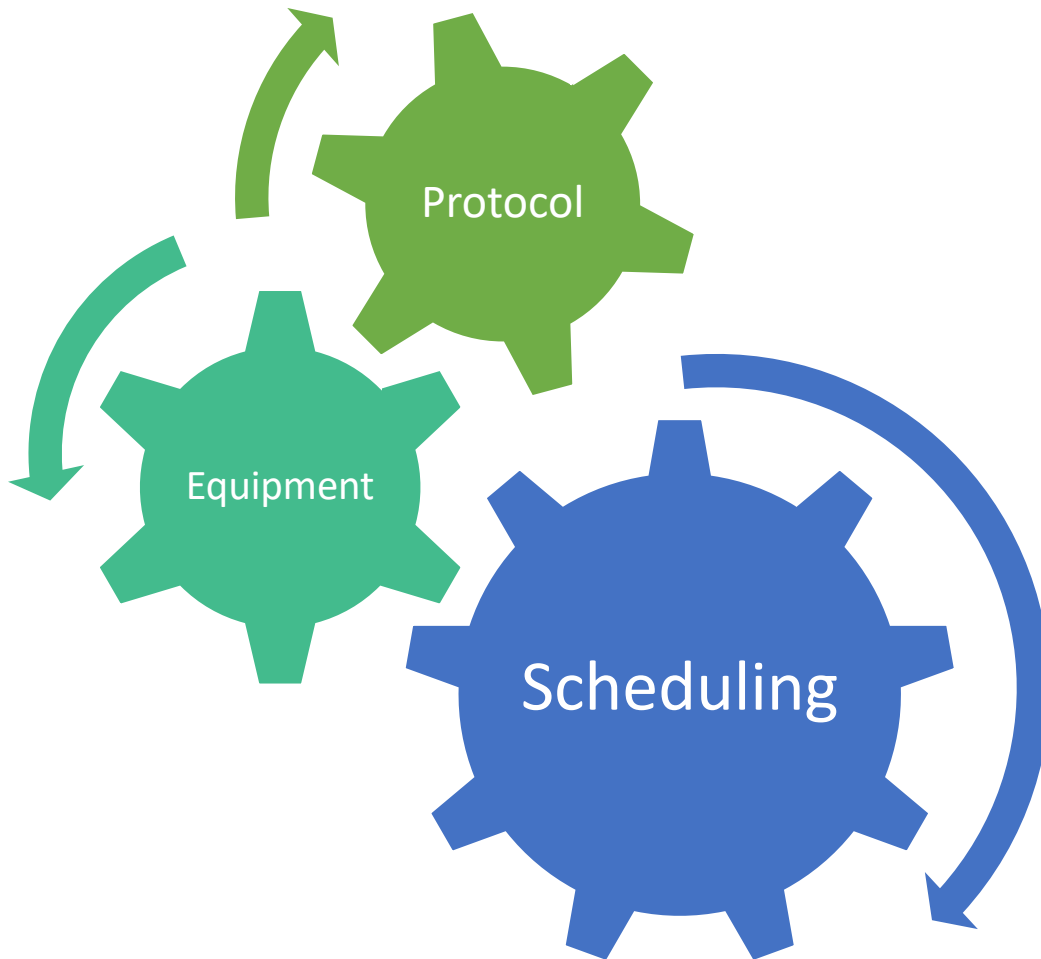
■ 2015
■ 2016



Mean Age at Fitting



Preliminary Analysis



- Of the three changes completed between 2015 and 2016, **scheduling** was the only significant factor in the regression model
- BUT...all of these factors are inter-related. Fewer appointments were needed to diagnose hearing status, potentially due to protocol and equipment changes, which opened up schedules for quicker appointments.

Diagnostic Improvement at Cincinnati Children's Hospital Medical Center

Diagnostic ABR QI at CCHMC	2011
ABRs Reviewed	764
Incomplete ABR at Initial Evaluation	26% (200)

Baseline data showed 52% of infants with incomplete evaluation at first ABR were Lost to Diagnosis

104 infants annually!

Our Goals:

- What information do you need to answer the question or establish a baseline for monitoring?
- Detection of hearing loss, degree and type, ***as quickly and as early as possible FOR EVERY INFANT!***

Diagnostic ABR at CCHMC – Outcomes

ABR QI at CCHMC	2011	2015	2017
ABRs Reviewed	764	660*	660*
Incomplete ABR at Initial Evaluation	26% (200)	11% (73)	5% (33)

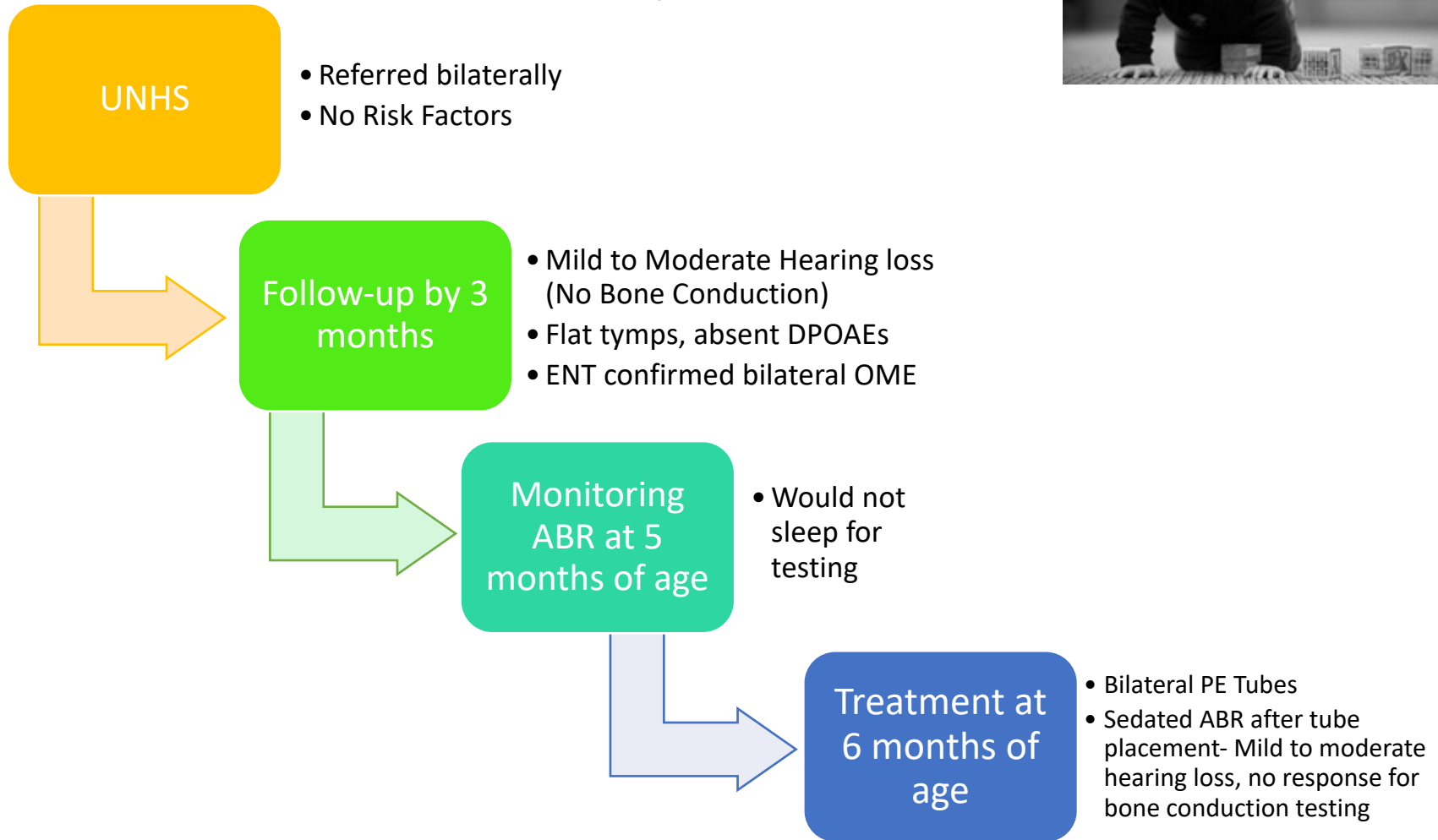
**Random sample of five ABRs per ABR audiologist per month*

- 2011-2015
 - Overhaul of ABR technology at all locations
 - Education focused on technology, BC ABR, infant sleep state
- 2015-2017
 - Revised protocols
 - Education focused on protocols, transition to 2 channel ABR, BC testing/masking
 - Anesthesia time studies: ABR test time decreased from an average of 45 to 37 min after protocol changes and education

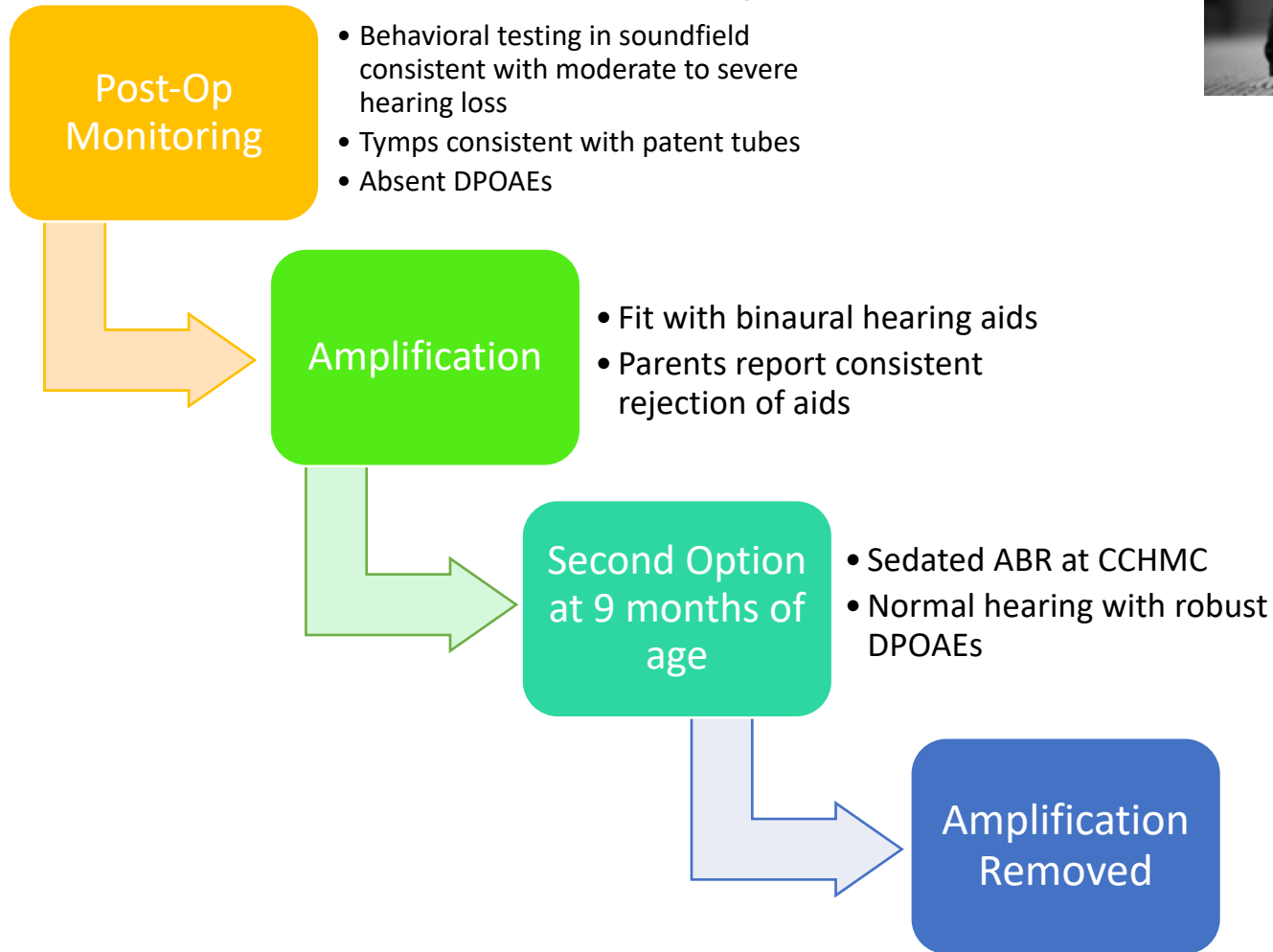
Improving Diagnostic Protocol – Critical Components

Training of Audiologists	Equipment	Protocols	Culture
Achieving best sleep state	Measures of background noise and estimate of strength of response	Where can you reduce wasted time?	Audiologists do not generally like change!
Bone conduction ABR Utilize manufacturer trainers and experts at pediatric facilities	Consider new advancements to replace old	Are protocols defeating technology?	Do you have the right people, numbers on team?
Ongoing ABR audits and case study review	Use newer averaging techniques and noise rejection	What information do you need to answer the question?	Do you choose equipment based on best outcome or what is “comfortable”?

Jemma's Journey



Jemma's Journey



Action Steps...



- Know your EHDI state program statistics.
- Re-visit your own protocol.
 - What data are you routinely missing?
- Evaluate your audiology program data.
 - What are YOUR outcomes? How can you improve?
- Know who the key stakeholders are in your area that can support your intent.
 - Do you work with your EHDI team?
 - Do you work with other providers in your area?
 - What trainings are available?



Links to Online Ohio Trainings

Courses will be available on OhioTrain located at <https://oh.train.org/DesktopShell.aspx>

Course Title: Amplification Validation and Functional Testing

Course ID: 1074658

Link: <https://cchmcstream.cchmc.org/MediasiteEX/Play/07a6b22b913741d6932b36592fb573461d>

Course Title: Assessment of Middle Ear Function and Otoacoustic Emissions

Course ID: 1075085

Link: <https://cchmcstream.cchmc.org/MediasiteEX/Play/904ffe01b3d24e66b823c5e7fb22f1761d>

Course Title: Behavioral Audiologic Assessment Outcomes of Children with Hearing Loss

Course ID: 1075053

Link: http://progressive.powerstream.net/008/00153/CCHMC_PatriciaRoush_Part1.mp4

Course Title: Challenges in Diagnosis and Management in Children with Auditory Neuropathy Spectrum Disorder (ANSD)

Course ID: 1075057

Link: http://progressive.powerstream.net/008/00153/CCHMC_PatriciaRoush_Part2.mp4

Course Title: COACH Protocol: Click and Tone Burst Air and Bone ABR, ASSR

Course ID: 1075059

Link: <https://cchmcstream.cchmc.org/MediasiteEX/Play/cade5ff16a2d46678cd2b1961f696eb21d>

Course Title: Impact of EHDI in the 21st Century

Course ID: 1075086

Link: http://progressive.powerstream.net/008/00153/CCHMC_ChristineYoshinagaltano.mp4

Course Title: Pediatric Hearing Instrument Fitting and Verification

Course ID: 1075083

Link: <https://cchmcstream.cchmc.org/MediasiteEX/Play/3cf6a444ea6040f39e62828b8e3914171d>

Course Title: Putting it all Together; EHDI: What Have We Learned?

Course ID: 1074794

Link: <https://cchmcstream.cchmc.org/MediasiteEX/Play/bbb68167ede04841964951870aa148c61d>

Course Title: Understanding the Needs of Children who are Deaf/HH Plus

Course ID: 1074394

Link: <https://cchmcstream.cchmc.org/MediasiteEX/Play/a05a558c54ae416f865fd78dbc8af6541d>

Course Title: When is it time to consider BAHA or Cochlear Implants?

Course ID: 1074468

Link: <https://cchmcstream.cchmc.org/MediasiteEX/Play/7ad97515601d4074b09232716cc4ffe71d>

Ohio's Next Steps

- Behavioral Testing Protocol
- Amplification Testing Protocol



Questions?

