Improving Detection of Hearing Loss in Rural Communities through Tele-Audiology

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Utah Department of Health & Human Services

No financial or non-financial relationships exist related to this presentation

Disclosures

As a result of this presentation, participants will be able to:

1. Describe how a tele-audiology program was implemented at a rural Utah hospital
2. Compare the outcomes of in-person testing vs tele-ABR testing in time to diagnose hearing loss in a rural Utah region
3. List benefits to offering tele-ABRs in rural areas

Learner Objectives

- In-person, close quarters
- Feelings of anxiety about results
- Exhaustion, postpartum depression
- Need for interpreter?
- Testing is time-limited
- Technical, troubleshooting

Infant ABR assessment

Types of telehealth

- **Store-and-forward (asynchronous) → No real-time interaction with patient/family**.
  - **Recorded health information** sent through electronic communications. Digital images, documents, videos.

- **Video conferencing (synchronous) → Live, face to face** communication between patient and provider.

cms.gov → *Telehealth for Providers: What you need to know*

The technology: videoconference

- **Public-facing communication apps: Social media.** Open to the public or allows wider access to viewing content. Obviously not HIPAA / FERPA compliant.
    - Facebook Live, TikTok, Twitch

- **Non-public facing communication:** only available to person you are communicating with (i.e., who you send the link / invite to)
    - **End-to-end encryption**
    - FaceTime, Google Meet, Whatsapp, Microsoft Teams, Doximity, etc.
    - Not always HIPAA / FERPA compliant

cms.gov → *Telehealth for Providers: What you need to know*

The technology: videoconference

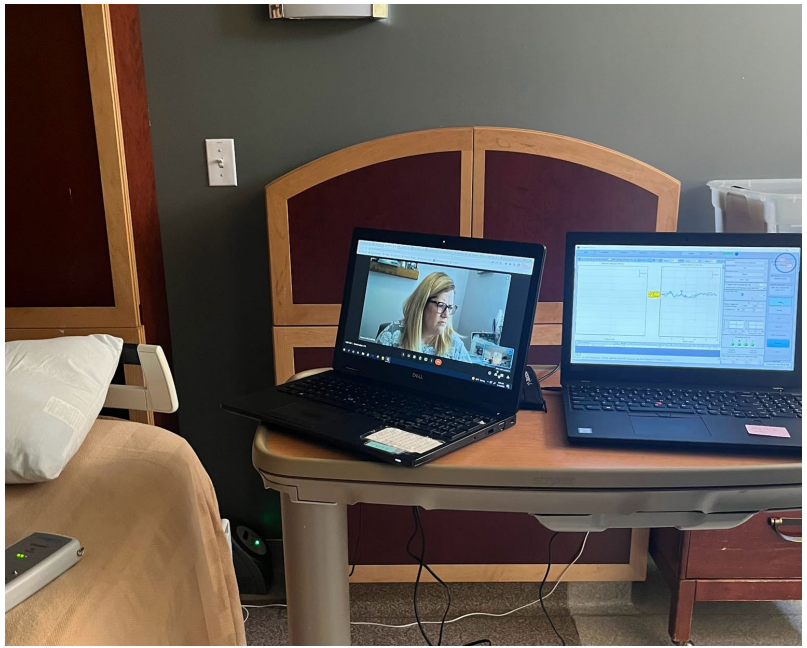
What Utah EHDI currently uses or has in the past:

- **Zoom** (current)
- **Google Meet** (current)
- Adobe Connect*
- Cisco Jabber*
- Skype* (2012 pilot)
- Cisco Webex
- GoToMeeting

cms.gov → *Telehealth for Providers: What you need to know*

The technology: remote computer takeover

- **If your equipment is PC based, you can do telehealth via remote computer takeover**
    - **Bomgar:** BeyondTrust Remote Support (Utah EHDI uses this)
    - **Teamviewer** (preloaded on Vivosonic)
    - Consult with your IT or technology department, as they may already have a program
    - Consider **licensing fees**



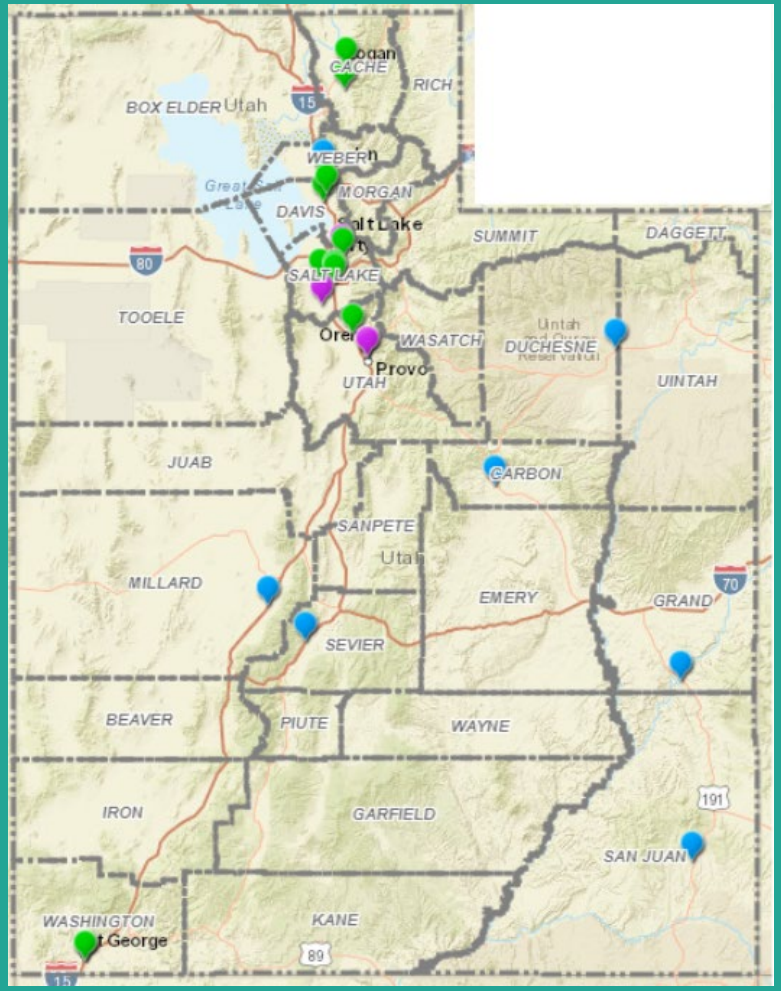
When?

Who?

Why?

How?

Connectivity?



Infant ABR desert:

17 audiologists with infant ABR expertise

300+ audiologists in Utah

Considerations when setting up a tele-ABR site

Benefits of TA: for clinic / hospital

Access

- **Expand hospital or clinic specialty services** (important for rural hospitals and communities)
- **Improve care coordination**
- **Decrease no-show rates** and **see families who may not otherwise travel to your clinic**
- **Create demand for service**
- ASHA, AAA, and Utah DOPL have said it's within our scope of practice
- Interstate licensing compact (not currently accepting applications)

Cost

- **Minimize transportation and staffing costs**
  - No car rental, flights, hotels, overtime
- **Now lower telehealth implementation costs**
- Keep reimbursement at the local level

EHDI Milestone Attainment (or clinic timeliness)

- Reduce # patients lost to follow-up → maximize patient outcomes
- **Timely diagnosis, referrals for medical consult**
- **Enrollment in EI**

Benefits of TA: for families

Geographical Access	Cost / Burden	EHDI Milestone Attainment (or clinic timeliness)

- **Specialty care in their community**
  - Appropriate diagnostic testing
  - **CSHCN** often have multiple appointments, so reducing the amount of logistics is HUGE
- Reach underserved families (goal)

- **Time off of work -** one or both caregivers
- **Travel costs**
  - Reliable car
  - Gas
  - Single-car family
- **Impacts sibling care**
  - School
  - Daycare, babysitter
  - Additional CSHCN children in home

- **Earlier diagnosis:** Maximize neurocognitive potential!
- **Decrease inappropriate referrals** (delay in diagnosis)
- **Increase necessary referrals** to specialty providers, early intervention, parent support

CSHCN = Children with special healthcare needs

Is it right for YOUR clinic or hospital?

- **Will it work for your patient population?** Rural, typically well-babies
  - Just as important → **Who wouldn't it work for**?
- Will it **improve access** to pediatric audiology services? Yes Are there already providers in the community? No. The travel, one-way is 2-5 hours.
- **Data, data, data** → LTFU, distance, interested partners, other successful sites
- **What services would be offered?**
  - Frequency-specific ABR (Vivosonic Integrity, 2-channel)
  - DPOAEs, tympanograms (Interacoustics Titan)
  - Can it be reliably delivered? Yes
- **You aren't in the room.** Will you need a **facilitator**? Yes
- Can you **troubleshoot** without being in the room? Yes
- Do you have **buy-in** from internal and external partners? Yes

Site locations (reporting / billing)

Originating site (Spoke)

Patients' and ABR equipment location

- Home* (have tried – internet access)
- **Clinic / hospital**
- School
- Early Intervention program
- **Local health department (LHD)**

Distant site (Hub)

Audiologists' location

- **Home**
- Clinic / hospital
- School
- Early Intervention program
- **State or local health department**

Hospital → Familiar setting, they know where it is, cafeteria. Emergencies and electrical noise.
LHD → Quieter setting, smaller room – WIC, lactation specialist (rocking chair); connection to resources (care coordination). Nurse arranged for closer site on 2nd ABR.
LHD + Hospital → Don't utilize hospital staff, but have the other perks. Networking.
Home: Connectivity; safety considerations
School: Good option → noise considerations; patient room set up?

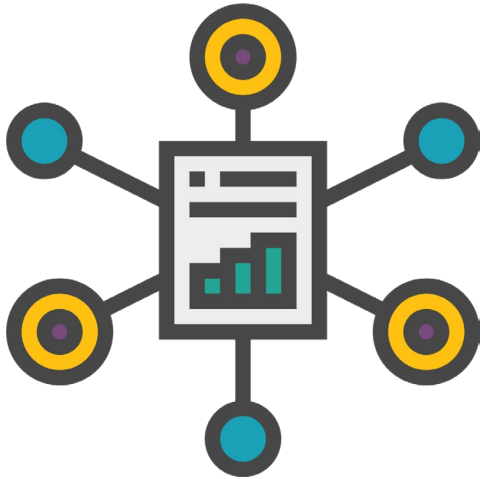
Business plan (the proposal)

- Brief description of program and how it benefits their community
- KEY CONTACTS for originating and distant site
  - Distant site
    - Audiologist
    - IT department contact
    - ABR manufacturer contact
  - Originating site
    - Facilitator contact
    - IT department
    - CEO / CNO
  - **Telehealth Technical Resource Center**
    - Northwest Regional Telehealth Network

Who it benefits, how it's done, and to what each party agrees to commit

Policies and procedures

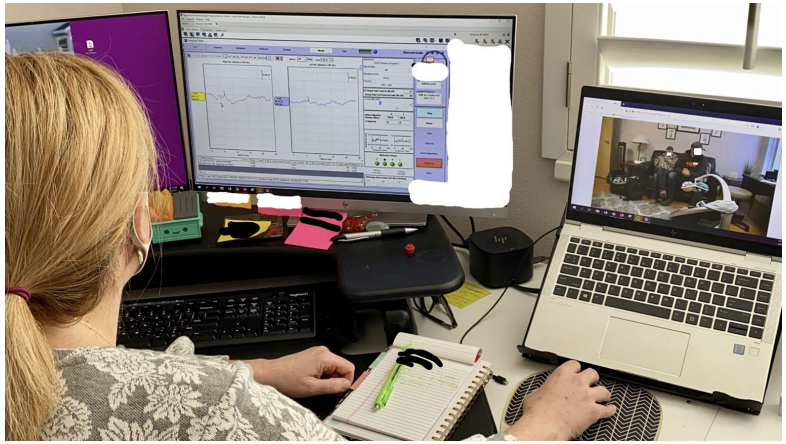
- **Referral and scheduling procedures**
  - Tell providers what an appropriate referral is
    - Age, insurance status, children with medical complexities, etc
- **Education and equipment training** to be provided to facilitators
  - In person, virtual, or both?
- For appointments: preliminary info / instructions for tele-ABR
  - Patient Info
  - Screening results
  - CMV testing results
- **ABR testing instructions** for families
- **Consent form**
- **Exam room prep**

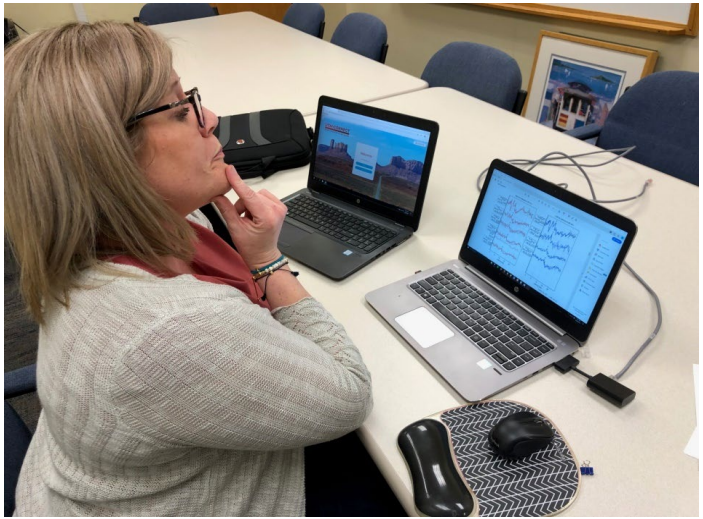


Distant site:
(audiologists' setup)

Technology needs

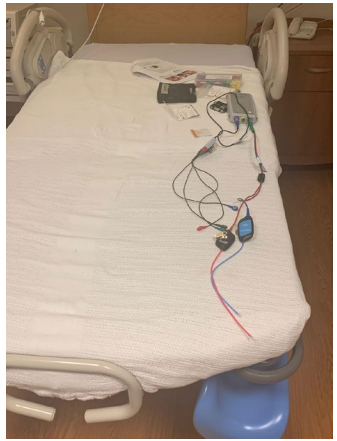
- Computer / video **camera**
- **Remote computer support software**
- **Two monitors** – one for ABR view, one for video
- Is **Wifi connectivity** an issue?
- Headphones (if not in private room)





Originating site setup: (ABR room)

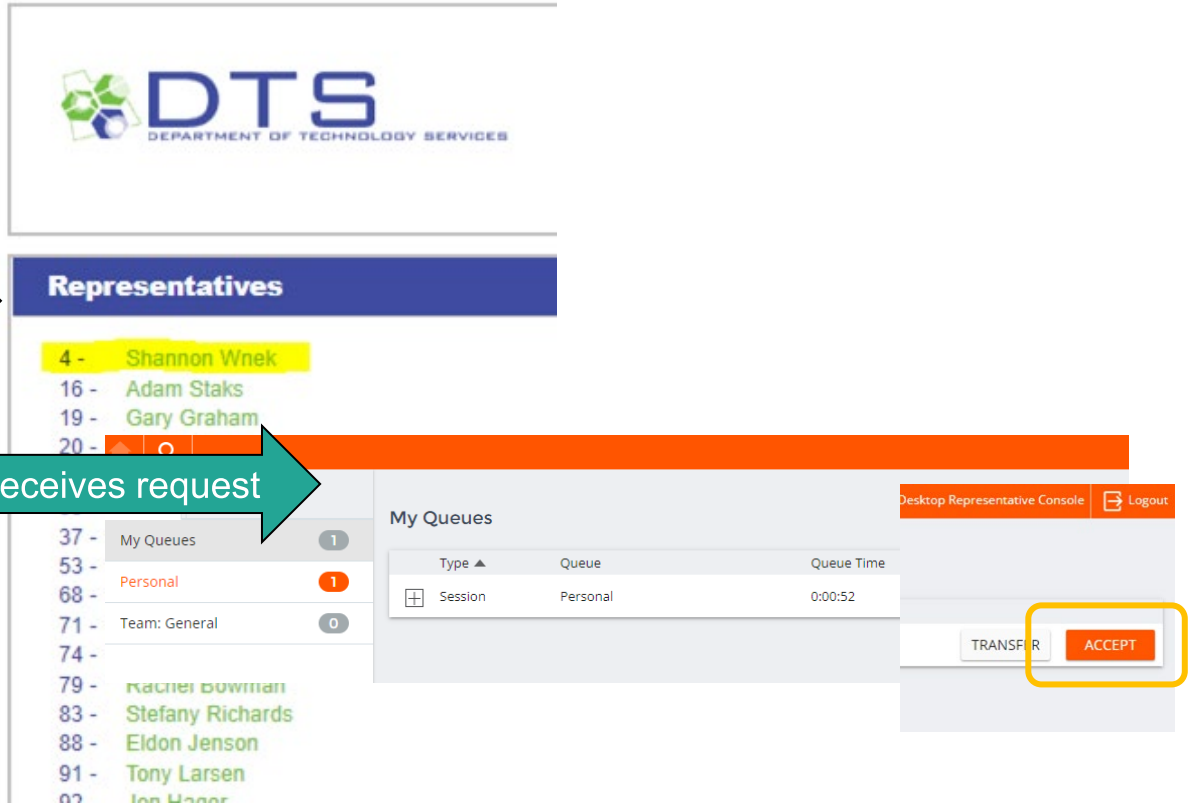
- **Two laptops**:
  - Video-conferencing / camera (Zoom, Google Meet,)
  - ABR, OAEs, tymp equipment
- Optional support → Mamaroo (swing), Boppy, comfortable seating, white noise maker



Connecting to the audiologist

Facilitator goes to website

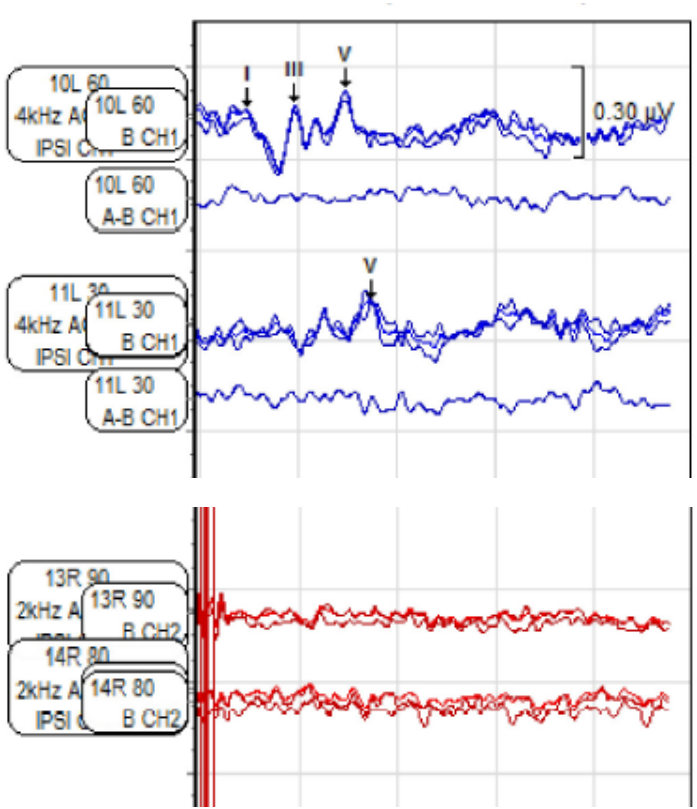
Audiologist receives request



Plan for how to obtain waveforms

(Or other testing, data)

- Once disconnected, there is **no access to ABR equipment**:
  - Email yourself the downloaded images
  - Snip images of waveforms as you go
- Close down ABR equipment and disconnect computer share
- Text facilitator to put equipment away



Tele-ABR facilitator

(your most important partner)

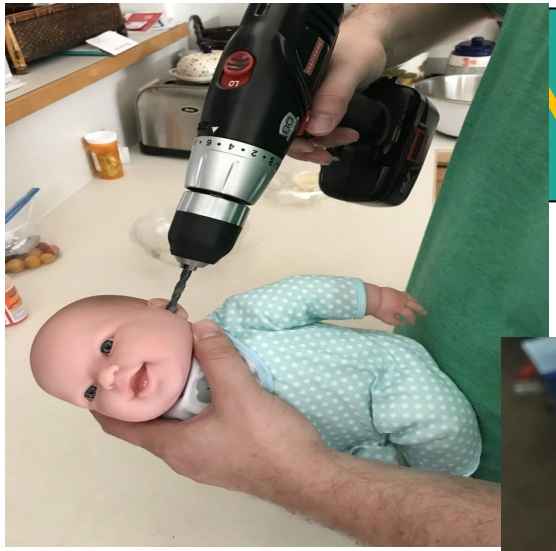
Facilitators by profession

- **Hearing screeners**
- **Nurses**
- Early interventionists
- Midwife
- Teachers of the Deaf / Parent Advisors
- EMT
- **Anyone comfortable working with infants** and families

ABR preparation

- Supplies → label <u>everything!!</u>
  - Diagnostic equipment
  - Inserts (including sizes, #/package)
  - Electrodes
  - OAE tips
  - Skin prep
  - Supplier contact information for ordering
  - CHARGED BATTERIES (and backups)
  - Spare alkaline batteries

“Hands-on training”: Finding an infant



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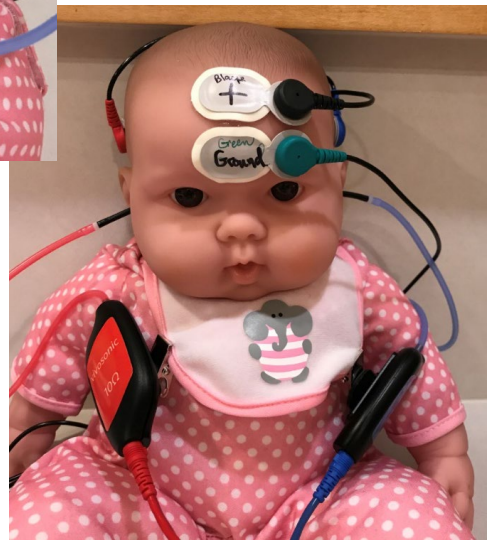


Training guide

Skin Prep (1)

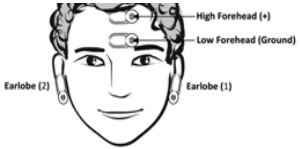
Electrodes (4)

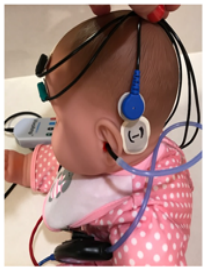
OAE tips

Inserts (2)

General rules:

Red insert & electrode (-) = Right ear
Blue insert & electrode (-) = Left ear
Black electrode = High forehead (+)
Green electrode = Low forehead (Ground)





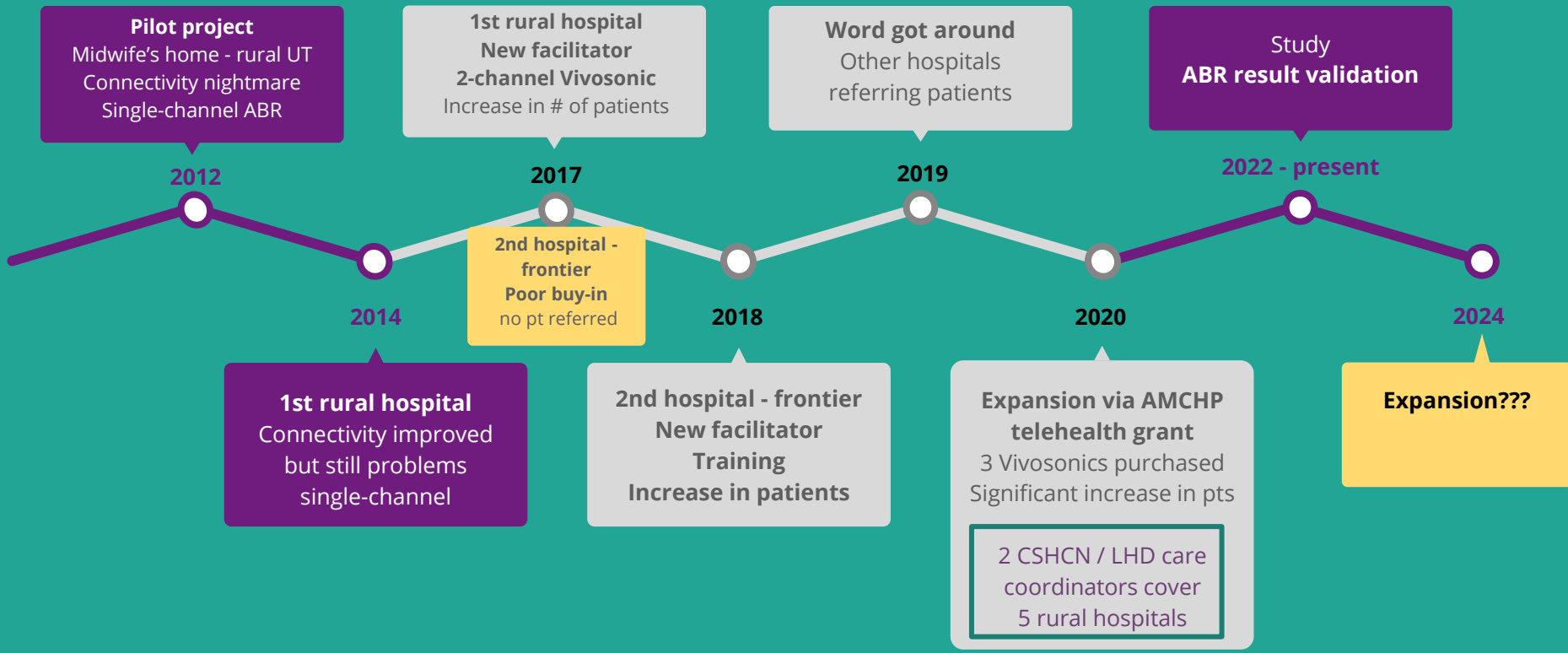
Communicating with facilitator

- **Establish good working relationship**
  - As you're learning, end sessions with a review of what worked or didn't work
  - Families can feel you're comfortable with each other

- **Cellphones are a must**
  - TEXTING is your friend – "hey, the battery is dying"
  - If your video access freezes…you need to be able to communicate

Utah Department of Health & Human Services

Utah EHDI tele-abr timeline



Exploring the Feasibility of Tele-Audiology in Rural Communities to Reduce Care Inequities for At-Risk Newborns

Grewal, M., Broadbent, E., Lang, S., Wnek, S., McVicar, S., Sidesinger, M., Diener, M., Park., A.

Compared 135 infants who failed NBHS, with 66 that underwent tele-ABR.

- ABR group were more likely to be non-White
  - 21.9% were American Indian vs. 11.8% of the in-person group ($p < 0.05$)
  - Distance traveled was significantly lower for the tele-ABR group, with 13.1 miles vs. 104.9 miles ($p < 0.001$)
  - 50.3 days vs. 49.2 days
- Looked at thresholds from tele-ABR compared to in-person ABR, but no significant test-retest variability

Shannon's EHDI stats

~30 tele-ABRs across various facilities

Permanent Childhood HL = 5

Confirmed at other facilities = 5

1 month: 5/5
3 month: 5/5
6 month: 4/5 → One enrolled later

Fit with amplification: 5/5 → 2 later fit with CI(s)

All well-babies

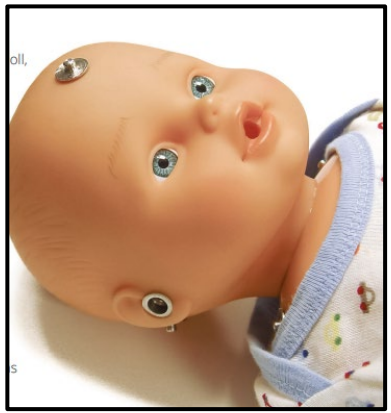
Unilateral, bilateral

Mild to profound

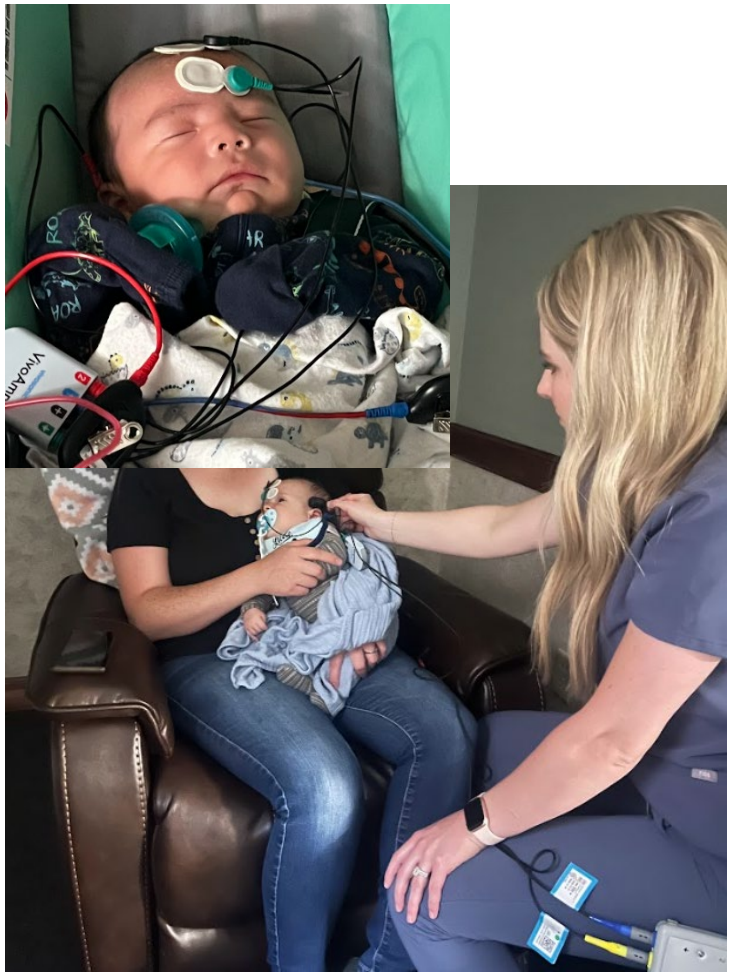
CMV+

Training challenges:

- Frontier communities may not have a baby available → **utilize a doll, practice on each other**
- If you don't have an ABR soon, retention doesn't last → **have a practice session** before first diagnostic



Intelligent Hearing Systems: Baby Isao

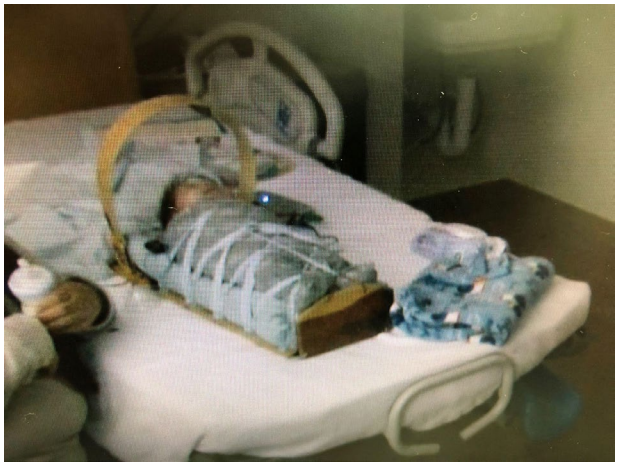


The challenges of tele-ABR:

- **Flexibility is a must**
- **Facilitators**
  - **Their comfort and skill level can impact a lot**
- Every diagnostic is different and brings its own challenges
  - Parent interpretation of instructions
  - Respecting the parent's preferences (swaddle, bottle, etc)
- Billing for services
  - Reimbursement is starting to happen for tele-audiology
- Expect growth and improvement over time
- **Continual learning curve as technology changes**

The successes:

- Many infants have been identified with hearing loss EARLY
- **Repeatable results** from one audiologist to another
- Equitable access to hearing healthcare
- **Word of mouth** → more primary care providers and audiologists asking for service
    - NICU ABR follow-up, CMV baseline testing, other **hospital NBHS programs have offered patient rooms** in exchange for closer services for families



Questions??

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