

Improving Audiology Access for Families



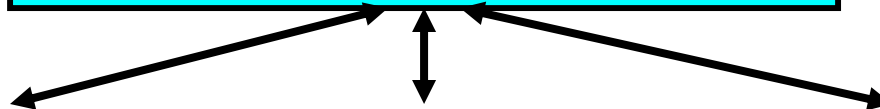
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Marion Downs
HEARING CENTER

Screening



**Complete Audiologic
Evaluation**



**Hearing Aid
Fitting**

**Early
Intervention**

**Medical
Evaluation**



Are we meeting EHDI Goals in the US?

(CDC 2007 Screening Statistics)

- ❖1: Screen > 95% of the birth population by one month of age: **2007 = 94%**
- ❖2: Diagnose by 3 months of age: **2007 = 65.6%**
- ❖3: Enroll in early intervention by 6 months of age: **2007 = 64.3%**
- ❖4: States will have coordinated systems of care: **2007 = 49 states & 2 territories reported**

Are we meeting EHDI Goals in the Colorado?

(Colorado 2008 Screening Statistics)

- ❖1: Screen > 95% of the birth population by one month of age: **98%**
- ❖2: Diagnose by 3 months of age: **82%**
- ❖3: Enroll in early intervention by 6 months of age: **54% (incomplete data)**
- ❖4: States will have coordinated systems of care: **Colorado has an EHDI Coordinator, an Infant Hearing Advisory, State Guidelines, Mandatory reporting**

EHDI Program Goals

(***goals influenced by audiologists)

- ❖1: Screen > 95% of the birth population by one month of age
- ❖2: Diagnose by 3 months of age
- ❖3: Enroll in early intervention by 6 months of age
- ❖4: States will have coordinated systems of care

EHDI Program Goals

(*****goals influenced by audiologists**)

- ❖1: Screen > 95% of the birth population by one month of age***
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- ❖3: Enroll in early intervention by 6 months of age***
- ❖4: States will have coordinated systems of care***

Audiologist role in NHS

- ❖ **Program management**
- ❖ **Responsibility for lost to follow-up & re-screen rates**
- ❖ **Role in parent notification and follow-up**
- ❖ **Re-screen protocol**
- ❖ **Communication with parents**
- ❖ **Reporting and accountability to state EDHI system**

Screening by 1 Month

- ❖ **Screen all babies prior to discharge**
- ❖ **Track babies transferred to other nurseries within the hospital or from other hospitals**
- ❖ **Communication between nursing and screening staff**
- ❖ **Improve outpatient re-screen follow-up**
- ❖ **System for screening for special populations (home births, early discharge, sick babies, out of state babies)**

Hospital Based Strategies to Reduce Loss To Follow-up

❖ Follow hospital protocol

- Provide written materials in parent's language
- Use an interpreter when needed
- Ensure an appointment for follow-up is made prior to discharge
- Verify contact information and obtain an alternate contact

❖ Verify PCP and communicate results

Reduce Lost to Follow-up from Screening

- ❖ Target risk populations for education
- ❖ Target specific hospitals for technical support
- ❖ Increase regional support for education and communication for hospitals and audiologists
- ❖ Increase parent participation in the system
- ❖ Increase efficiencies in the data management system
- ❖ Engage the Medical Home!

Diagnosis by 3 months

❖ Diagnostic audiologic evaluation

- Complete test battery-best practice
- Focus on ear specific information
- Mild vs normal
- Conductive
- Pattern of Auditory Neuropathy/Auditory Dys-synchrony

❖ Other evaluations

- CMV titer
- Evaluation for MEE
- CT
- Genetics screen

Optimizing the Audiologic Assessment Visit

- ❖ **Test by 3 months of age to optimize natural sleep**
- ❖ **Review health information in advance**
- ❖ **History including risk factors by phone or on line**
- ❖ **Review information obtained during hospital stay**
- ❖ **Expand information obtained from second screen**
- ❖ **Tele-health???**

Optimizing the Audiologic Assessment Visit

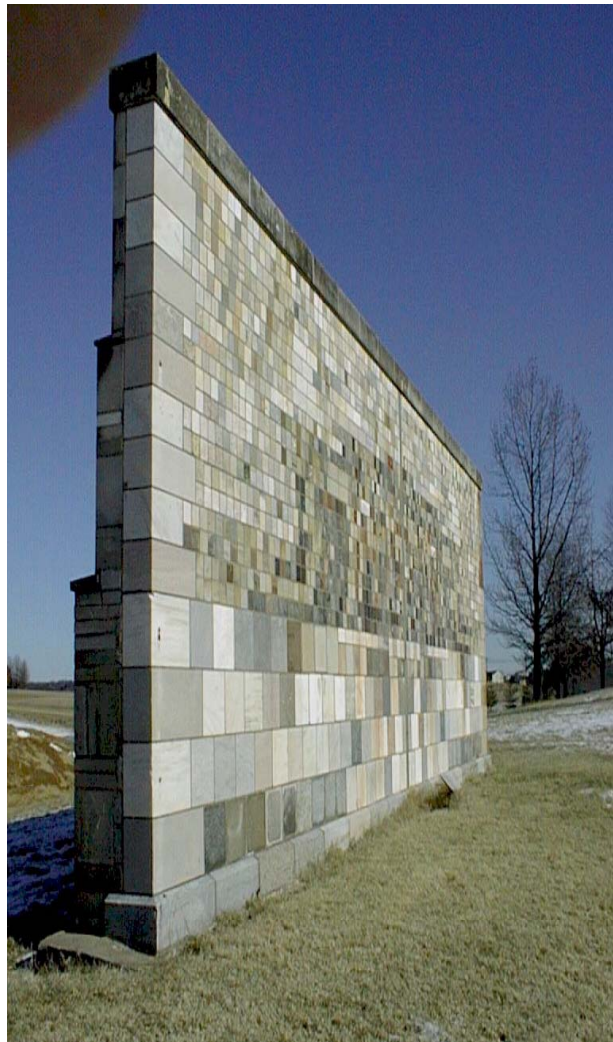
- ❖ Appointment scheduled before discharge
- ❖ Appointment made at 1-2 weeks of age
- ❖ Advance Instructions to parents
 - Importance of visit
 - Sleep deprivation
 - Feed onsite
- ❖ Refer to EI when loss is identified but details (degree and type) are still being assessed

Diagnosis by 3 months Middle Ear Effusion???

- ❖ **Include strategies to ID in test battery**
- ❖ **Medical Intervention necessary**
- ❖ **PE tubes before 6 months if persistent MEE results in hearing loss???**
- ❖ **If Medical Intervention fails to resolve hearing loss by 6 months of age, refer to EI**
- ❖ **Counsel parents**
 - Resolution of loss?
 - Sensitive period for access to language
 - Possible temporary use of amplification

Amplification Issues

- ❖ Access from diagnosis
- ❖ Medical clearance: ENT or PCP?
- ❖ Funding barriers
- ❖ Loaner options
- ❖ Before or simultaneous to EI referral
- ❖ Advanced features?
- ❖ Probe-mic estimated
- ❖ Validation
- ❖ Use schedule
- ❖ Follow-up schedule
- ❖ Communication with EI system/provider
- ❖ Role of EI provider in validation



**Timely Access to Qualified
Audiologists Is a**

MAJOR

**Barrier to Meeting the
EDHI 1-3-6 Goals**

Advanced Access

**Special Thanks for the Support from
NICHQ, MCHB
Catherine Tantau, BSN, MPA**

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Advanced Access is the ability of a practice to...

...Offer patients/families an appointment with the provider of their choice at a time that is convenient for them.

What is Advanced Access ?

- ❖ NO delays for an appointment**
- ❖ CONTINUITY for patients and providers**
- ❖ Doing today's work today**

Constant Tension

Patient/family definition of Urgent

VS.

Medical definition of Urgent

Constraints

Demand in the
population

Request for
service

constraint

Access to that service

constraint

Delivery of that service

constraint

Access to
secondary
service

Examining Access Issues by Practice

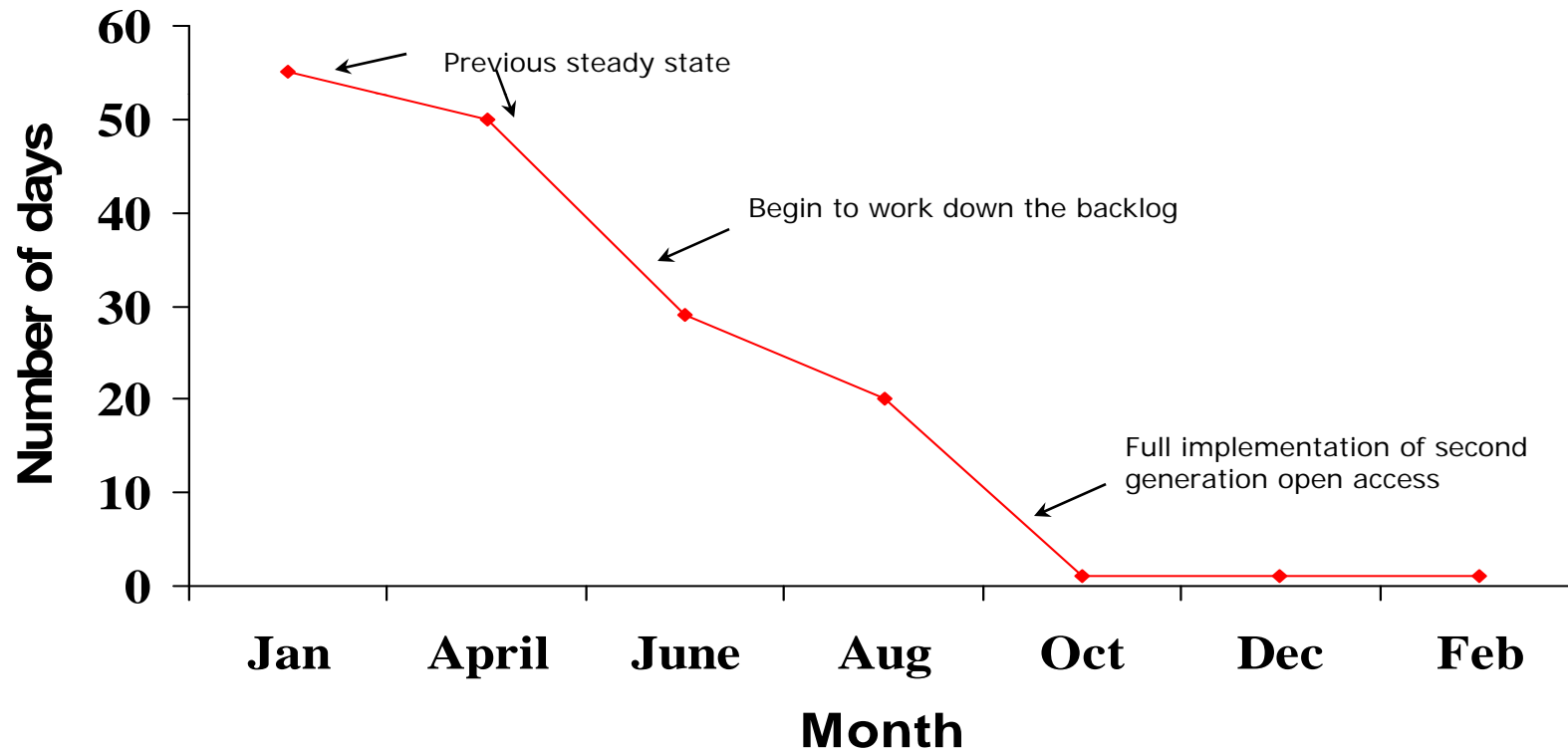
- ❖ Set an Access Aim; 1-3-6 the Gold Standard
- ❖ Measure Delay (3rd available)
- ❖ Measure Demand and Supply
- ❖ Tracking your progress

How to Calculate Delay

- ❖ Measure days til 3rd next available routine appt. for each provider and each visit type
- ❖ Measure each week, same day, same time
- ❖ Plot your data over time
- ❖ Annotate run chart

Delay Example

REDUCTION IN AVERAGE WAITS FOR ROUTINE APPOINTMENTS



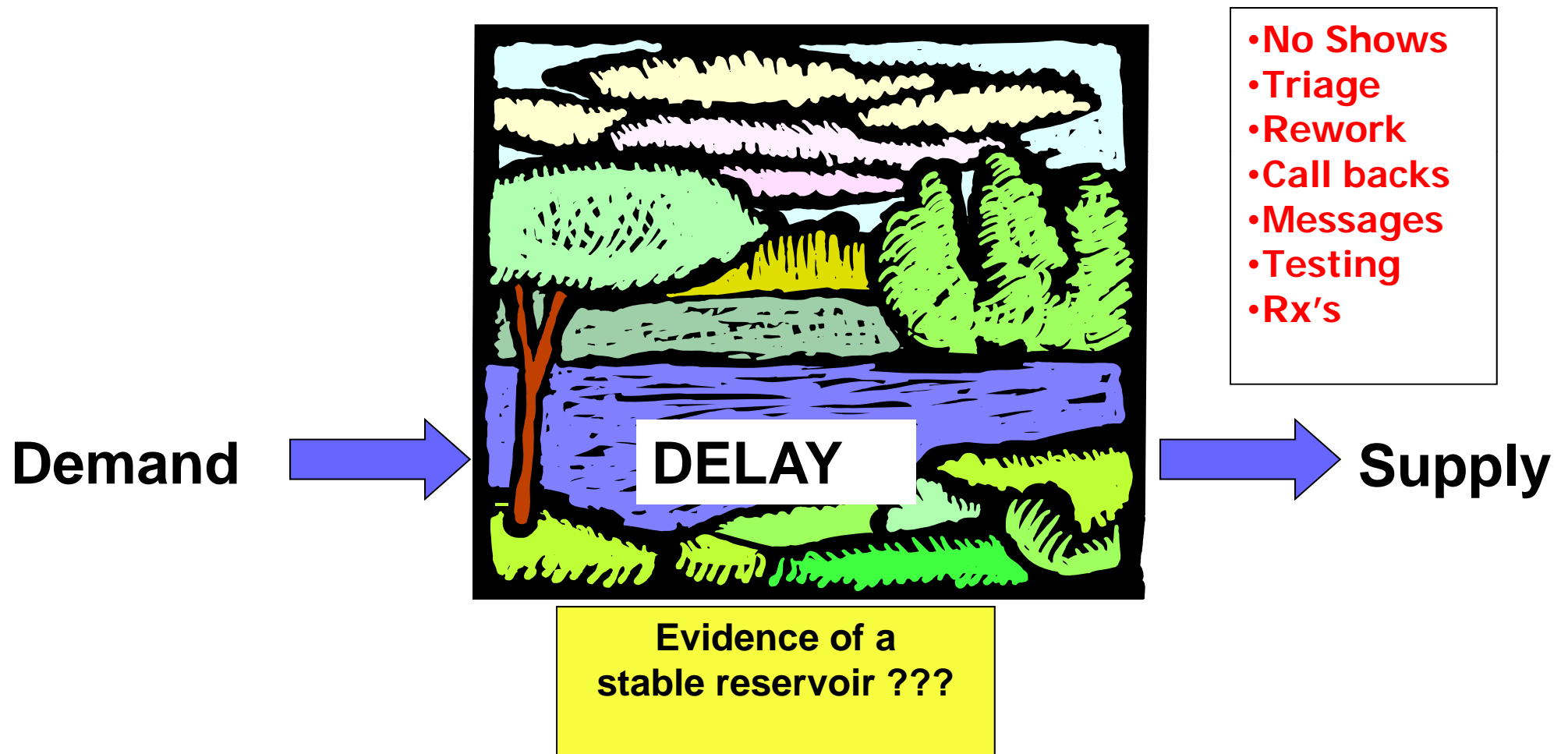
True Demand Inventory for Specialists

Care Unit	Pts referred today regardless of day they are appted.	Walk-ins Seen today	Other venues??	Urgent referrals / consults received regardless of day they are appted.	Any follow-up appts or returns generated today	Total
Provider 1						
Provider 2						
Provider 3						
Totals						

Supply questions for Audiology/ENT...

- ❖ What is the demand for follow-up screen?
- ❖ What is the demand for diagnostic assessment unsedated/sedated?
- ❖ What is the demand for ENT office visit for a new patient?
- ❖ What is the demand for hearing aid fit/follow-up?
- ❖ Other ?

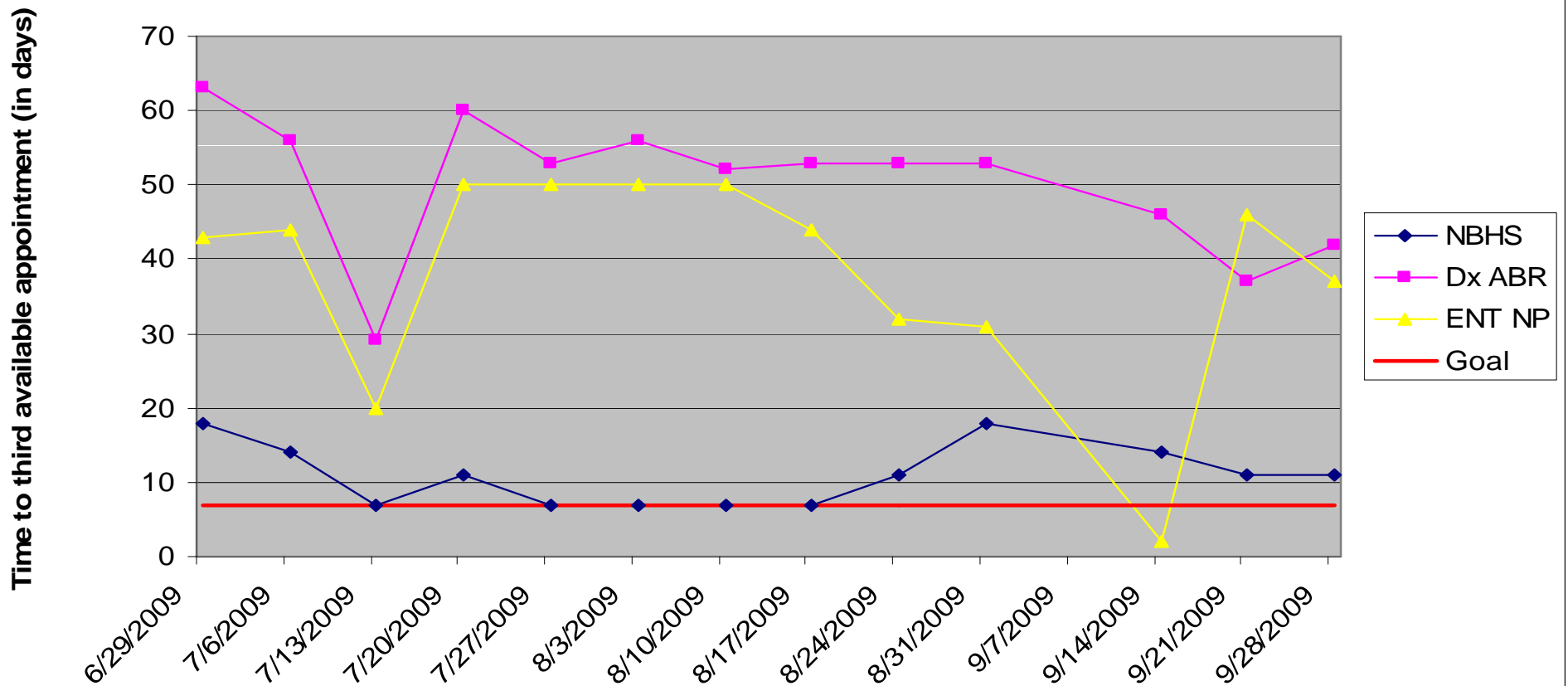
Demand and Supply Equilibrium



Audiology Delay Example

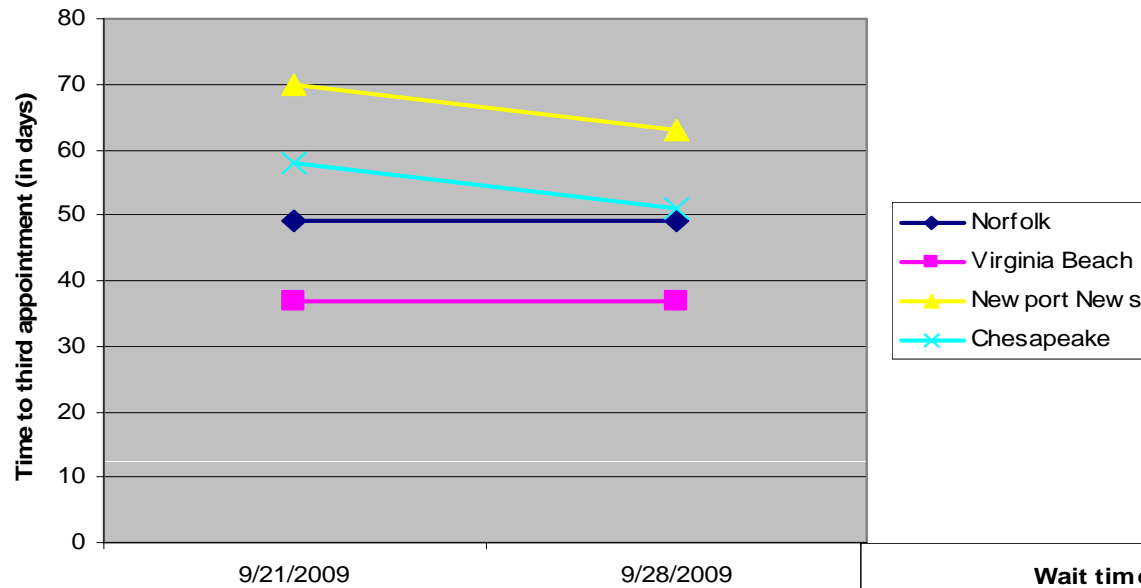
Virginia...Allison Cleland

NBHS Third Next Available

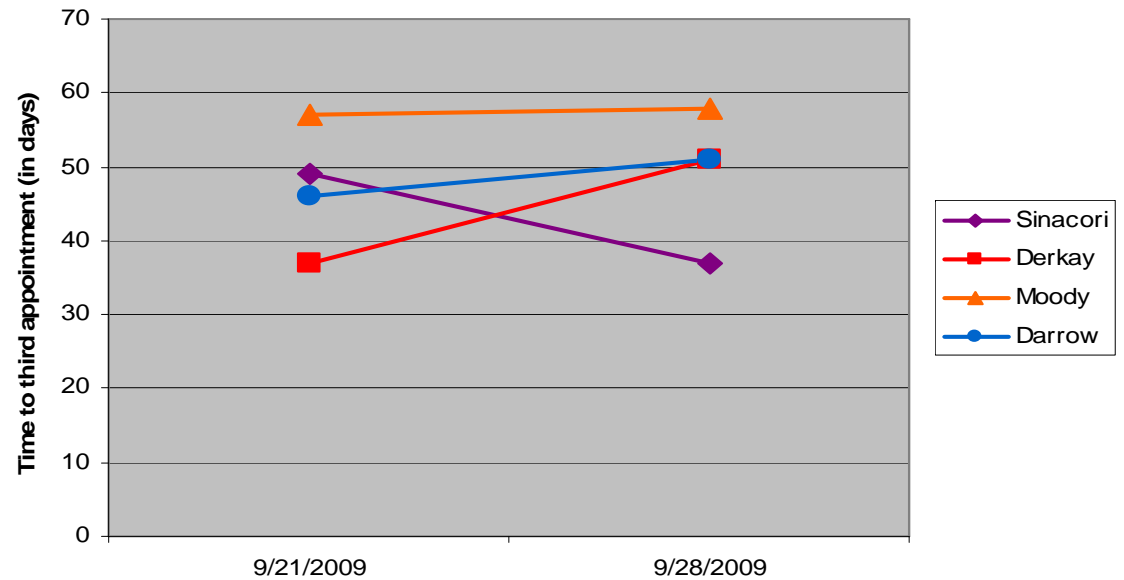


Delay; Virginia...

Wait times for new patient appointment according to office location



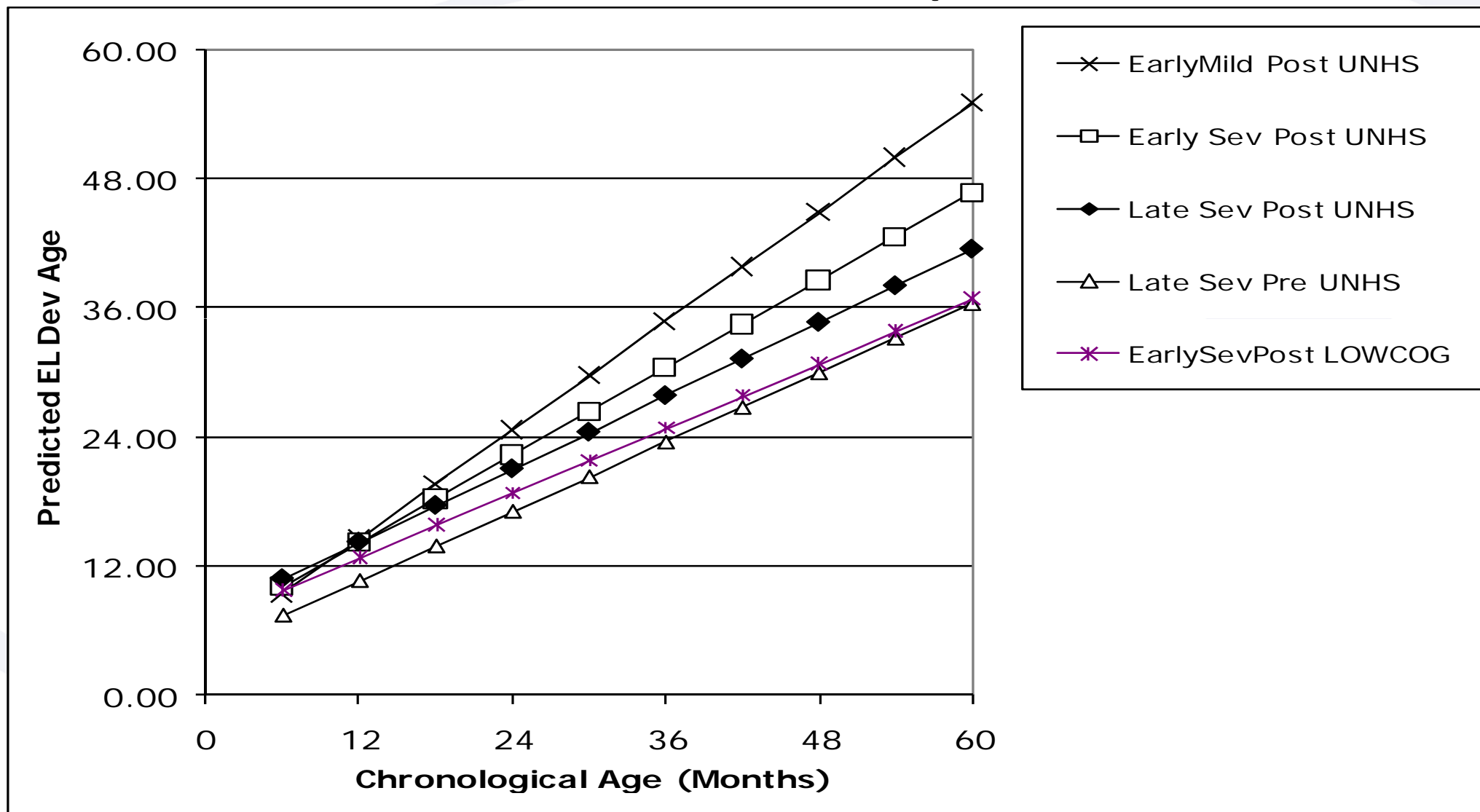
Wait times for new patient appointment according to provider



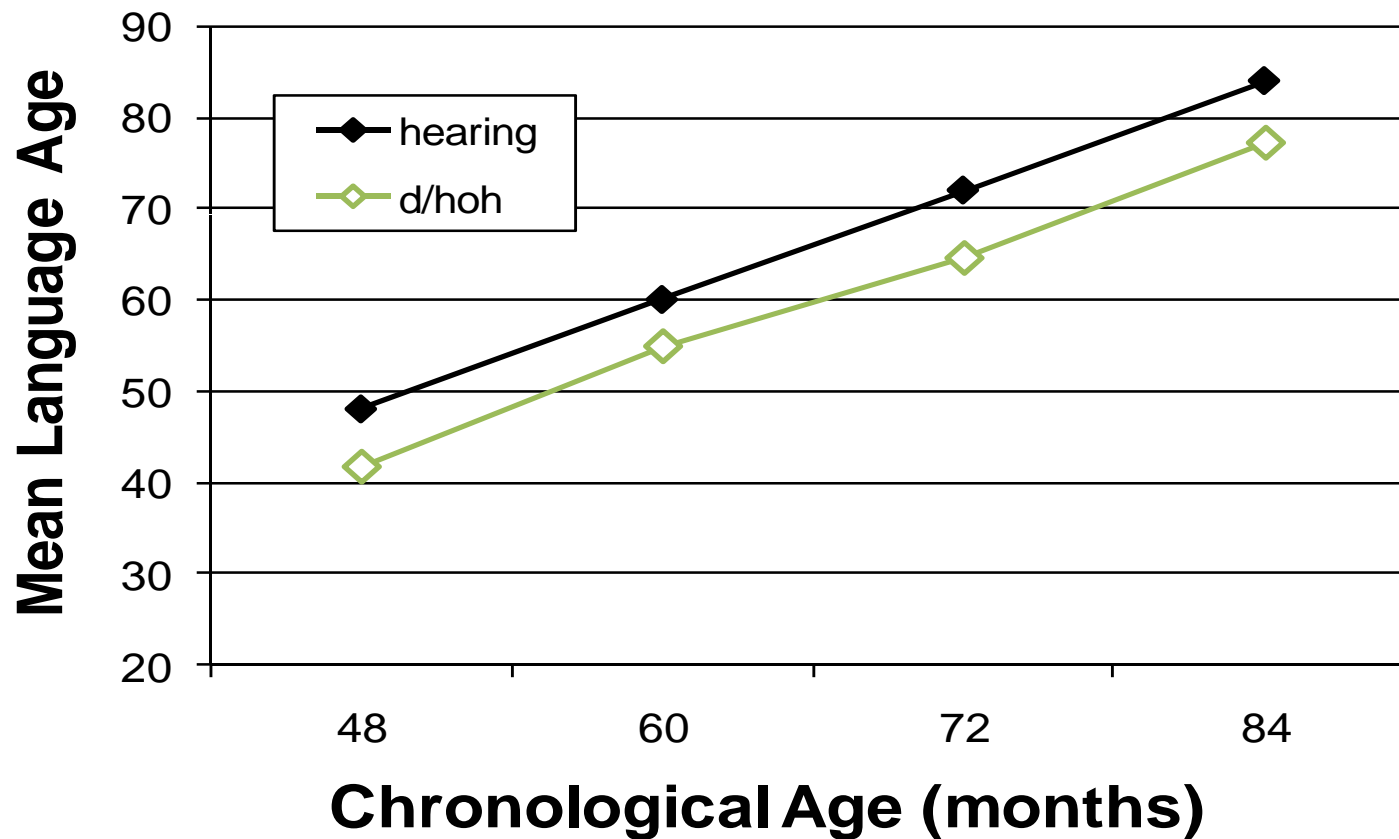
Audiology Input Equity Options

- ❖ Audiologists with training and experience
- ❖ Train more staff???
- ❖ Availability of equipment
- ❖ Modify availability by expertise and visit type
- ❖ Add availability in admin time
- ❖ Others ???

Pre-Post UNHS comparisons



Expressive Vocabulary (EOWPVT)

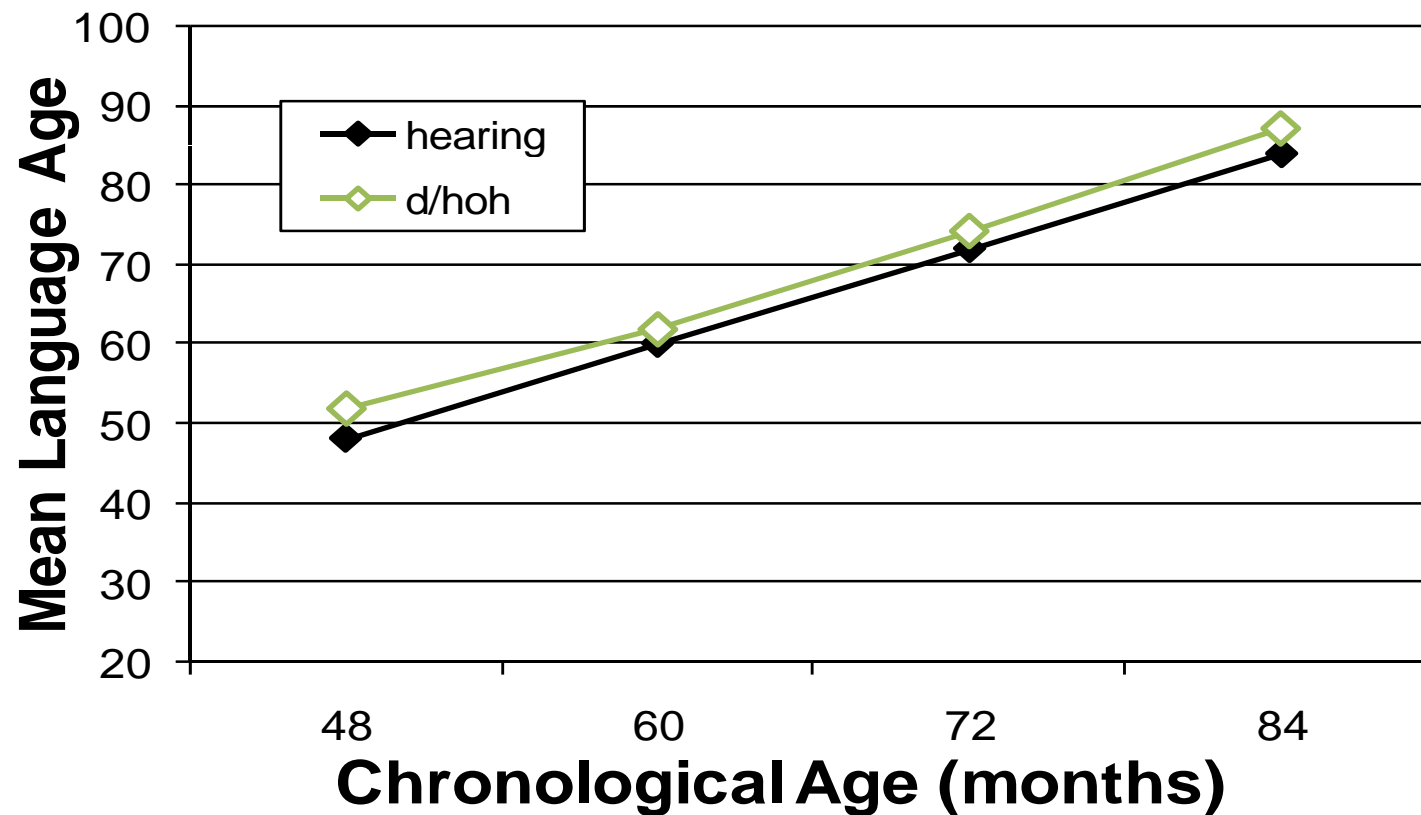


Sedey & Yoshinaga-Itano, 2008

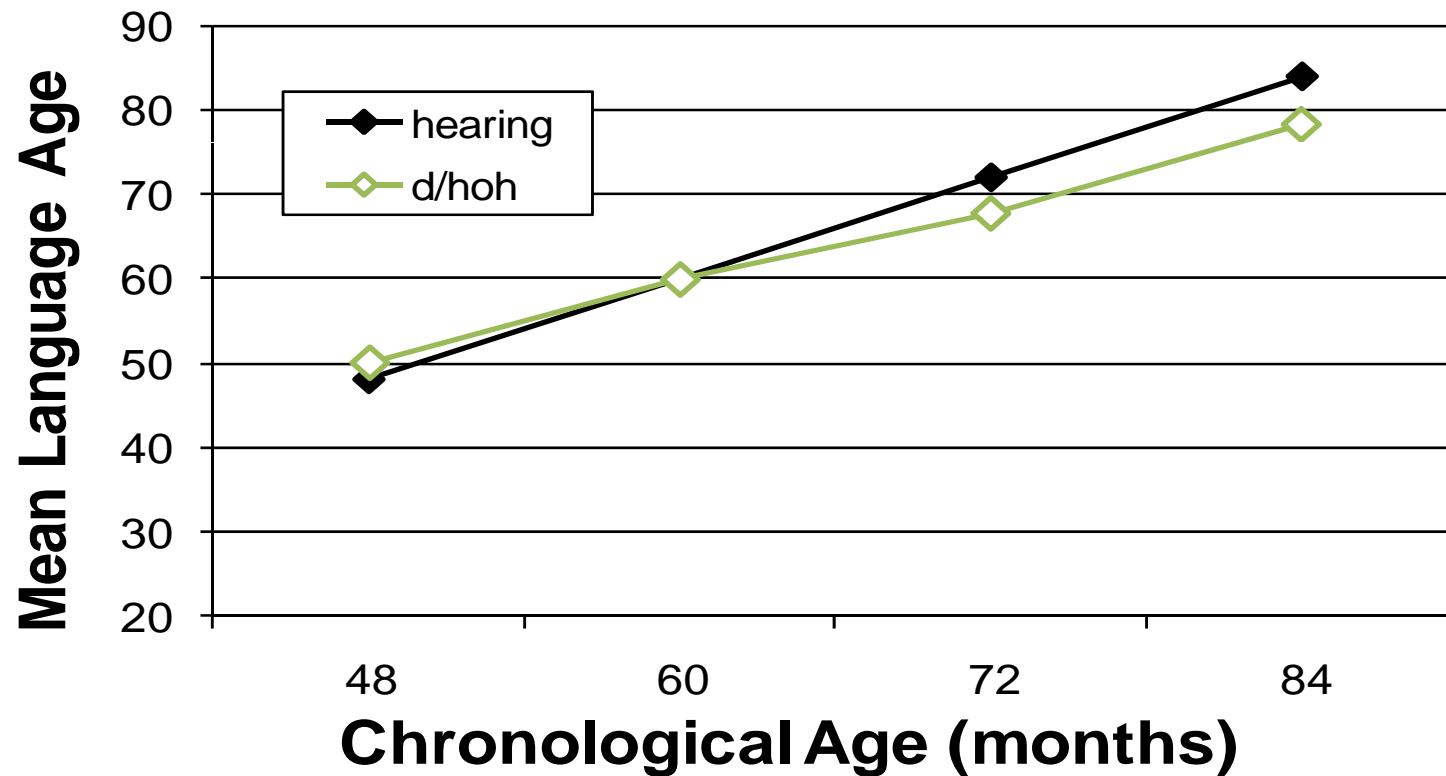
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Vocabulary Comprehension (TACL)

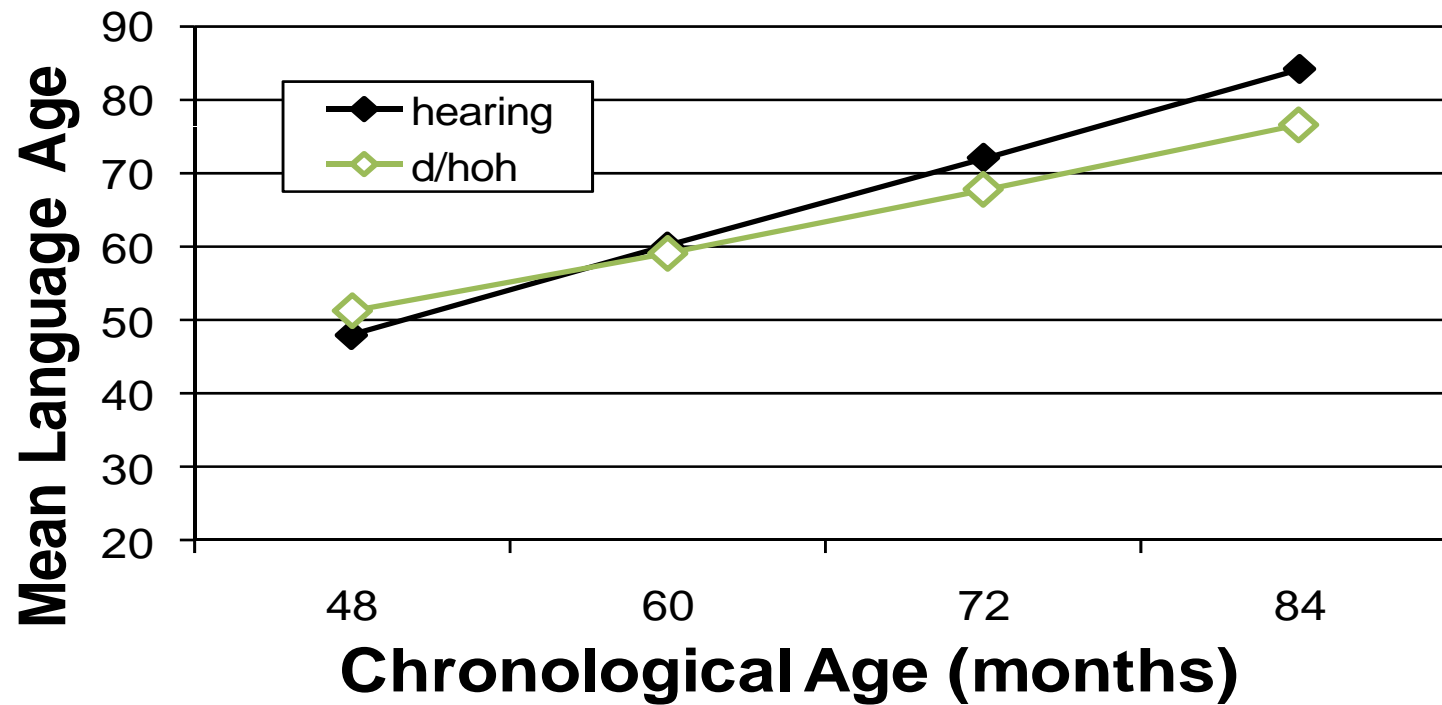


Comprehension of Grammar (TACL)



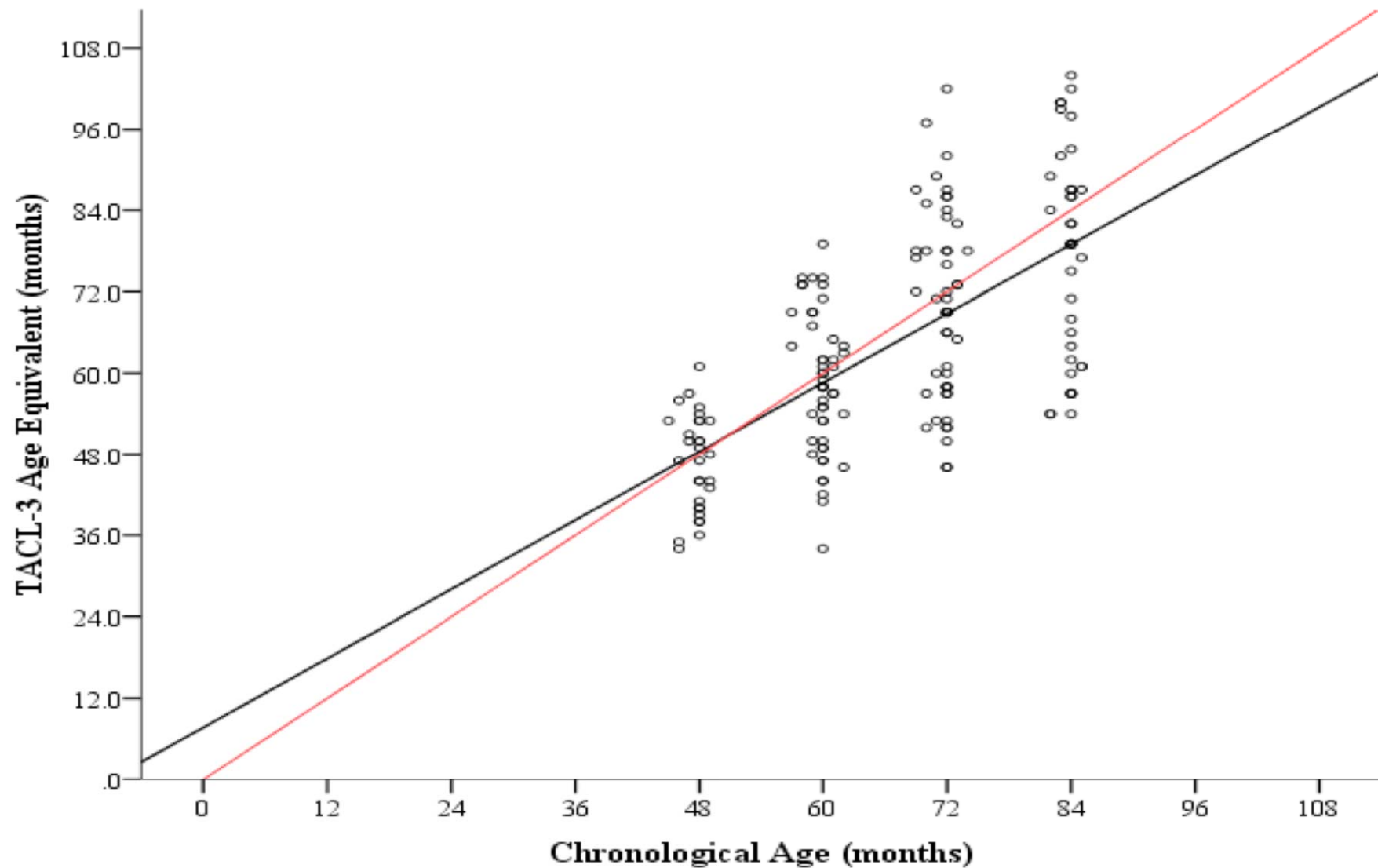
Sedey & Yoshinaga-Itano, 2008

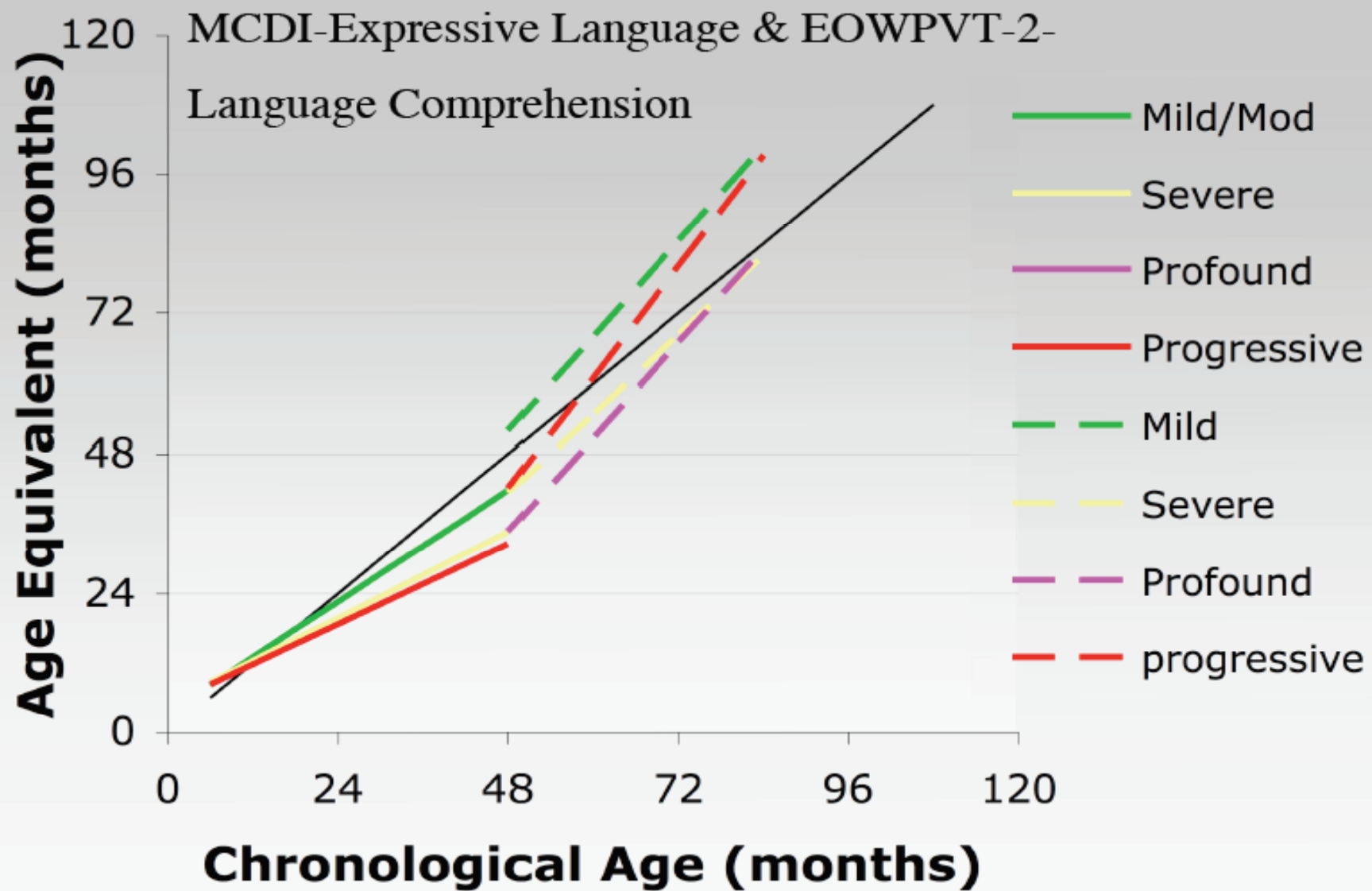
Comprehension of Elaborated Sentences (TACL)



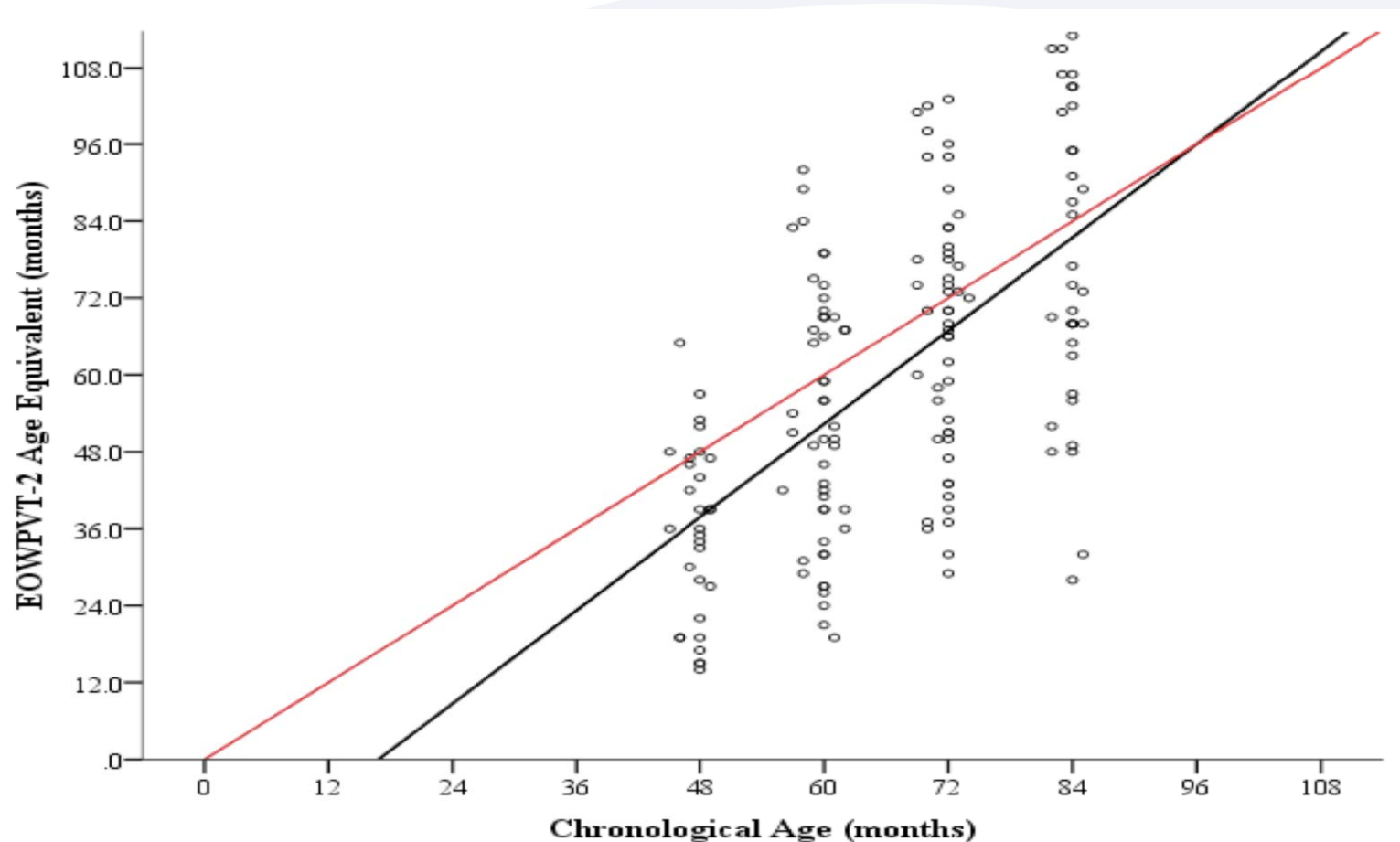
Sedey & Yoshinaga-Itano, 2008

TACL scatterplot (Baca. 2009)





Expressive One Word Picture Vocabulary Test (Baca, 2009)

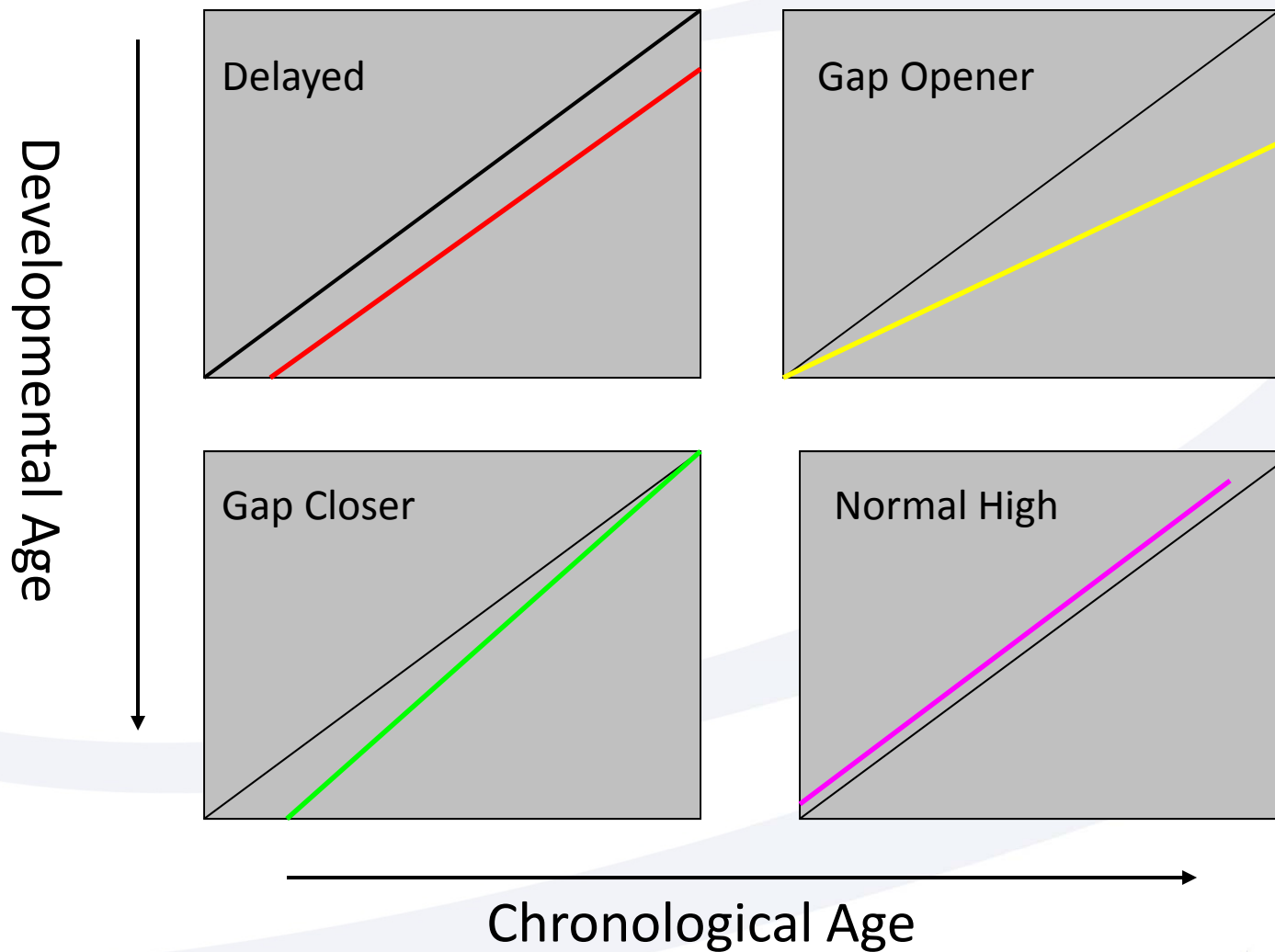


Group Categories

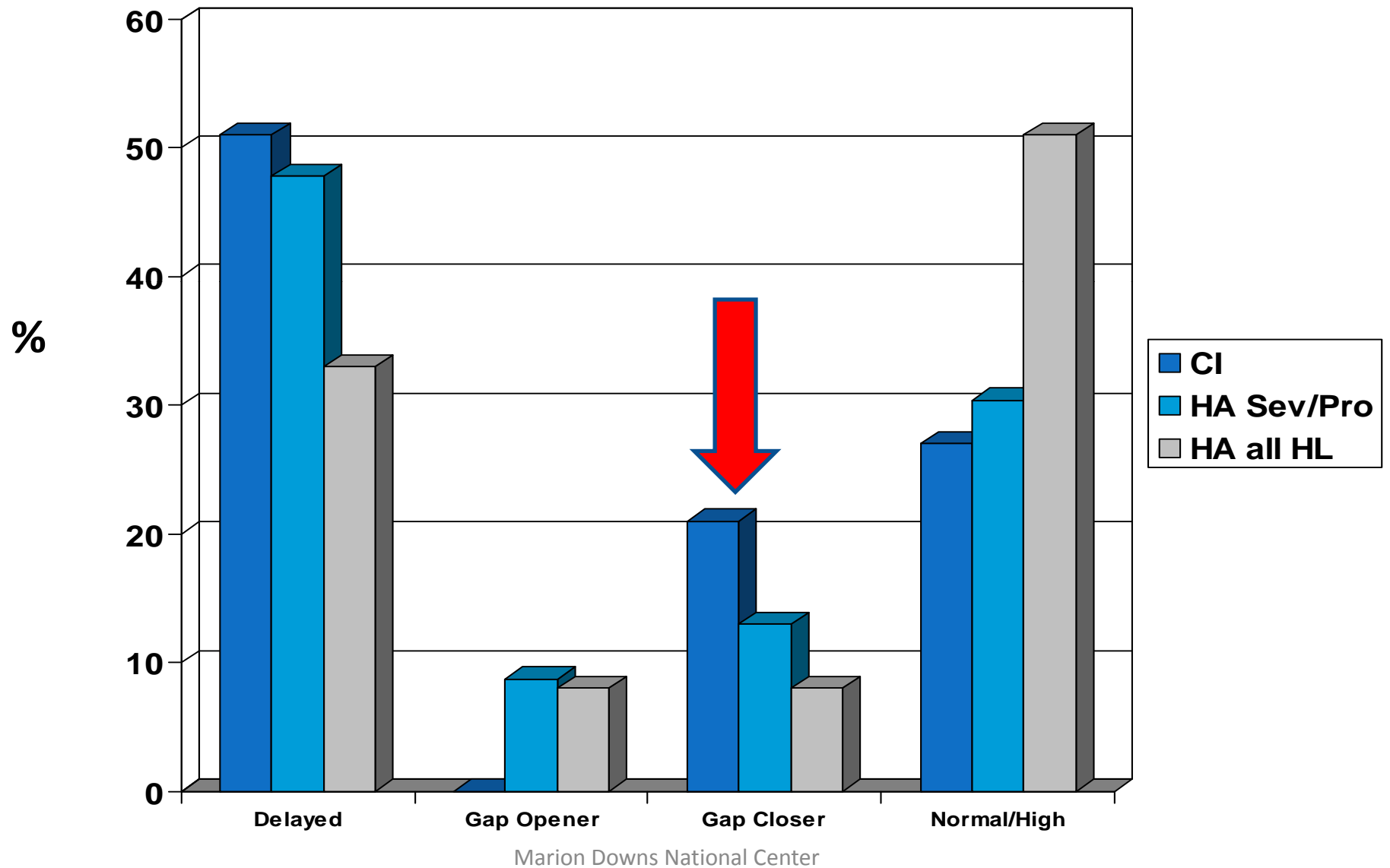
Birth through Preschool

- Delayed performer- Novices
- Gap Closer
- Gap Opener
- Normal/High performer- Experts
- 10th percentile (*preschool only*)

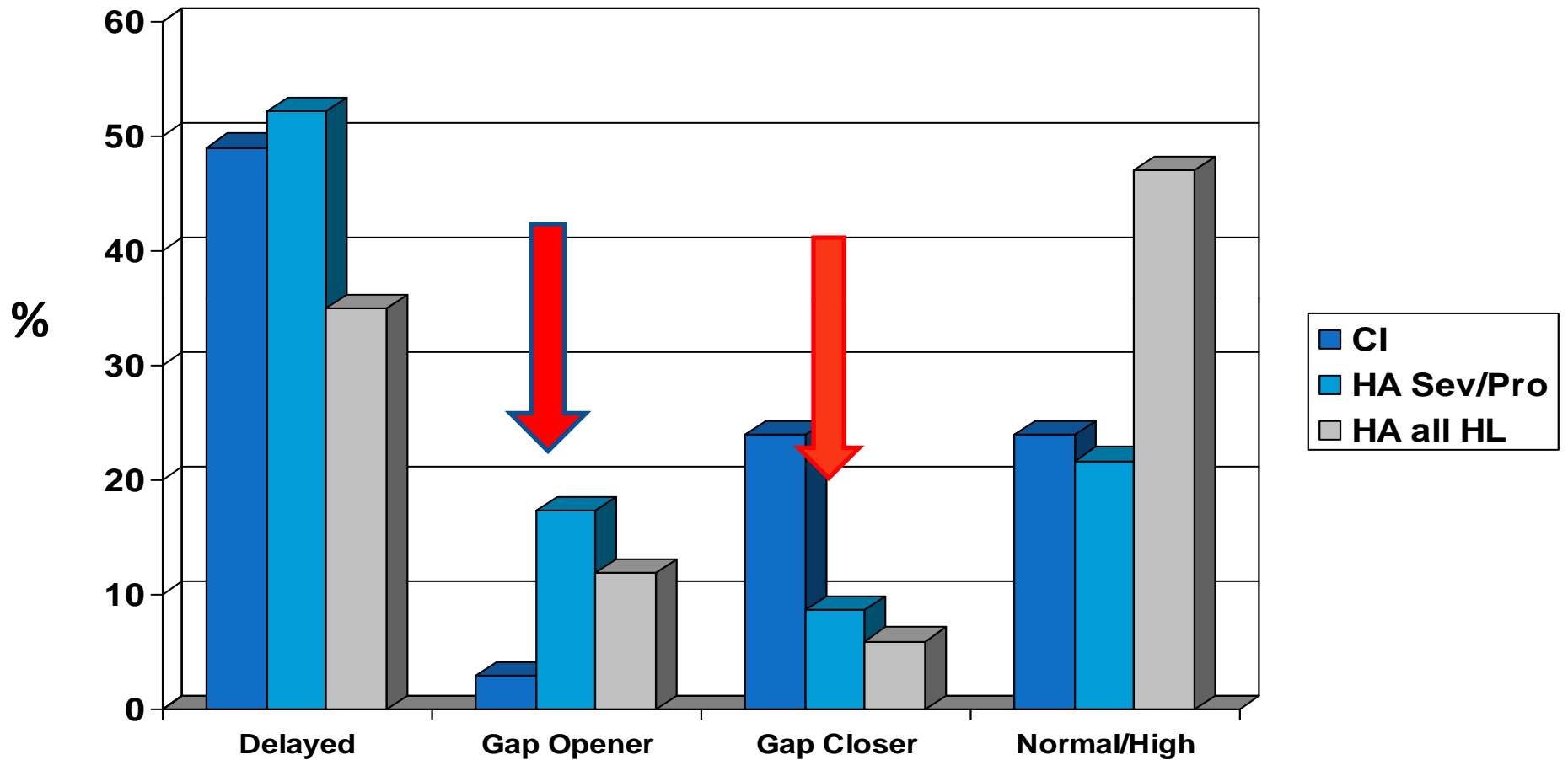
Group Category Illustrations



TACL: CI AND HA



EOWPVT: CI AND HA



Experts: Normal/High Achievers

Birth through preschool

TACL:

- 41.5% for all children with hearing loss***
- 27.3% of children with CI***
- 30.4% of children with HA & severe/profound HL***

EOWPVT:

- 38% for all children with hearing loss***
- 24.2% of children with CI***
- 21.7% of children with HA & severe/profound HL***

***High Achievers: Infant Cohort
(Baca, 2009)- greater than 1.0 growth rate***

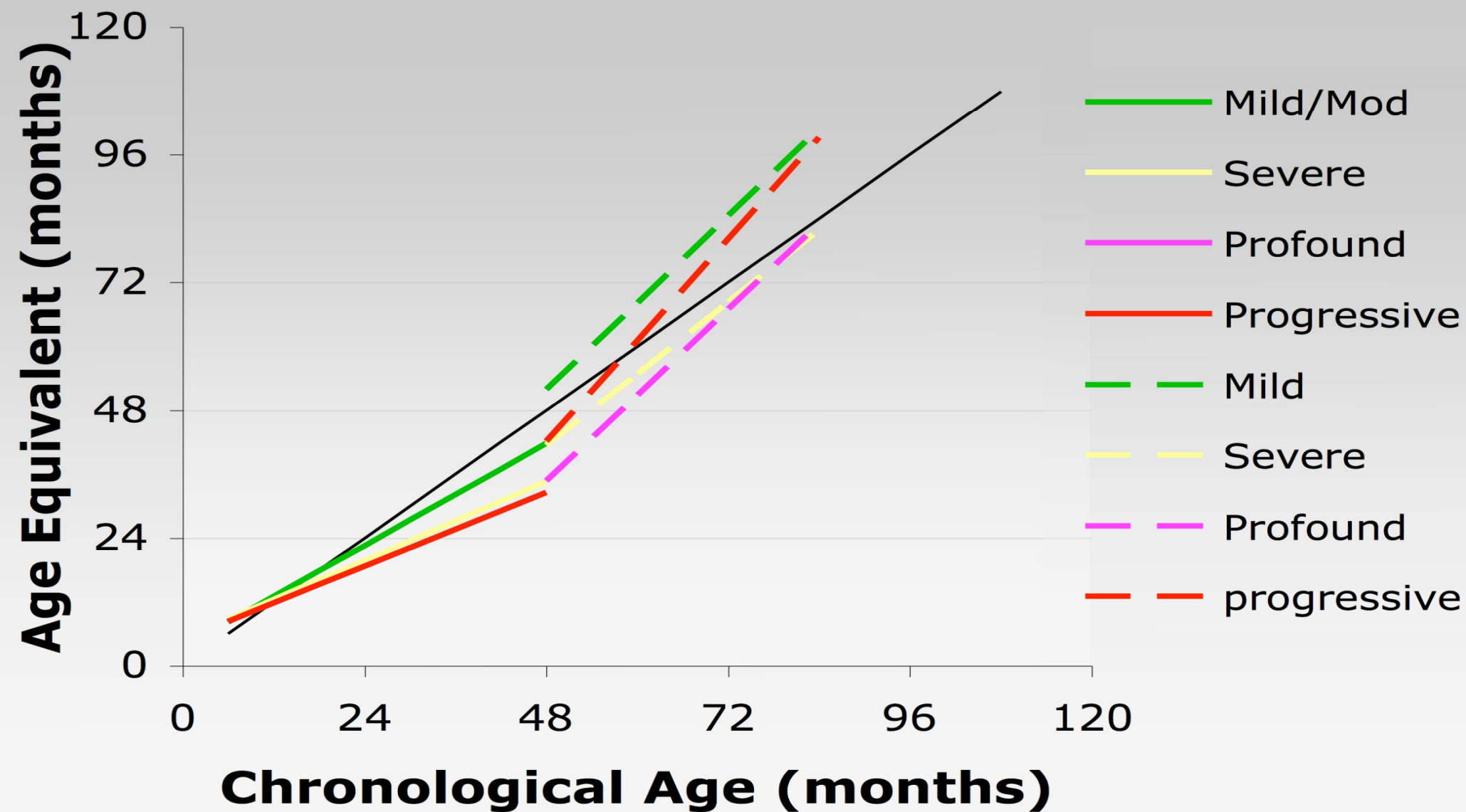
N=25 of 213 children ages birth to 3 years

ELQ \geq 80 at 36 months

Slope \geq 1

- 2/3 of these high achievers have mild and moderate hearing loss***
- 1/3 have severe/profound or progressive hearing loss (N=8) 4 had CI, 4 HA***
 - of this group - 50% cochlear implant, 50% HA users (severe loss)***

MCDI-EL and TACL-3 (Baca, 2009)



High Achievers: Infant Cohort (Baca, 2009)

- Variability in Maternal Level of Education***
- Non-verbal cognitive quotient within normal limits***

Gap Closers

Birth through Preschool

TACL:

- 13.4% for all degrees of hearing loss***
- 21% of children with CI***
- 13% of children with HA severe/profound HL***

EOWPVT:

- 13.4% for all degrees of hearing loss***
- 24% of children with CI***
- 8.7% of children with HA severe/profound HL***

CI Gap Closers: Maternal Level of Education

- Most children with CIs who are gap closers have mothers with college degree and graduate education***
- Expressive One Word Picture Vocabulary Test
62.5% had 16 years of education or greater***
- Test of Auditory Comprehension of Language
57% had 16 years of education or greater***

CI Gap Closers: DOHL

TACL: N= 7

- CI Gap closers had either severe HL or progressive HL*
- 50% progressive hearing loss*
- 50% severe hearing loss*

EOWPVT: N=8

- CI Gap closers were in each HL category*
 - 37.5% severe*
 - 37.5% profound*
 - 25% progressive*

10th Percentile at 84 months with CI

9/33 = 27% were below the 10th percentile on the EOWPVT

2/33 = 6% were below the 10th %ile on the TACL

Summary

Only 1 in 4 children with CI maintain normal or above language development

Another 1 of 4 children with CIs are gap closers for vocabulary, 1 in 5 for syntax. Over half have mothers with 16+ years of education and 25% (EOWPVT) and 50% (TACL) have progressive losses

27% are below the 10th %ile

No children were implanted before 12 mo.

Summary

Children with HAs and predominantly severe HL have poorer mean vocabulary at 84 months and slower rate of growth than their CI peers probably due to a higher % of gap openers

8.7% HA (0% CI) TACL, 17.4% HA (3% CI) EOWPVT

and fewer gap closers 13% HA (21% CI) TACL, 8.7% HA (24% CI) EOWPVT

Acknowledgement

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- **NIH/NIDCD # N01-DC-4-2141**
- **Maternal Child Health**
- **Colorado Department of Education**
- **Colorado Department of Public Health & Environment**
- **University of Colorado**

The Role of Public Health

- ❖ Developing comprehensive community based systems
- ❖ Meeting the needs of families
- ❖ Reduce stress/anxiety due to prolonged wait times
- ❖ Prevent unnecessary sedation
- ❖ Reduce the average month of diagnosis

The Role of Public Health

- ❖ Improve the average age for contact with Parent Guides
- ❖ Improve the average age of early intervention
- ❖ Improve the average age of amplification fitting

ULTIMATE GOAL – IMPROVE OUTCOMES

From Ideas to Best Practices

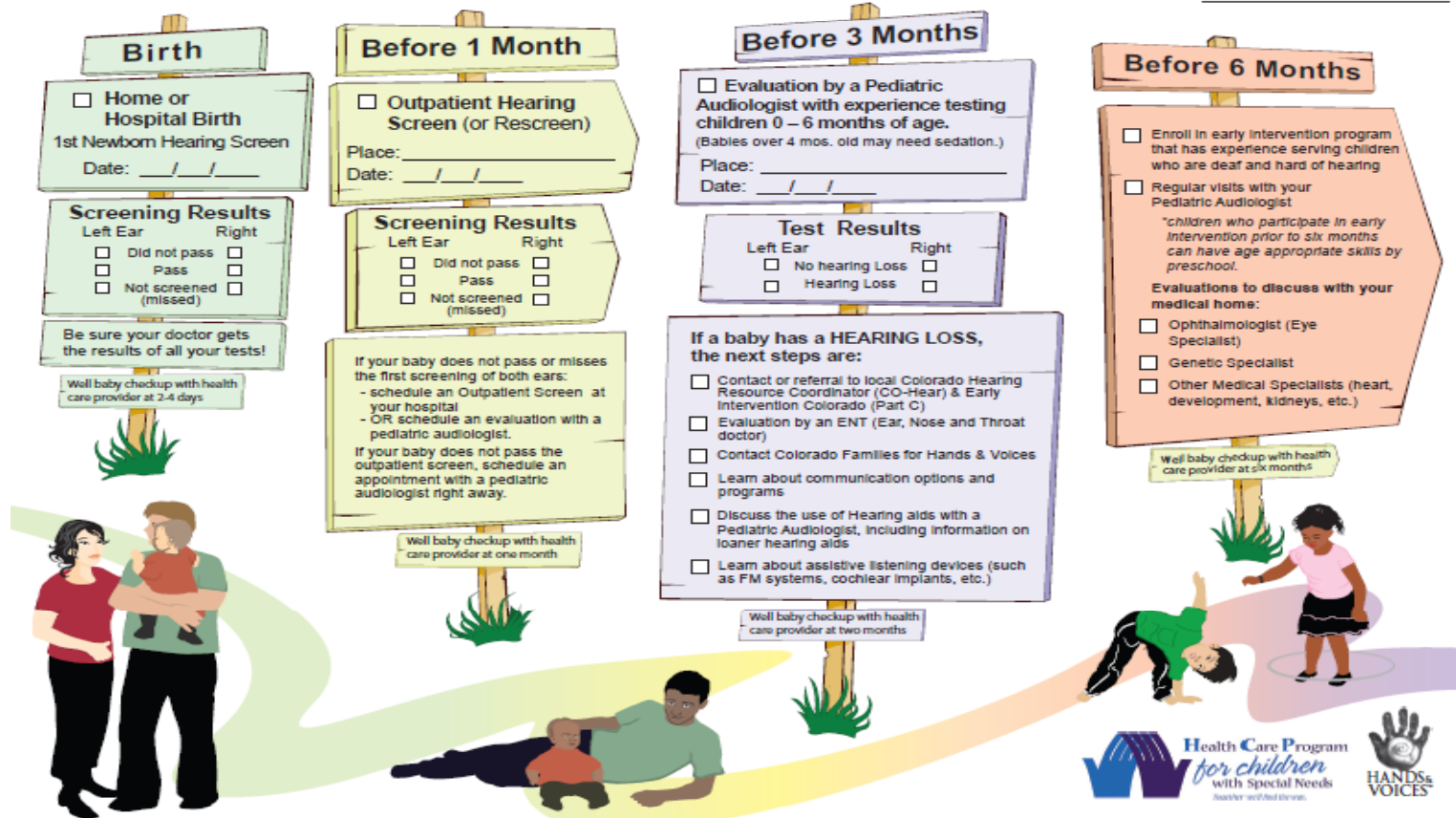
- ❖ Schedule the outpatient rescreen/audiology eval prior to discharge
- ❖ Provide the results in writing and verbally in the parents language
- ❖ Integrate with the Medical Home
- ❖ Develop a Roadmap for Families for each community

Colorado

Colorado Infant Hearing Program –A Roadmap for Families

Child's Name: _____

Child's Date of Birth: ____ / ____ / ____



Individualized Information

Local and Regional Resources

Pediatric Audiologist: _____

CO-Hear (Colorado Hearing Resource Coordinator): _____

Health Care Program for Children with Special Needs (HCP) Regional Audiologist:

HCP Regional Office and Team Leader: _____

Hands & Voices Regional Parent Guide: _____

Part C Coordinator: _____

Statewide Resources

- Health Care Program for Children with Special Needs: www.HCPColorado.org
- Colorado Families for Hands & Voices: (Parent Funding Toolkit, Parent Stories, Colorado Resource Guide) 303-492-6283, www.cohandsandvoices.org
- Colorado Home Intervention Program: <http://tinyurl.com/cbd5ln>
- Early Intervention Colorado, Services for Children Birth to Three: <http://www.eicolorado.org/>

National Resources

- www.babyhearing.org: Boys Town National Research Hospital informational site for parents
- Early Hearing Detection and Intervention Program, Centers For Disease Control website: www.cdc.gov/ncbddd/ehdi
- National Center for Hearing Assessment & Management: www.infanthearing.org
- Hands & Voices: www.handsandvoices.org
- Alexander Graham Bell Association for the Deaf/Hard of hearing: www.agbell.org
- American Society for Deaf Children, www.deafchildren.org