

# A Model Program for Periodic Medical Home Childhood Hearing Screening

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# Project Background

- California has historically lagged behind in universal newborn hearing screening -- even though 1/8 of all babies with hearing loss are born there!
- AB 2780, 2002 – only CCS-approved hospitals required NBHS prior to discharge
- AB 2651, 2008 - *All* Birthing Centers now required to do UNHS prior to discharge



# Project Background

- The good news: California does a good job of follow-up on the babies that they screen
- However: Babies still fall through the cracks;
  - The information about follow-up may not get to the family (language barriers, emotional issues)
  - Logistical issues may prevent completion of testing
- Hypothesis: Perhaps better continuity of care if screening is done *in the child's medical home*



# Addressing the Fallout Of Newborn Screening

## Government and Researchers Seek to Reduce False Positives, Improve Physician Education and Follow-Up for Families

By SHIRLEY S. WANG

**T**HE RECENT adoption of widespread screening of newborns for congenital health problems is saving thousands of lives every year, identifying potentially deadly conditions in time to begin treatment. But now, health-care professionals recognize that success has highlighted glitches in the system.

More screening has meant more potential for erroneous test results and misdiagnoses, causing needless angst for parents. Doctors and hospital officials, who must inform new parents about the screening process, are often ill-informed about the diseases that

are screened for and how they are treated. And once a diagnosis is confirmed, families may get little follow-up as they struggle with the overwhelming rigors of caring for their sick infant.

To improve the screening process, health providers and government officials are starting to expand beyond the push for more screening to also address shortcomings in the entire system. Efforts include creating a national standard for assessing screening, in order to cut down on false positives. Genetics experts are developing an online map of specialists across the country to

### Unintended Impact

Some problems have cropped up with newborn screening:

■ **False Positives:** Second and even third tests are sometimes needed to rule out false positives and confirm the diagnoses.

■ **Ill-Informed Doctors:** Some pediatricians aren't familiar with the screened-for conditions, or where to find specialists for treatment.

■ **Lack of Follow-Up:** States are only beginning to track patients to monitor the long-term impact of early diagnosis.

help families find treatment. And researchers and health officials are working to educate doctors about screening and create state registries to track the long-term impact of early diagnosis.

"We're trying to see the newborn screening as a system and not a lab test," says Rani Singh, associate professor and director of the Genetics Metabolic Nutrition Program at Emory University in Atlanta, which has been working in a collaborative of southern states to improve access to genetic services.

Newborn screening has grown exponentially over the past two years—the result of years of effort by health experts and patient advocates. All 50 states now man-

date the procedure, which involves pricking the heel of an infant before the baby leaves the hospital to obtain a few drops of blood for testing. As of July, nearly 90% of U.S. babies are tested for 21 of the 29 conditions recommended by the American College of Medical Genetics, compared with 38% in 2005, according to the March of Dimes.

The conditions, many of which are metabolic disorders that interfere with how the body breaks down and absorbs nutrients, are typically rare. With some, fewer than 1 in 10,000 are afflicted. But

Please turn to page D3

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■ **Lack of Follow-Up:** States are only beginning to track patients to monitor the long-term impact of early diagnosis.



## How is *Baby Sound Check* different?

- Many babies fail newborn screens solely because they have debris/vernix in the ear canal or residual fluid in the middle ear
- Initial screening **at 2 weeks of age** should dramatically reduce the numbers of false positives
- All babies (even if they pass the initial screen) will be **re-screened periodically** till age 3.
- Catch late-onset or progressive hearing loss



## How is *Baby Sound Check* different?

- Adding Acoustic Reflexes to OAE testing can rule out Auditory Neuropathy
- **Early and periodic screening** addresses the goals of
  - American Academy of Pediatrics
  - Healthy People 2010
  - Bright Futures
  - Early and Periodic Screening, Diagnosis, and Treatment Program (EPSDT)



# How is *Baby Sound Check* different?

- The John Tracy Clinic spirit infuses every aspect of the program
  - Parent involvement every step of the way
  - “Hope, guidance and encouragement”
- The integrated follow-up protocol has a series of **checks and balances**
  - Families monitored in medical home and at JTC
  - Helps ensure that no families fall through the cracks



# Video







# Project Goals & Objectives



# Goals

- Create a *sustainable* model for hearing screening in community-based clinics
- Screen infants and toddlers who are
  - missed at birth,
  - incorrectly diagnosed or
  - lost to follow-up



# Goals

- Integrate comprehensive hearing screening into routine well-baby care *within the medical home*
- Provide continuity of care and follow-up
- Replicate and disseminate the model



# Outcomes

- 10,000 infants and toddlers will be screened for hearing loss as part of well-baby care
- Statistics suggest that 30-60 babies will be diagnosed with permanent hearing loss
- Another 60-120 will have late-onset and progressive losses



- Also, 500 children will be discovered to have undiagnosed but treatable middle ear problems
- Ultimately, **all parents involved will obtain information about their child's hearing status**



- Children who do not pass the hearing screening will receive diagnostic evaluations



- Children with permanent hearing loss will be enrolled in early intervention programs



# Outcomes

- All families will receive culturally appropriate family support
- All families will preserve linkages with a medical home
- Data will be linked with other relevant health data





# Screening procedure





# *Baby Sound Check™*

## Hearing Screening Technology

### “Testing, 1...2...3”

- Otoacoustic Emissions (OAE)
  - Test of inner ear function
- Tympanometry (“Tymps”)
  - Test of middle ear function
- Acoustic Reflexes (AR)
  - Test of auditory nerve function



## Possible outcomes

<b>Pass all three tests</b>	Periodic screening
Refer OAEs <b>and</b> tympanometry	Middle ear problem: see physician and re-screen
Refer OAE, <b>pass</b> tympanometry	Possible cochlear problem: diagnostic evaluation at JTC
Pass OAE and tympanometry, <b>refer reflexes</b>	Possible nerve problem: diagnostic evaluation at JTC



# *Baby Sound Check*<sup>TM</sup> Partners

- AltaMed Health Services Corporation
- South Central Family Health Center
- St. John's Well Child and Family Center
- Venice Family Clinic



# Equipment selection

- Needed to select units that were
  - Compact (hand-held, ideally)
  - User-friendly to non-audiologists
  - Reliable
  - Sturdy
  - Available for purchase (can't be beta-testing!)
  - High-frequency tympanometry mandatory
  - Disposable vs re-usable tips



# Location for testing

- Dedicated room vs. portable cart
- Some clinics did not have space to dedicate
- Needed to examine both setups



# Dedicated Room



# Initial in-service training

- Class One: General in-service for all staff
  - Orientation, info about hearing loss
- Class Two: Screener training (includes providers)
  - How to screen, troubleshooting equipment
- Class Three: Provider training (general)
  - Interpretation of test results
- Class Four: Training for pediatricians
  - Syndromes and appropriate referrals



# General Inservice



Big rooms...

Or small...



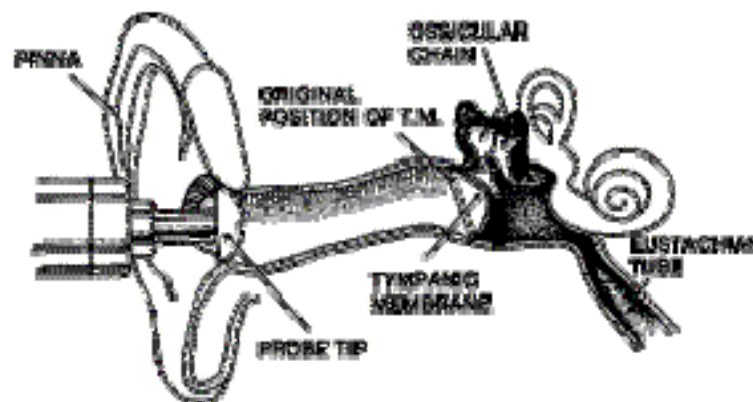


# Screeener training



# Provider inservice

- **SCHEDULING:** Getting everyone together at the same time was the biggest challenge!
- One hour isn't enough time
- Forget assumptions about prior knowledge



# Kickoff, May 2007

- First child successfully screened
- Press Event
- Luncheon



# Challenges

- First providers trained were reluctant to implement the program routinely
  - felt that they lacked the competency to interpret the results
- Became apparent that providers needed to be able to understand *and perform* the screening procedure themselves
  - added two inservices to their training schedule



# Additional Sessions Added

- Team training
- Screener training divided into two sessions:
  - Otoacoustic Emissions
  - Tympanometry
- Additional “Hands-on” session added in clinic
- Total of three 1-hour sessions for MAs
- Still not enough hands-on



# How to provide enough practical experience?

- Two hours of classroom training isn't sufficient
- Screeners need more practice before doing initial screenings in clinic
  - Comfort with equipment
  - Screening efficacy
- When to do competency evaluations?



# New Training Schedule

- All-staff meeting (60 minutes)
- Classroom Lecture and Demo at clinic
  - Two sessions, 90 min each topic
- Provider Lecture at clinic (60 min)
- MA Hands-on Training
  - 3 MAs per session
  - Provided at community childcare sites
- Provider Hands-on Training at JTC
  - 5 providers, 3.5 hours per session
- MA Competency evaluation



# Challenges

- After initial training, medical teams often weren't able to practice enough to become competent *before* they started screening in the clinic.
- First providers trained were reluctant to implement the program routinely
  - felt that they lacked the competency to interpret the results
- Additional training sessions added; more time away from seeing patients





# MA Competency Training

- MA will accompany audiometrist to local childcare center; 100 children screened per session (3 MAs at a time)
- MA will receive provisional certification
- Each MA to keep log of patients screened
- Will receive final certification once a certain number of screenings have been done in the clinic



## Baby Sound Check

### Competency Criteria for All Personnel Performing Hearing Screening

Outpatient Hearing Screening Providers shall incorporate the following competency criteria into their evaluation and monitoring of individuals performing hearing screening.

Individual skills shall include the ability to:

	Task	Performed Task	Needed Training	Not Observed
1.	Prepare the environment to perform the hearing screening:			
a.	Ensures appropriate test situation with regard to ambient noise.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	Perform the hearing screening:			
a.	Assesses child for quiet state.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b.	Positions child correctly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c.	Inserts probe correctly-pulls ear up and out, probe remains without support and obtains good probe fit.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d.	Operates hearing screening equipment accurately.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e.	Completes hearing screening with a valid test result.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f.	Removes and disposes of test items appropriately and returns equipment to secure storage area.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	Perform infection control and risk management:			
a.	Practices standard precautions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b.	Washes hands before and after handling each child.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c.	Cleans and disposes of equipment per office policy and protocol after each use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	Collect and record test data following hearing screening:			
a.	Enters/records child information accurately.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b.	Collects and reports screening results according to office protocol.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	Communicate knowledge of the Hearing Screening:			
a.	Explains importance of hearing screening.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b.	Explains hearing screening procedure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



\_\_\_\_\_  
Screener's Name

\_\_\_\_\_  
Evaluator / Date



# Provider Competency Training

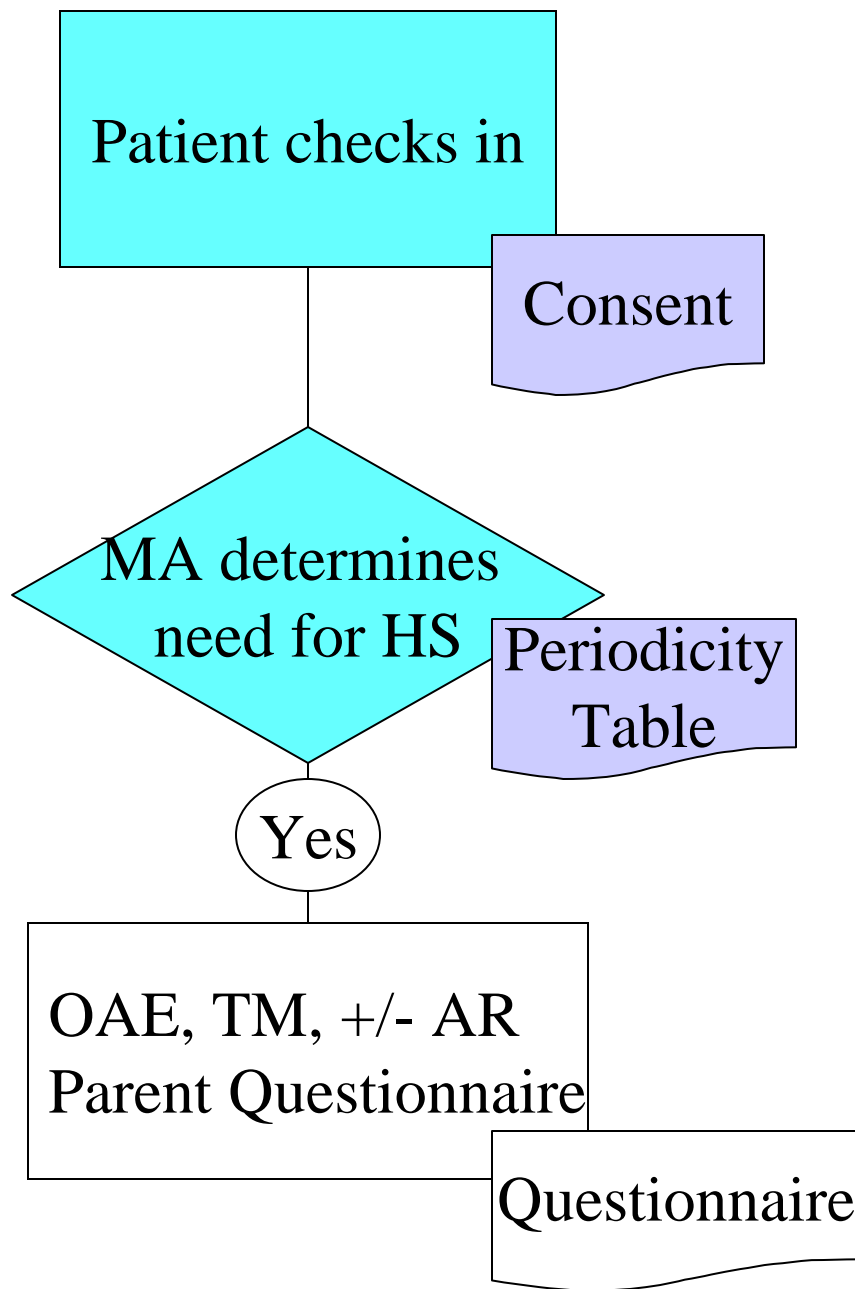
- Providers spend a day at JTC
  - observing screenings as well as getting practice with the screening equipment
  - interpretation of test results
  - provision of results to parents
- Will be evaluated at end of day for readiness to supervise screenings at clinic sites



# Implementation: Key issues to address

- Training
- Patient Flow
- Clinic Productivity/ Cost
- Quality Assurance
- Data Management
- Immediate Access to Specialty Care





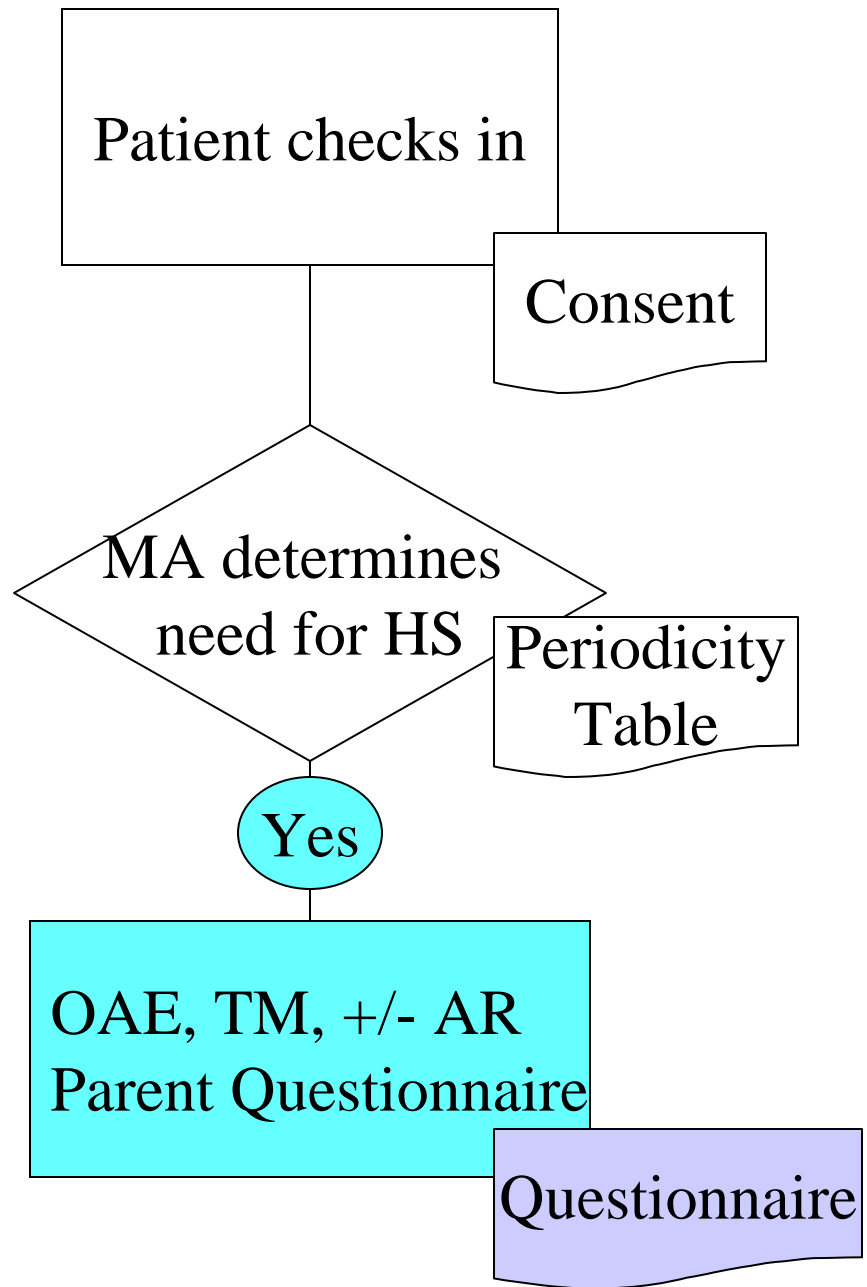


Baby Sound Check Periodicity Table

**Periodicity Table**

Age	0-4 mos	5-8 mos	9-12 mos	13-24 mos	25-36 mos
Interval Until next exam	6 months	6 months	12 months	12 months	12 months
Date Tested/Initials	Date: _____ Initials: _____	Date: _____ Initials: _____	Date: _____ Initials: _____	Date: _____ Initials: _____	Date: _____ Initials: _____
Date Tested/Initials	Date: _____ Initials: _____	Date: _____ Initials: _____	Date: _____ Initials: _____	Date: _____ Initials: _____	Date: _____ Initials: _____
Date Tested/Initials	Date: _____ Initials: _____	Date: _____ Initials: _____	Date: _____ Initials: _____	Date: _____ Initials: _____	Date: _____ Initials: _____
OAE	Yes	Yes	Yes	Yes	Yes
Tymp	High Frequency	High/Low Frequency	Low Frequency	High Frequency	High Frequency
Acoustic Reflex	No	Yes	Yes	No	No





**Baby Sound Check  
Initial Visit**

**BIRTH HISTORY**

- Hospital of Birth: \_\_\_\_\_ Birth Weight: \_\_\_\_\_
- Was baby born full-term?  Yes  No If not, how many weeks early? \_\_\_\_\_
- Did the mother have any infections during pregnancy or at the time of birth?  Yes  No
- Did the baby have any infections?  Yes  No
- Were there any complications (check all that apply):  
 Needed to be under lights  Yes  No  
 Needed Oxygen  Yes  No  
 Needed blood transfusion  Yes  No  
 Needed antibiotics  Yes  No  
 Needed a feeding tube  Yes  No
- Other problems during pregnancy or birth: \_\_\_\_\_
- How long was the baby in the Hospital after birth? \_\_\_\_\_
- Did the baby stay in the NICU?  Yes  No If so, how long? \_\_\_\_\_

**HEARING HISTORY**

- Did the baby get a hearing screening?  Yes  No  
 If so, what was the result? \_\_\_\_\_ Was there follow up? \_\_\_\_\_

**MEDICAL HISTORY**

- How many ear infections have there been since birth? \_\_\_\_\_
- Has the child ever had to see a specialist for the ears?  Yes  No
- Are you concerned that your child can't talk clearly?  Yes  No
- Are you concerned that your child doesn't say many words?  Yes  No
- Are you concerned that your child can't hear well?  Yes  No
- Are there any other medical problems that you have concerns about or that the child has needed a specialist for?  Yes  No
- Is your child developing normally?  
 Doesn't play well with other kids  Yes  No  
 Poor balance  Yes  No  
 Poor attention  Yes  No  
 Tantrums  Yes  No
- Other physical or socialization concerns: \_\_\_\_\_

**FAMILY HISTORY**

- Any relative with hearing loss?  Yes  No
- Any relative with problems with balance?  Yes  No

PA-C Signature: \_\_\_\_\_ Name: \_\_\_\_\_  
 M.D. Signature: \_\_\_\_\_ DOB: \_\_\_/\_\_\_/\_\_\_ Med. Rec#: \_\_\_\_\_

**Baby Sound Check  
Follow-up Visit**

**RECENT MEDICAL HISTORY**

- How many ear infections has your child had in the past year? \_\_\_\_\_
- Has the child ever had to see a specialist for the ears?  Yes  No
- Are you concerned that your child can't talk clearly?  Yes  No
- Are you concerned that your child doesn't say many words?  Yes  No
- Are you concerned that your child can't hear well?  Yes  No
- Are there any other medical problems you have concerns about or that the child has needed to see a specialist for?  Yes  No
- Has there been a change in your child's development recently?  Yes  No
- Is your child developing normally?  
 Doesn't play well with other kids  Yes  No  
 Poor balance  Yes  No  
 Poor attention  Yes  No  
 Tantrums  Yes  No
- Other physical or socialization concerns: \_\_\_\_\_

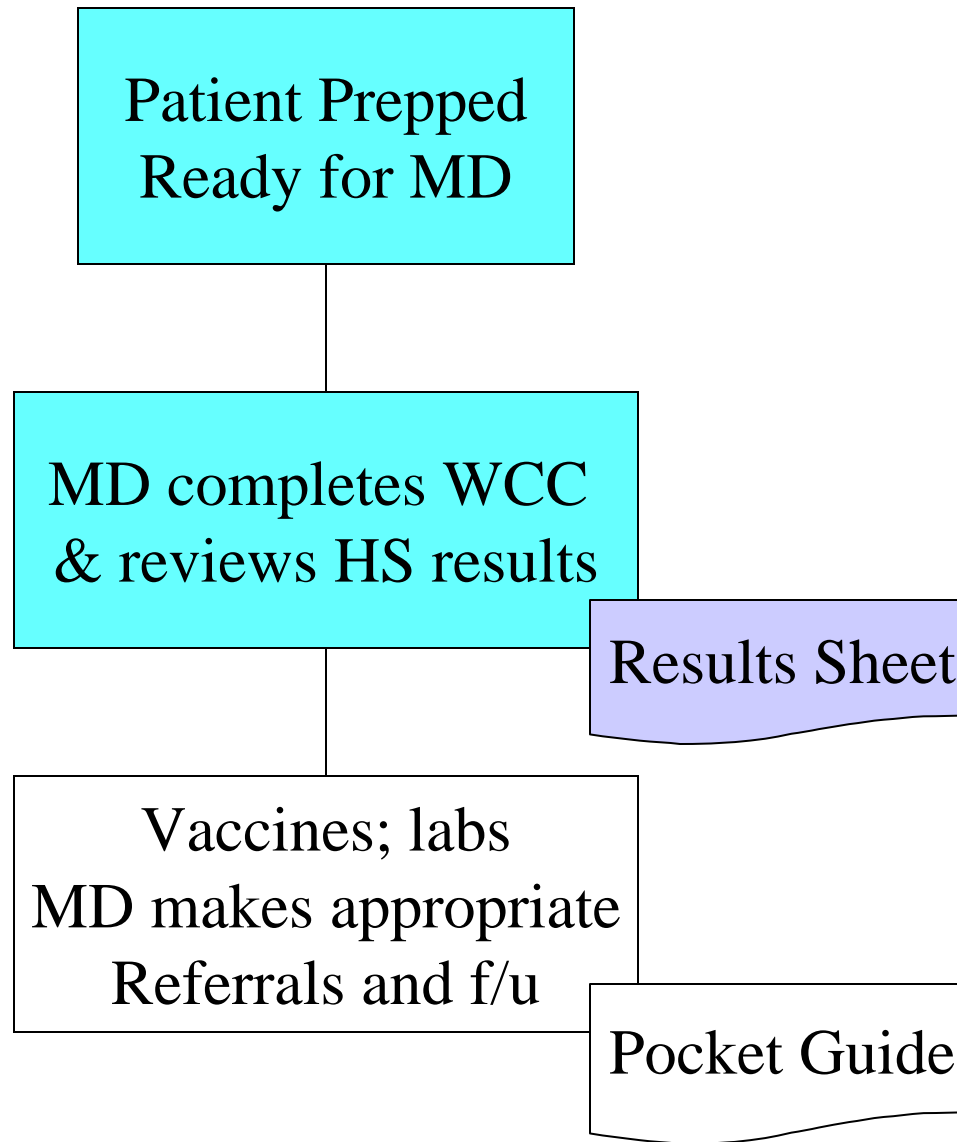
**FAMILY HISTORY (Discovered since last visit)**

- Any relative with hearing loss?  Yes  No
- Any relative with problems with balance?  Yes  No

PA-C Signature: \_\_\_\_\_ Name: \_\_\_\_\_  
 M.D. Signature: \_\_\_\_\_ DOB: \_\_\_/\_\_\_/\_\_\_ Med. Rec#: \_\_\_\_\_



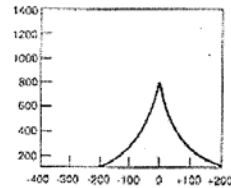




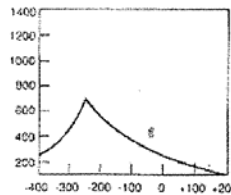


HEARING SCREENING RESULTS

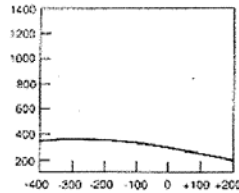
Circle a response for each ear:



R L  
(1) Normal eardrum  
mobility and middle  
ear pressure



R L  
(2) Normal mobility,  
negative pressure



R L  
(3) Abnormal  
mobility and  
pressure (no peak)

R L  
(4) Unable to test

Circle a response for each ear:

Coding: Pass(1) Refer(2) No test(3)

Acoustic Reflex R Pass Refer Unable to test

Acoustic Reflex L Pass Refer Unable to test

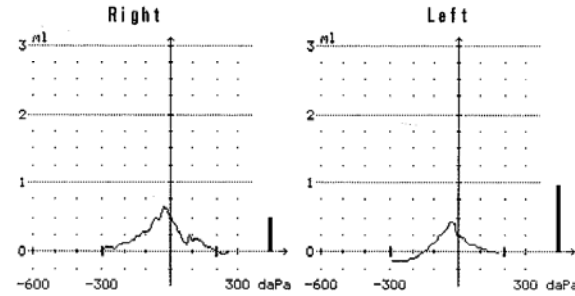
OAE R  Pass  Refer  Unable to test

OAE L Pass  Refer  Unable to test

Screener: COE

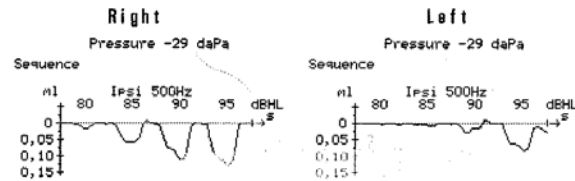
AT235h

Tympanogram



Ear Volume	0.49 ml	Ear Volume	0.98 ml
Compliance	0.63 ml	Compliance	0.44 ml
Pressure	-29 daPa	Pressure	-29 daPa
Gradient	0.26 ml	Gradient	0.21 ml

Reflex



Date of Test: 5-21-07



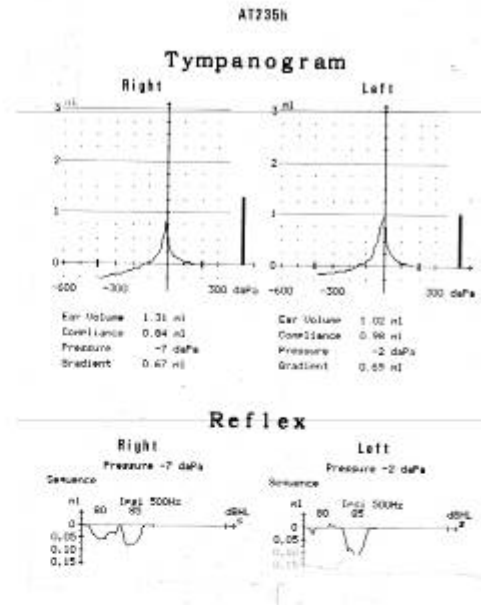
**HEARING SCREENING RESULTS**

**Normal** eardrum mobility: compliance greater than 0.3

**Flat:** Abnormal eardrum mobility (compliance less than 0.3 or no peak)

**Negative** middle ear pressure: more negative than -100, with presence of peak

**Incomplete:** Could not complete test



HEARING SCREENING RESULTS (0-3 years old)				
	Left Ear		Right Ear	
<b>Tympanometry</b>	925671	<input type="checkbox"/> Normal	925675	<input type="checkbox"/> Normal
	925672	<input type="checkbox"/> Negative	925676	<input type="checkbox"/> Negative
	925673	<input type="checkbox"/> Flat	925677	<input type="checkbox"/> Flat
	925674	<input type="checkbox"/> Incomplete	925678	<input type="checkbox"/> Incomplete
<b>Reflex</b>	925681	<input type="checkbox"/> Present	925684	<input type="checkbox"/> Present
	925682	<input type="checkbox"/> Absent	925685	<input type="checkbox"/> Absent
	925683	<input type="checkbox"/> Incomplete	925686	<input type="checkbox"/> Incomplete
<b>OAE</b>	925871	<input type="checkbox"/> Pass	925874	<input type="checkbox"/> Pass
	925872	<input type="checkbox"/> Refer	925875	<input type="checkbox"/> Refer
	925873	<input type="checkbox"/> Incomplete	925876	<input type="checkbox"/> Incomplete

Screener: \_\_\_\_\_

Date of Test: \_\_\_\_\_

Parent's Name: \_\_\_\_\_

Parent's Best Phone #: (\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_



**Normal**  
 compliance: greater than 0.3  
 pressure: more positive than "-100"  
 (ex: -75; -50; 0; +25, etc)

**Flat:**  
 compliance: less than 0.3, or no peak  
 pressure: not relevant

**Negative**  
 compliance: greater than 0.3  
 pressure: more negative than "-100"  
 (ex: -110; -150; etc)

**Incomplete:** Could not complete test

**Medical Assistants:**  
 # of screenings: \_\_\_\_\_

**Total minutes to screen:**  
 \_\_\_\_\_ minutes

**Reason for Screening:**

Routine Baby Sound Check Screening

Other: \_\_\_\_\_

*(Concerned for Speech Delay, Previous screening failed, etc.)*

HEARING SCREENING RESULTS (0-3 years old)				
(bubble in the appropriate result)				
	Right Ear		Left Ear	
Tympanometry	925671	<input type="radio"/> Normal	925675	<input type="radio"/> Normal
	925672	<input type="radio"/> Negative	925676	<input type="radio"/> Negative
	925673	<input type="radio"/> Flat	925677	<input type="radio"/> Flat
	925674	<input type="radio"/> Incomplete	925678	<input type="radio"/> Incomplete
Reflex	925681	<input type="radio"/> Present	925684	<input type="radio"/> Present
	925682	<input type="radio"/> Absent	925685	<input type="radio"/> Absent
	925683	<input type="radio"/> Incomplete	925686	<input type="radio"/> Incomplete
OAE	925871	<input type="radio"/> Pass	925874	<input type="radio"/> Pass
	925872	<input type="radio"/> Refer	925875	<input type="radio"/> Refer
	925873	<input type="radio"/> Incomplete	925876	<input type="radio"/> Incomplete
Referrals	ENT	<input type="radio"/> Otolaryngology	AM1	<input type="radio"/> AltaMed < 6 months
	JTC	<input type="radio"/> John Tracy	AM6	<input type="radio"/> AltaMed 6 Months
	None	<input type="radio"/> None	AM12	<input type="radio"/> AltaMed 1 Year

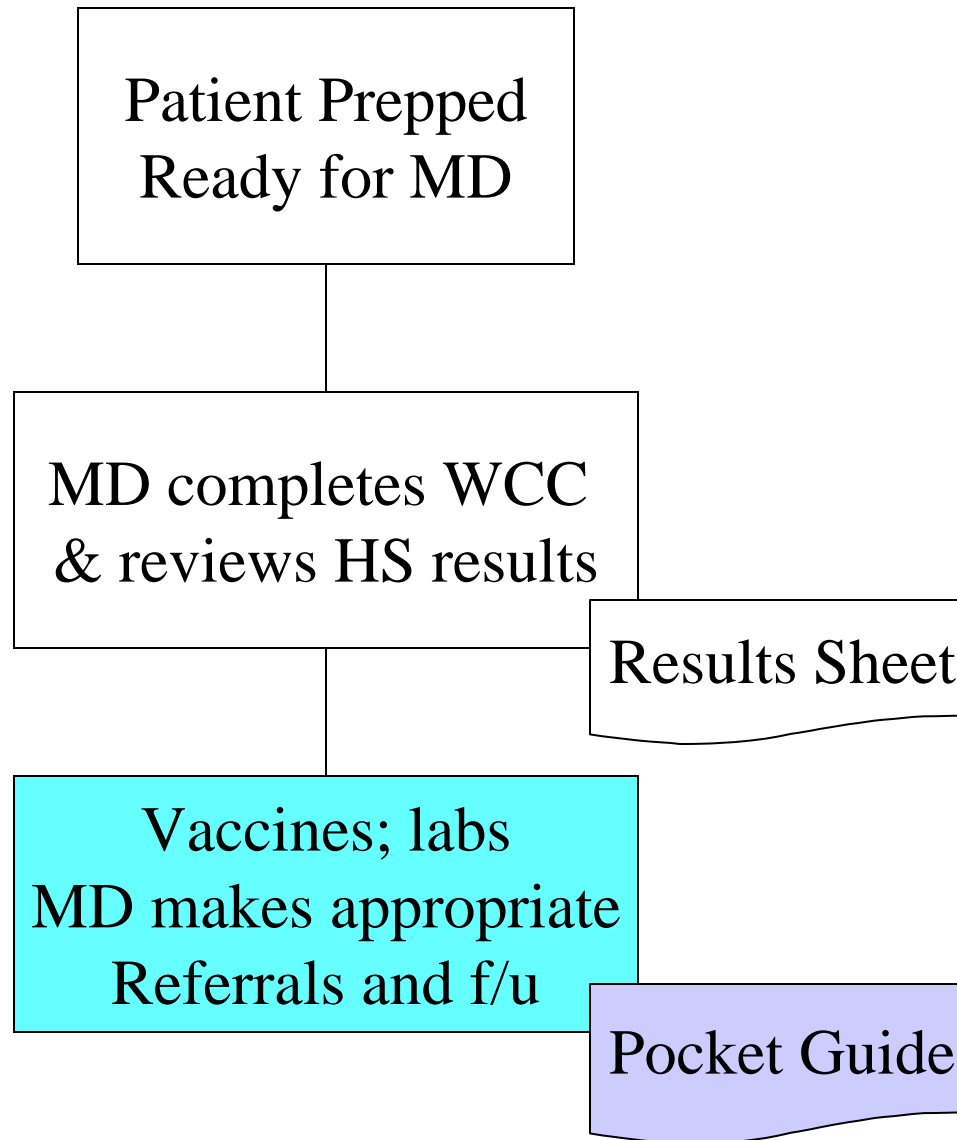
Screener: \_\_\_\_\_

Date of Test: \_\_\_\_\_

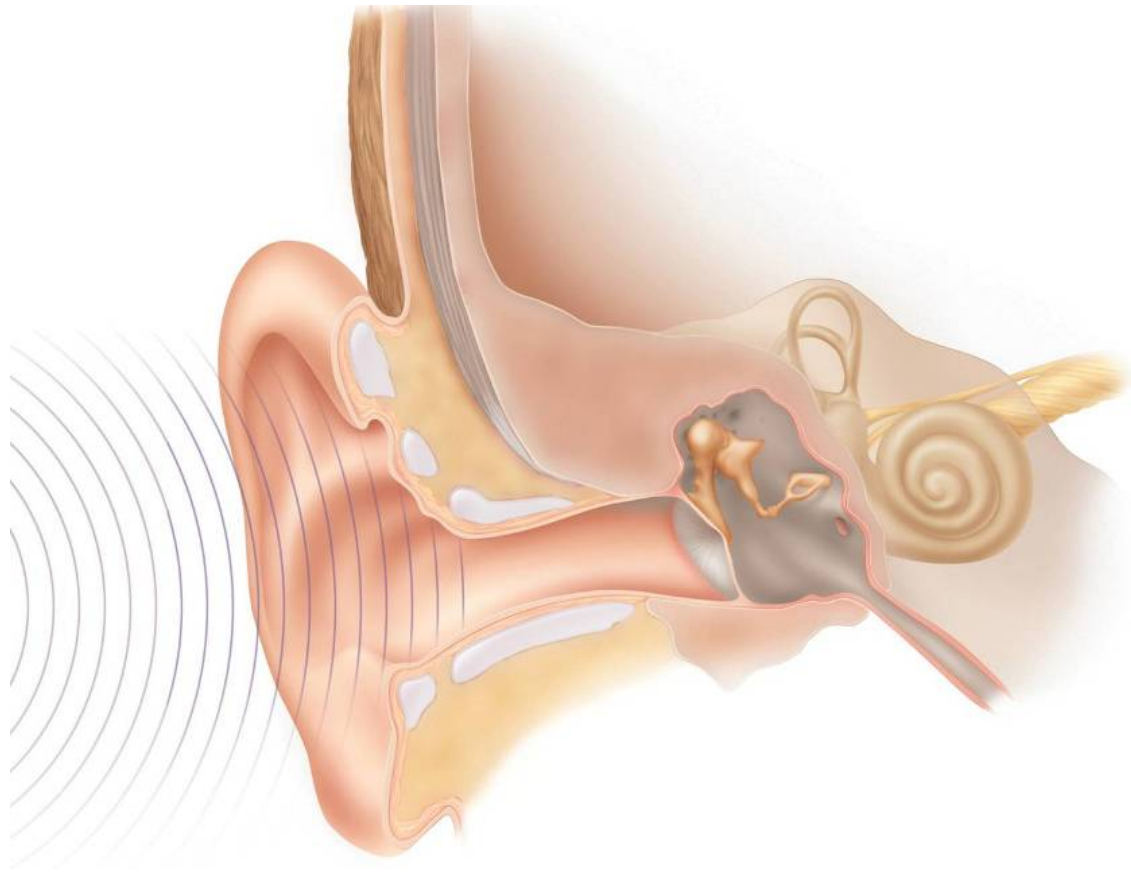
Parent's Name: \_\_\_\_\_

Parent's Best Phone #: (\_\_\_\_) \_\_\_\_ - \_\_\_\_\_





# Physician Pocket Guide



# Physician Pocket Guide



## Early Identification

- Diagram of ear
- Interpretation of results
- Degrees of Hearing Loss
- Follow-up/ referrals for various outcomes

## Confirmed Hearing Loss

- Step-wise approach to search for etiology
- Referrals
- Monitoring development





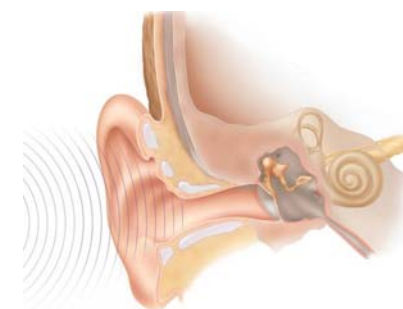


# Possible outcomes

<b>Pass all three tests</b>	Periodic screening
Refer OAEs <b>and</b> tympanometry	Middle ear problem: see physician and re-screen
Refer OAE, <b>pass</b> tympanometry	Possible cochlear problem: diagnostic evaluation at JTC
Pass OAE and tympanometry, <b>refer reflexes</b>	Possible nerve problem: diagnostic evaluation at JTC



# Search for an Etiology: Stepwise Approach



## 1. History/ PE

FHx of hearing loss, NICU for > 5days, syndromic,  
CF anomalies

## 2. Genetic Testing

Most common cause of hearing loss

Connexin 26

## 3. CT Temporal Bones

Mondini Dysplasia, enlarged vestibular aqueduct

## 4. Other

EKG, UA, renal U/S, MRI temporal bones, Cx 30



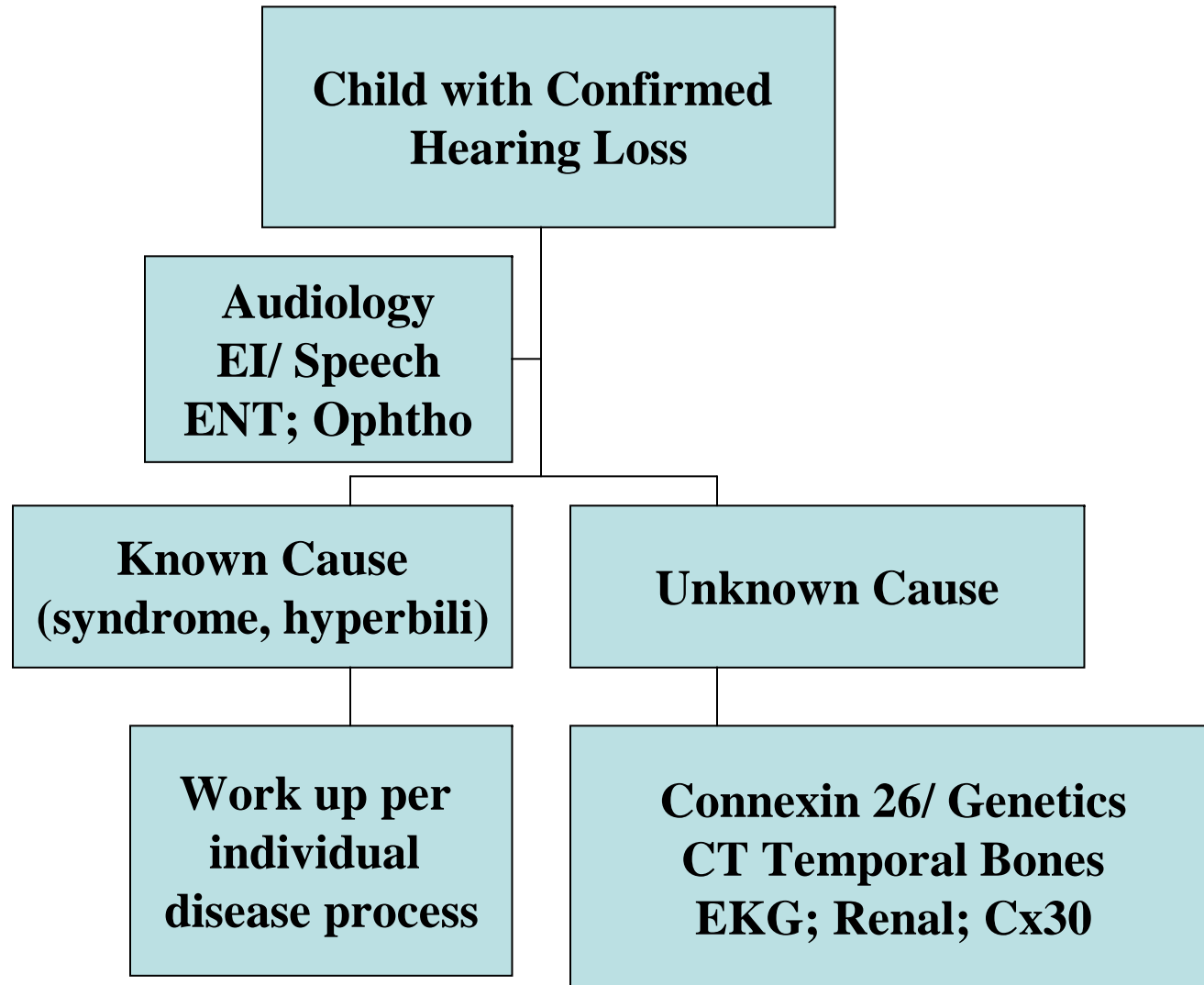
# Referrals



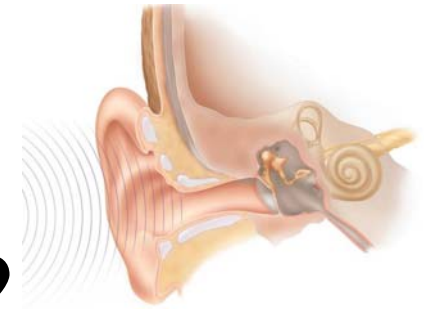
- ALL patients with hearing loss:
  - Audiology, early intervention, speech tx
  - ENT
  - Ophthalmology (annually)
  - Genetics



# Our work up



# Patient with confirmed Hearing Loss...Now what?



1. Ensure audiology/ early intervention follow up
2. Monitor OME (effusions makes things worse)
3. Monitor for developmental problems (30-40% have assoc delays)



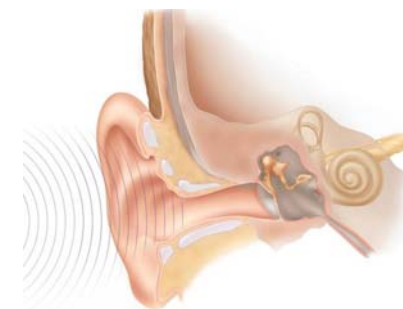
# Patient with confirmed Hearing Loss...Now what?



4. Give pneumococcal and HiB vaccines if planned for cochlear implants
5. Screen all siblings for hearing
6. Search for an etiology....
7. Refer to specialists....



# High Risk Patients: Need Audiology Eval



1. Caregiver concern
2. FHx permanent HL
3. NICU >5days
4. ECMO, intubated, ototoxic meds, diuretics, hyperbili needing XT
5. TORCH infection
6. CF anomalies, including all ear deformities
7. Syndromes assoc with HL
8. Neurodegenerative d/o (Charcot-Marie Tooth, Friedreich ataxia, Hunter)
9. Culture (+) infections assoc with SNHL, including bacterial or viral (HSV, VZV) meningitis
10. Head trauma with basal skull/ temporal bone fx
11. Chemotherapy



**Pruebas auditivas para su bebé**

AltaMed  
ELA/Commerce



**5427 E. Whittier Blvd  
Los Angeles, CA 90022  
Phone: 325.555.0125  
Fax: 323-869-1900  
<http://www.altamed.org>**

Su bebé se evaluó el día: \_\_\_\_\_

Resultados:

Tímp D Norm Neg No **píco** No se pudo hacer

Tímp I Norm Neg No **píco** No se pudo hacer

Reflejo D Pasó Referir No se pudo hacer

Reflejo I Pasó Referir No se pudo hacer

EOA D Pasó Referir No se pudo hacer

EOA I Pasó Referir No se pudo hacer

Recomendaciones:

\_\_\_\_\_ Re-evaluar en \_\_\_\_\_ mes(es)

\_\_\_\_\_ Llamar a la clínica **John Tracy** para una  
evaluación completa

Teléfono al que le podemos llamar: \_\_\_\_\_

Teléfono alternativo: \_\_\_\_\_

**Clínica John  
Tracy / AltaMed**  
**Baby Sound Check**  
Pruebas auditivas para su bebé



**Clínica John Tracy  
806 West Adams Blvd.  
Los Angeles, CA 90007  
Phone: 213-748-5481  
Fax: 213-749-1651  
<http://www.jtc.org>**





# Clinic productivity

- Impact still unclear; many variables
  - Room availability
  - Staffing
- So far, no clear difference has been noticed in numbers of patients seen per day
- Adapting model to different clinic needs
  - Ex: WCC vs separate hearing screening clinic



# Cost

- Equipment
- Training of staff and providers
- Staff time to perform screens
- Billing varies based on insurance type
  - Medicaid
  - Private



# Quality Assurance

- Multiple training sessions
- Competency exams prior to first screening
- Physician Pocket Guide
- Baby Sound Check site champions at each clinic
- Close contact with John Tracy Clinic
- Periodic chart audits by the John Tracy Clinic



# Data Management

Far more time and effort were required than anticipated to develop forms:

- that allow data to be saved in charts
- that allow data to be entered into MegaWest, the data entry and tracking system
- Change to electronic medical records
- Brochures for parents
- Questionnaires for research



# Summary of Challenges

- Development of training protocols
- Scheduling training sessions
- Maintaining efficient patient flow
- Minimizing cost
- Quality assurance
- Development of forms, questionnaires, brochure
- Data management and tracking
- Immediate access to audiology



# Successes

- Articulating the fundamental need and purpose of the program
- Generating strong interest on the part of the community clinics and the community at large
- Over 150 children screened at 6-month mark



# Successes:

## Physicians are on board

- Increases education/ knowledge in terms of hearing health
- Primary provider/ coordinator for screening & preventative care
- Provides an easy opportunity to re-screen in cases where the NBHS is not available
- Facilitates relationship with local audiology



# Public Information

- Article in *California Pediatrician*, Oct 2007

## Pediatric Hearing Screening in the Medical Home: A Model Program

Christine Gilmore Eubanks, PhD; Barbara F. Hecht, PhD

Deafness is the most common disability present at birth. In the United States, approximately one in 300 infants is born with permanent hearing loss. We have long known that diagnosis in early infancy and intervention within the first few months of life can prevent the tragic consequences of limited communication, low school achievement and life-long dependency that can result from delayed detection of childhood deafness (Yoshinaga-Itano, 1995). Additionally, diagnosing these children early can trigger a closer look at medical conditions sometimes linked with deafness, such as heart arrhythmia and vision and kidney problems. Indeed, researchers in the field agree that no group has more to gain from early identification than children with hearing loss (Joint Committee on Infant Hearing, 2000).

Until the last few years, the average age of diagnosis for hearing loss was 30 months. Advances in technology have now made it feasible to screen babies at birth using objective physiologic measures, and Newborn Hearing Screening Programs of the country in the percentage of newborns screened, has recently passed legislation (AB 2651) to try to address this gap. However, follow-up, including re-screening, comprehensive diagnosis and timely entry into early intervention programs, has proven to be a major hurdle throughout the nation. In some states, up to 50% of infants who fail their hospital screening are lost to follow-up (White, 2005), a situation that disproportionately affects low-income and chronically underserved families.



Upcoming article in ASHA newsletter



# By End of Year One

- JTC will incorporate infant-toddler hearing screening in five AltaMed sites that provide well-baby care:
  - Commerce
  - Bell
  - Boyle Heights
  - Pico Rivera
  - El Monte



# Year One

- Develop and test
  - training materials
  - forms and charting
  - protocols
  - tracking systems
  - reimbursement mechanisms
- Evaluate in different settings under one umbrella organization



# Year Two and beyond

- Replication of the program at sites in other CCALAC community clinic organizations



# Year Two

(dates approximate)

- January-February 2008
  - Venice Family Clinic
  - Scheduling, forms, logistics
  - Training to start by March
- April 2008
  - South Central Family Health Center
- July 2008
  - St. John's Well Child and Family Center



# Fine tuning and continuity of *Baby Sound Check* program

- Continued assessment of in-service and additional staff training needs
- Data analysis and evaluation
- Development of replication and expansion plan



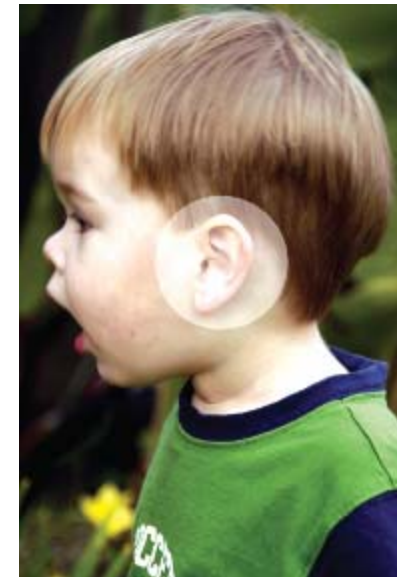
# Expectation by Year 5

- Hearing screening will be a well-established, smoothly operating component of well-baby care at the 10 clinic sites
- Result: coordinated, preventive hearing health care for 20,000 infants and toddlers



# Expectation by Year 5

- Annual, periodic screening will be in place
- Capacity for immediate screening of hearing and middle ear function for children with
  - Speech delay
  - Developmental delay
  - Recurrent middle ear infections



# Roles & Responsibilities

- Program Director
  - Develop and administer training program
  - Supervision of screening and diagnostics
  - Data collection, analysis and program evaluation
  - Outreach to community healthcare partners
  - Dissemination of model
- Administration
  - Advocate, support project as a priority
  - Assist with logistics and dissemination





# Roles & Responsibilities (clinics)

- Medical Assistants
  - Perform hearing screenings
- Physicians
  - Present results of screenings, make referrals for further audiological or medical evaluations
- Clinic Support Staff
  - coordinate training and screening logistics, billing, and data collection/transmission to JTC.



# Roles & Responsibilities (JTC)

- Pediatric Audiologists and Counselors
  - Diagnostic testing, counseling and referrals to Early Intervention professionals
- Parent-Infant teachers
  - Coordinate follow-up (with audiologists)
- Audiology Assistants/Audiometrists
  - Assist with screener training on-site
  - Make appointments with families
  - Bilingual staff assist with translation



# Funding provided by the Rosenthal Family Foundation

