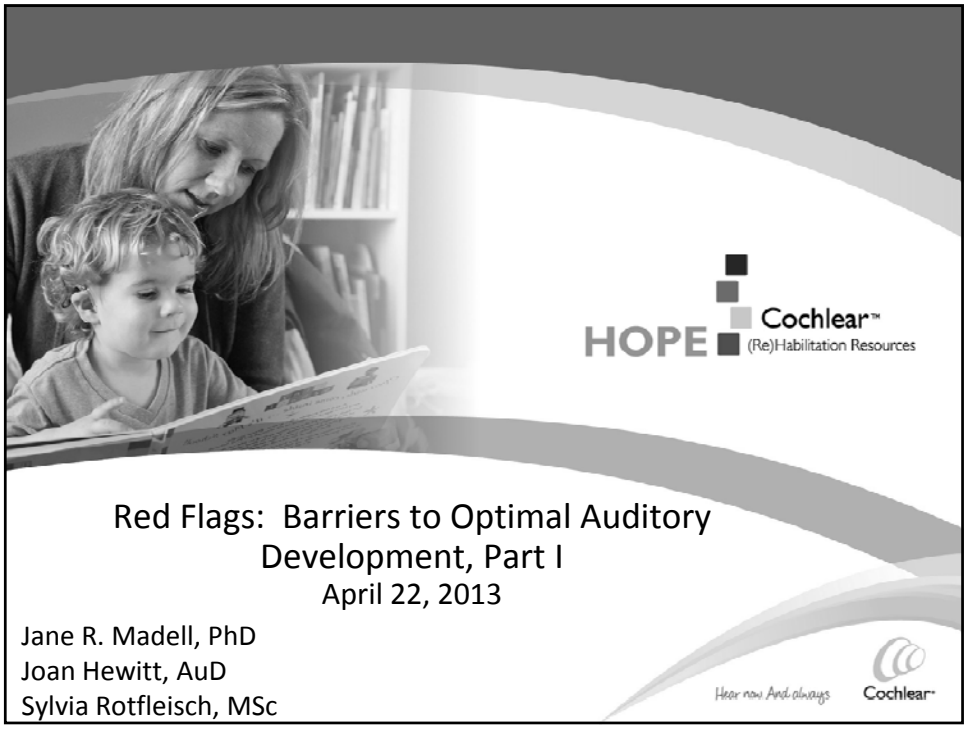

Red Flags: Barriers to Optimal Auditory Development, Part I

April 22, 2013

Jane R. Madell, PhD
Joan Hewitt, AuD
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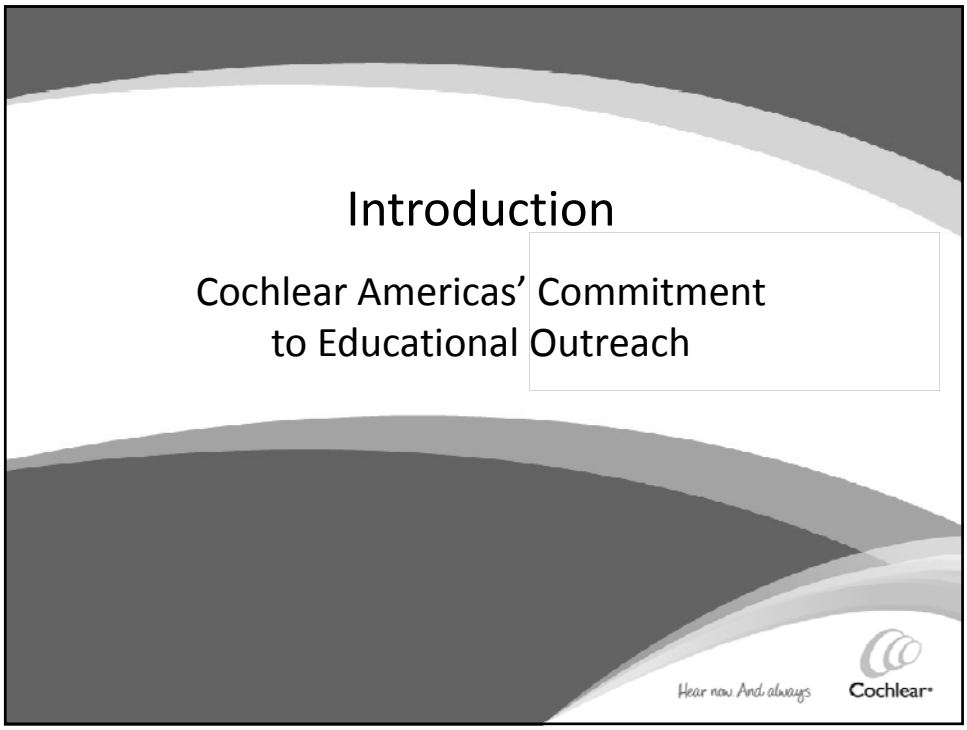

Our Presenters

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Hear now. And always. Cochlear

RED FLAGS:
Barriers to optimal auditory development Part 1

HOPE

22 April 2013

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THIS IS A TWO PART WORKSHOP

- Part 1 discusses audiology issues
- Part 2 discusses speech-language issues
- Ideally the course should be one two-hour course
- We recommend that attendees view both courses

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GETTING STARTED

- Things are fine for most kids
- Why are some kids superstars and other kids not?
- Why the huge variation among kids who seem to be equal?
- We know that not all kids do equally well, but why?

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LOOKING FOR EXPLANATIONS

- Some things are clearly a problem:
  - Not hearing as well with technology
  - Not getting appropriate therapy
  - Parents not involved
  - Developmental issues
- BUT sometimes everything is lined up and kids are still not achieving what we would expect

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PHILOSOPHY

- If a child is not making appropriate progress, ***there is a reason***!
- We have an obligation:
  - To figure out why
  - To try and address the problem
- All clinicians/team members need to work collaboratively to make this successful
- We must include parents as critical team members
- It is almost always possible to succeed

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WHY AUDITION IS IMPORTANT?

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WHY IS LISTENING CRITICAL?

- Hearing is the most efficient way to develop spoken communication and literacy
- ***Hearing*** = ***auditory brain development***
- It is not really about the ears – ***it is about the brain!***
- Technology is really a ***brain access tool***
- Acoustic access to intelligible speech is critical for development of the auditory brain
  - The auditory cortex is involved in speech perception and language processing in humans

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THE MOST BASIC RED FLAGS

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RED FLAGS: BASIC behavioral observations

- Child not tolerating technology
  - Child resistant to wearing technology
  - Behavior management issues related to technology
- Behavioral observations
  - No response/poor response to sound
  - Hypersensitive to sound
  - Involuntary eye blinks/facial stimulation when wearing devices

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RED FLAGS: BASIC behavioral observations

- **IF CHILDREN HEAR WELL WITH THEIR TECHNOLOGY, THEY SHOULD WANT IT ALL DAY, EVERY DAY!!**
- Parents (or other family members, especially grandparents) are concerned about progress
  - Parents are often hesitant to express concerns
  - If parents are concerned we need to take their concerns seriously
    - Are they realistic?

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INTERVENTIONAL RED FLAGS OR IS THE INTERVENTION APPROPRIATE?

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RED FLAGS: Ineffective Intervention

- Audiologists need to recognize ineffective intervention
- Child and family are enrolled in ineffective intervention if the intervention:
  - Involves the child without involvement of the parents and family
  - Does not monitor technology ***every*** day
  - Does not follow a normal developmental model
  - Does not stress the development of audition as the basis of all speech and language
  - Promotes visual language development (lipreading, sign language)

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Audiologists support effective intervention

- ***Hearing loss*** limits access to speech and language; thus, the ***hearing loss*** creates the delayed speech and language
- Effective therapy
  - Defined auditory component
  - Auditory skill development in appropriate sequence is the focus of therapy
  - Auditory abilities are developed through the auditory modality
  - Parental guidance and coaching is provided at every session for transfer to all settings

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Audiologists support effective intervention by:

- Teaching technology monitoring / checking
  - Who is checking it daily?
    - Do parents, clinicians, and teachers have appropriate listening technology (hearing aid stethoscope, CI earbuds, CI listening check)?
    - Do parents know how to use the technology?
    - Do clinicians and teachers know how to use the technology?

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Audiologists support effective intervention by:

- Teaching technology monitoring / checking cont.
  - What is being done to check technology daily?
    - Ling sounds?
    - Other discrimination?
    - Close and far?
    - Will a drop in function be recognized?
  - Who is helping the child recognize and report technology malfunction?

M

Audiologists support effective intervention by:

- Evaluating signs of difficulty reported by clinicians/parents
  - No or poor response to high frequency stimuli
  - Distorted vowel production
  - Dropping certain consonants consistently
  - Speech sound deterioration
  - Mishearing
    - Increased “what?”
  - Reporting static
  - Any sudden and/or dramatic change in performance

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Audiologists support effective intervention by:

- Monitoring parent education and training:
  - PARENTAL INVOLVEMENT AND EDUCATION ARE CRITICAL!!
  - Auditory based therapy model
  - Parents need to be involved in the therapy sessions and trained in sessions
  - Therapy for 1, 2 or even 3 hours does not replace parental involvement and reinforcement 24/7

M

Audiologists support effective intervention by:

- Confirming that equipment is working
  - Accepting responsibility for technology malfunctions
  - ***When in doubt, CHANGE IT OUT!!!!***
- Ensuring that the child is:
  - Hearing throughout the frequency range
  - Hearing soft speech
  - Hearing in noise

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Audiologists support effective intervention by:

- Discouraging visual speech
  - Focus on audition and limiting vision
    - Understand the strengths of auditory access for speech-language development
    - Understand the limitations of vision to access speech
  - Eliminate exaggerations
    - If it seems unnatural, it is probably going to create a problem

M

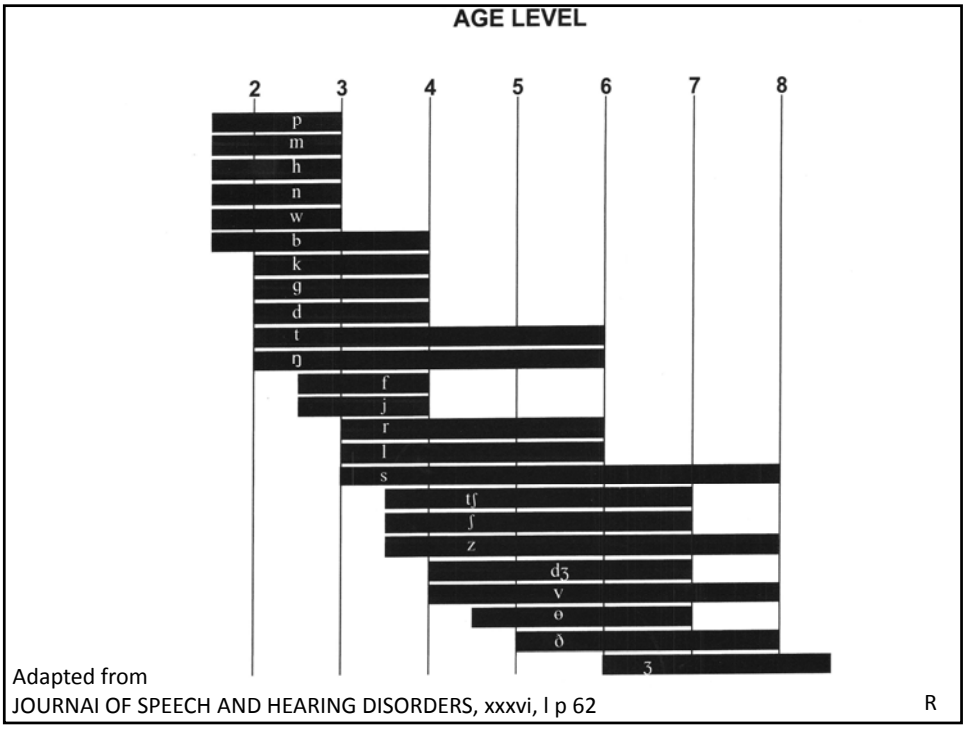
SPEECH/LANGUAGE RED FLAGS OR IF INTERVENTION IS APPROPRIATE, WHAT PROBLEMS INDICATE IT'S TIME FOR ADDITIONAL HELP?

R

RED FLAGS: Speech Production

- Poor voice quality
- Developing consonants in the appropriate sequence
- Identify consonants that are consistently absent when they are age appropriate
- Problems with phoneme development
- Inappropriate or abnormal production of consonants

R



Adapted from
JOURNAI OF SPEECH AND HEARING DISORDERS, xxxvi, l p 62

R

RED FLAGS: Language Development

- Expectation: one year's growth in one year
- Deterioration of speech skills
  - Production
  - Discrimination
- Language plateau or regression

R

NEVER ASSUME!!!!

- ALWAYS COLLECT DATA!!!
- Parent, teacher, and clinician data and documented observations are essential to appropriate remediation of the problems
- We must ***test*** to begin to determine what is affecting progress

R

IF A CHILD HAS APPROPRIATE PARENTAL AND INTERVENTIONAL SUPPORT, THEN RED FLAGS POINT TO TECHNOLOGY ISSUES.

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TECHNOLOGY ISSUES FOR HEARING

- The most important use of our hearing is for speech and language perception
- Very simply, speech and language perception issues result from one or more of four situations:
  - I did not understand because it was too quiet
  - I did not understand because it was too loud
  - I did not understand because it was not clear
  - I did not understand because I do not have the language development

M

WHAT DOES TECHNOLOGY TELL US ABOUT HEARING?

- Real ear measures and CI mapping do ***NOT*** tell you what the child is hearing!
  - Real ear only tells you what is reaching the eardrum
  - CI MAPs/NRT only tell how much electrical stimulation is being provided
  - Real ear and CI MAPs tell you ***nothing*** about what the auditory brain hears!!

M

IF HA AND CI PROGRAMS DO NOT TELL US WHAT A CHILD HEARS, THEN WHAT DOES?

- Children provide us with accurate and reliable information about what they hear:
  - When we observe and understand their behaviors
  - When we listen to what they say and how they say it
  - When they complete detailed audiological testing with an experienced pediatric audiologist
  - Parents, interventionists, teachers, family members, and friends are essential to this process

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M

FOR A DETAILED AUDIOLOGICAL EVALUATION, WHAT DO WE NEED TO TEST?

- Unaided thresholds
- Thresholds with technology – Right (R), Left (L), and Binaural (B)
- Speech perception with technology
  - 50 dB HL (normal conversation) - R, L, B
  - 35 dB HL (soft conversation) – B (R, L if possible)
  - 50 dB HL +5 S/N Ratio, B

M

RED FLAGS: Audiological Evaluation

- Audiological red flags with technology:
  - Hearing very soft sounds
    - Thresholds 0-15 dB HL, especially for young children
  - Not hearing soft conversation
    - Thresholds 35 dB HL or poorer
  - Poor speech perception at normal conversational level (50 dB HL)
  - Poor speech perception at soft speech level (35 dB HL)
  - Poor speech perception at loud speech level (70 dB HL)

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RED FLAGS: Audiological Evaluation

- Audiological Red Flags cont.
  - Poor single word speech perception with good sentence recognition
  - Good single word speech perception with poor sentence recognition
  - Poor single word speech perception with poor sentence recognition
  - Speech perception testing completed with inappropriate test materials

M

WHAT RED FLAGS INDICATE SPEECH IS TOO SOFT? HOW DO WE ADDRESS THESE?

H

RED FLAGS: UNDER AMPLIFICATION and UNDERSTIMULATION

Patient consistent with technology usage, BUT:

HEARING AIDS	COCHLEAR IMPLANTS
Pt. consistently removes technology	Pt. consistently removes technology
Pt. turns up volume	Pt. turns up volume and/or sensitivity
Pt. relies on visual input	Pt. relies on visual input
Pt. does not turn or respond to name	Pt. does not turn or respond to name
Vocalizations do not change with technology	Vocalizations do not change with technology
Pt's voice is loud	Pt's voice is quiet or whispered
Listening/speech/language development is slow or non-existent	Listening/speech/language development is slow or non-existent
Speech perception at 70dB HL is 12% better than at 50dB HL	Speech perception at 70dB HL is 12% better than at 50dB HL

H

UNDER AMPLIFICATION and UNDERSTIMULATION

- **RX**:
  - Check to ensure technology is working appropriately
  - Audiological testing to verify unaided/aided hearing thresholds
  - Aided speech perception testing at 35dB HL
  - Phoneme perception testing
  - Reprogramming to increase amplification/stimulation for soft speech, normal conversation, and possibly loud sounds as needed
  - Trial with different technology
  - Cochlear implant evaluation if using hearing aids

H

CASE STUDY: UNDER AMPLIFICATION

5.5 yr old boy aided at age 3.6