Considerations in Assessment of Autism Spectrum Disorder with Children who are Deaf or Hard of Hearing

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Presenters

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• Susan Wiley
• Deborah Mood
Disclosures

- No $ gain from this talk

- Dr. Yoshinago-Itano is on the LENA Scientific Advisory Board but has no financial interest in the LENA Foundation

- We will not be selling you anything!
Learning Objectives

Understand the rates of ASD in Deaf/HH > general population

Describe atypical development in children with the dual diagnosis

Explain a minimum of two "red flags"

Discuss how assessments may need to be adapted when there is a question of possible ASD in D/HH children
Based on Expert Experience & Literature, we will address:

- Epidemiology of the dual diagnosis
- "Red flags" for recognizing/screening ASD in D/hh children
- Assessment considerations
- Implications of dual diagnosis for intervention
- Resources for family support
- Educational advancement of providers
Why it is important

- ~4% of D/hh children have ASD ➔ can further complicate communication development
- Diagnostic process & availability of appropriate interventions are severely lacking
- Misdiagnosis can greatly impact outcomes in this group of children
Epidemiology

- Rates of ASD continue to grow, even for children who are deaf

<table>
<thead>
<tr>
<th>Year Range</th>
<th>CDC believed Prevalence Rates</th>
<th>Annual Survey believed Prevalence Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004-2005</td>
<td>1:125</td>
<td>1:111</td>
</tr>
<tr>
<td>2005-2006</td>
<td>1:110</td>
<td>1:94</td>
</tr>
<tr>
<td>2006-2007</td>
<td>-</td>
<td>1:53</td>
</tr>
<tr>
<td>2007-2008</td>
<td>1:88</td>
<td>1:81</td>
</tr>
<tr>
<td>2009-2010</td>
<td>1:68</td>
<td>1:59</td>
</tr>
</tbody>
</table>
Prevalence of Autism based on Severity of Hearing Loss

Data is provided here from the Annual Survey of Deaf and Hard of Hearing Children and Youth Conducted by the Gallaudet Research Institute Published in Szymanski, Brice, Lam and Hotto, 2012
Age of Diagnosis for ASD and Hearing Loss

Median 53.5 months

Median 78 months

Understanding the dual diagnosis

Higher ASD Rates in D/hh children

Severity of HL & ASD dx = Mixed results

D/HH children are later to be diagnosed (esp. mild HL)

Delayed dx ➔ delayed intervention ➔ poorer outcomes

ASD + D/hh ➔ complicates language development
The diagnosis: A dilemma?

<table>
<thead>
<tr>
<th>Dilemma of under-diagnosis</th>
<th>Dilemma of over-diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Is it the right one?</td>
<td>• Is it the right one?</td>
</tr>
<tr>
<td>• Lack of diagnosis = lack of early intervention = lack of possible gains later in life</td>
<td>• Supports &amp; intervention, if not appropriate, may not help symptoms nor prepare families</td>
</tr>
<tr>
<td>• Lack of appropriate services</td>
<td>• Schools &amp; professionals may not accept the child</td>
</tr>
</tbody>
</table>
Diagnostic Challenges

- Lack of standardized assessment tools for Deaf/HH
- Providers trained in ASD - may not understand complex needs of D/HH children (Communication, development, behaviors, etc.)
- Providers - trained in deafness or ASD, not many trained in both
- Children will act differently in different settings (multiple sources of information helpful)
Assessment Challenges When Using Interpreters

May not know/recognize or convey atypical language features if noted

Potential to disrupt rapport necessary for assessing social reciprocity

The role of an interpreter may be unclear
Screening

No ASD screening tools have been validated for children who are Deaf/HH

Clinical experience of several providers suggests that some screening tools such as the MCHAT and SCQ can both over and under-identify children who are D/HH

Advisable to still refer a child who presents with red flags for ASD who “passes” these screening measures to be referred for a more comprehensive ASD diagnostic assessment.

The Baby and Infant Screen for Children with Autism Traits (BISCUIT) was administered to children with conductive hearing loss (need for PE Tubes) and children in this category did not overlap with the results from the children with ASD (suggesting that children who are at risk for HL do not have autistic traits)

Worley, J et al 2011 Developmental Neurorehabilitation 14(3) 171-176
Screening

- Colorado has applied the LENA autism screening (LLAS) among 83 children birth to 72 months who are Deaf/HH of varying degrees of hearing loss

- The LENA ASD screening algorithm was applied to the data outputs to categorize likelihood of an ASD

- Minnesota CDI results (specifically social development domain) were also evaluated among children flagged as at risk on the LENA

- Children at risk require further evaluation
Screening children who are deaf or hard of hearing for autism

LENA: Language ENvironment Analysis
LENA Methods: Automatic Processing

Audio Stream of Child Voice & Environment Sound

Identification of Different Sounds (Segmentation)

Sequence of Key Child, Adult, Environment Noise Overlapped Sounds

Human Voice (Child or Adult)

Phone Recognition

Consonant-like Sound, Vowel-like Sound, Non-Speech Sound, Pause
## Data Set of the Study

<table>
<thead>
<tr>
<th>Child Groups</th>
<th>Number of Children (N)</th>
<th>Number of Recordings</th>
<th>Child Segments (number in million)</th>
<th>Phoneme-like Units (number in million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical Development (TD)</td>
<td>106</td>
<td>802</td>
<td>2.15 M</td>
<td>8.42 M</td>
</tr>
<tr>
<td>Language Delay but not ASD (LD)</td>
<td>49</td>
<td>333</td>
<td>0.75 M</td>
<td>2.65 M</td>
</tr>
<tr>
<td>Autism (ASD)</td>
<td>71</td>
<td>225</td>
<td>0.53 M</td>
<td>1.82 M</td>
</tr>
<tr>
<td>Total</td>
<td>226</td>
<td>1363</td>
<td>3.43 M</td>
<td>12.89 M</td>
</tr>
</tbody>
</table>

In the following slides of results of findings

- **Green:** Typical Development (TD)
- **Blue:** Language Delay not Related to Autism (LD)
- **Red:** Autism (ASD)
Frequency of Consonant-like Sound

Mean and Standard-Error

Correlation with age:
TD: 0.67***
LD: 0.42**
ASD: 0.32**

Correlation with age:
TD: 0.67***
LD: 0.42**
ASD: 0.32**

**t-test**
(Welch 2-sample 2-side)

TD versus ASD:
t(90) = 7.95***

TD versus LD:
t(68) = 5.52***

LD versus ASD:
t(118) = 2.62**

*p<0.05
**p<0.01
***p<0.001
Result of C-MLU: Trajectories & Correlation with Chronological Age

Correlation with chronological age:

HH: 0.51 ***
TD: 0.63 ***
LD: 0.32 *
ASD: 0.32 *

*: p < 0.05
**: p < 0.01
***: p < 0.001
LENA + Child Development Inventory
Social Age Quotient

CDI: Social Age Quotient

Age Quotient vs Chronological Age in Months

Case A
Case B
Case C
MacArthur-Bates CDI: Symbolic Gesture

MacArthur-Bates CDI: WG
Case A

Age Quotient

Receptive Vocab
Expressive Vocab
Phrases Understood
Total Gestures

Chronological Age in Months
### Referral Rates for Criteria 3

<table>
<thead>
<tr>
<th>Types of Referrals</th>
<th>Number of Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children Not Referred on LENA</td>
<td>42</td>
</tr>
<tr>
<td>Total Referred on LENA</td>
<td>34</td>
</tr>
<tr>
<td>Total Referred on Minn</td>
<td>20</td>
</tr>
<tr>
<td>Referred on Both</td>
<td>14</td>
</tr>
<tr>
<td>Referred on LENA only</td>
<td>20</td>
</tr>
<tr>
<td>Referred on Minn only</td>
<td>6</td>
</tr>
</tbody>
</table>

The bar chart illustrates the distribution of referrals for Criteria 3, with the number of children falling into each category.
Results

• “Criteria 3” is the most robust measure resulting in the most accurate need for referral.

• Using a double screen (LENA and CDI) the refer rate for the LLAS and M-CDI is 16.87%
  - Those that referred on LLAS but not the M-CDI was 24.10%
  - Those that referred on the MINN-CDI Social but not the LLAS were 7.23%

• Therefore, using a double screen relying on “criteria 3” is the most appropriate for determining who warrants referral for further evaluation as the other two criteria have a high false positive rate (indicate concern when no problems exist)

• The sensitivity for referral is robust for all types of hearing loss, except for bilateral severe/profound hearing loss
Results: Other Findings

• Among 20 children in the study flagged on the LLAS alone (not the social subscale on the MINN-CDI Social) did not have suspicions of ASD by their CHIP provider, suggesting further diagnostic evaluation may not be needed.

• 6 children were classified not at risk by the LLAS, yet had scores below the cut-off concern on the CDI Social (<0.8 quotient), one of whom has mild ASD (false negative on LLAS).

• 3 children in the study have been diagnosed with a form of ASD (2 with severe to profound HL), one of which was a false negative (did not screen positive) and the other two were noted as risk by criteria 3.

• The LLAS may not be sensitive enough to pick out minute vocal qualities of children with milder forms of ASD.
Moving beyond screening to diagnosis

• “Gold standard” assessment tools commonly used with hearing children have not been validated with children who are D/HH
  – ADOS-2, ADI-R
  – Efforts underway in Great Britain to validate for use with D/HH

• Use of ADOS-2 with D/HH (Mood & Shield, 2014)
  – May under-identify ASD if used in a “standardized” manner
  – Failure to administer module that matches the child’s language functioning results in lack of ability to assess atypical language and social communication
  – Administration of “easier” module relies on tasks that are too developmentally easy and a missed opportunity to assess social/communication skills appropriate for the child’s developmental functioning

• Many tools may not reliably identify ASD among children who are D/HH
  – Use of ADOS-2 algorithms with D/HH is not advised
  – When used by a clinician familiar with ASD and deafness, ADOS-2 may reveal important clinical information

• Multiple sources of information and rule in/rule out process are necessary
“Red Flags” for a possible ASD in children who are Deaf/HH

- **Atypical preverbal communication**
  - poor eye contact, lack of pointing, poor orientation for communication, poor joint attention
  - delays in language acquisition beyond what one could expect based on hearing loss/etiology/intervention history

- **Atypical language features**
  - echolalia, palm rotation errors, persistent gesture use despite instruction in formal sign and use of formal sign by others in the child’s environment (distinct from home signs)

- **Social difficulties**
  - failure to initiate/respond to peers when communication taken into consideration, failure to recognize Deaf cultural norms, etc

- **Repetitive behaviors/restricted interests**
<table>
<thead>
<tr>
<th>Deficits in Social/Communication and social interaction</th>
<th>ASD</th>
<th>Typically developing D/HH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deficits in social/emotional reciprocity</td>
<td>• Atypical social approach</td>
<td>• Appropriate social smile</td>
</tr>
<tr>
<td></td>
<td>• Difficulty with reciprocal</td>
<td>• Appropriate eye contact</td>
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<tr>
<td></td>
<td>conversations</td>
<td>• Engages others in their environment with integrated eye</td>
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<tr>
<td></td>
<td>• Reduced sharing of affect</td>
<td>contact, give/show behavior, gestures, vocalizations</td>
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<td></td>
<td>/interests/enjoyment and</td>
<td>• Imitate motor/vocal/signs</td>
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<tr>
<td></td>
<td>limitations in social interaction</td>
<td>• Appropriate joint attention</td>
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<td></td>
<td></td>
<td>33 34</td>
</tr>
<tr>
<td>Deficits in Social/Communication and social interaction</td>
<td>D/HH + ASD</td>
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<td>-------------------------------------------------------</td>
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<tr>
<td>Deficits in social/emotional reciprocity</td>
<td></td>
<td></td>
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<tr>
<td>• Reduced/absent <strong>social smile</strong></td>
<td></td>
<td></td>
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<tr>
<td>• Limited or inconsistent <strong>eye contact</strong></td>
<td></td>
<td></td>
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<tr>
<td>• Limited give/show behavior</td>
<td></td>
<td></td>
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<tr>
<td>• Reduced sharing of affect</td>
<td></td>
<td></td>
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<tr>
<td>• Difficulties with <strong>joint attention</strong></td>
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<tr>
<td>• Difficulty engaging in social conversation at one’s language ability level</td>
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<tr>
<td>• Does not readily respond to name or culturally appropriate attention getting measures</td>
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<tr>
<td>• Difficulty understanding others’ needs and feelings or processing facial/signed emotion cues</td>
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<tr>
<td>Deficits in Social/Communication and social interaction</td>
<td>ASD</td>
<td>Typically developing D/HH</td>
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<tr>
<td>Deficits in communicative behaviors for interaction</td>
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<tr>
<td></td>
<td>• Poorly integrated verbal/nonverbal behavior</td>
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<td></td>
<td>• Abnormalities in eye contact and body language</td>
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<td></td>
<td>• Limited facial expressions/gestures</td>
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<td></td>
<td>• Difficulties in understanding nonverbal cues</td>
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<tr>
<td></td>
<td>• Appropriate eye contact</td>
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<tr>
<td></td>
<td>• Well integrated gestures/eye contact/vocalizations</td>
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<td></td>
<td>• Wide range of facial expressions; use of ASL facial grammatical markers</td>
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<td></td>
<td>• Will learn incidentally with visual/auditory access, the sequence of learning language will follow typical developmental norms</td>
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<tr>
<td></td>
<td>• May have difficulties with vocabulary, grammar, word order, idiomatic expressions and other aspects of verbal communication</td>
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<tr>
<td>Deficits in Social/Communication and social interaction</td>
<td>D/HH + ASD</td>
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<tr>
<td>-------------------------------------------------------</td>
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<tr>
<td>Deficits in communicative behaviors for interaction</td>
<td>Limited gestures</td>
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<tr>
<td></td>
<td>Lack of pointing for shared enjoyment</td>
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<td></td>
<td>Difficulty with choice making (e.g. pointing to make choices)</td>
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<td></td>
<td>Using others as objects for communication (e.g. hand as tool)</td>
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<td></td>
<td>Abnormal prosody of speech/sign</td>
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<td></td>
<td>May demonstrated poorly integrated sign and spoken language (if utilizing total communication approach)</td>
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<td></td>
<td>Shifting of signing space below typical visual spatial space</td>
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<td></td>
<td>Poor understanding/use of integrated ASL facial grammatical features(^{36})</td>
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<td></td>
<td>Gaps in acquisition of language and delays beyond expected for hearing loss/intervention history/accessibility of language</td>
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<td></td>
<td>Limited spontaneous language use of words within child’s repertoire for social communication (e.g. to comment, share, request).</td>
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<tr>
<td></td>
<td>Limited range of facial expression or poorly coordinated</td>
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<td></td>
<td>Difficulty grasping Deaf cultural norms (e.g. use of attention getting strategies, entering/exiting conversations)</td>
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</table>
Language features of ASD in ASL

Features similar to oral language but may present differently in visual language

- Palm reversals (Shield, 2014)
- Pronoun avoidance vs. pronoun reversal (Shield, 2014)
- Echolalia
- Persistent use of individual’s own gestures rather than formally instructed/used sign vs. neologisms (e.g. “red” vs. “ketchup”)
- Failure to use appropriate sign space
- Mixed results regarding use of facial aspects of sign language and impact of ASD (Denmark, 2011, 2014)
<table>
<thead>
<tr>
<th>Deficits in Social/Communication and social interaction</th>
<th>ASD</th>
<th>Typically developing D/HH</th>
</tr>
</thead>
</table>
| Deficits in developing and maintaining appropriate relationships | • Difficulties building relationships appropriate to developmental level  
• Difficulty adjusting behavior to context  
• Difficulty with imaginative play  
• Difficulty making friends or limited interest in people | • Interested in people and able to develop age-appropriate relationships when communication is accessible  
• Imaginative play follows typical developmental course (commensurate with language and nonverbal IQ)  
• Flexible play  
• May prefer to control conversation or play if having troubles following changes in conversation based on language level or in challenging listening environments (when using an auditory/oral approach) |
<table>
<thead>
<tr>
<th>Deficits in Social/Communication and social interaction</th>
<th>D/HH + ASD</th>
</tr>
</thead>
</table>
| Deficits in developing and maintaining appropriate relationships | • Reduced shared enjoyment  
• Delayed acquisition of symbolic play skills inconsistent with nonverbal IQ  
• Difficulty making and sustaining friendships even when communication is accessible  
• Unusual social overtures toward others (e.g. backing into parents, grunting at peers, hitting peers to initiate contact)  
• Play is rigid and unimaginative |
<table>
<thead>
<tr>
<th>Restricted/Repetitive Patterns of Behavior</th>
<th>ASD</th>
<th>Typically developing D/HH</th>
</tr>
</thead>
</table>
| Stereotyped or repetitive speech, motor movements, or use of objects | • Stereotyped repetitive speech (i.e., echolalia, repetitive language use, idiosyncratic phrases)  
• Repetitive motor movements  
• Repetitive use of objects  
• Difficulties with transitions | • Usually not demonstrated, particularly in children with well-established communication system and average nonverbal IQ  
• Echolalia can occur as a typical developmental pattern, but should be for a brief period of time  
• You/I pronoun reversals can occur as part of typical development for children with co-occurring visual impairments |
<table>
<thead>
<tr>
<th>Restricted/Repetitive Patterns of Behavior</th>
<th>D/HH + ASD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stereotyped or repetitive speech, motor movements, or use of objects</td>
<td>• Echolalia in sign or spoken language&lt;sup&gt;7&lt;/sup&gt; 26-28 • Idiosyncratic gestures (e.g. persistent use of made up gesture, distinct from home sign&lt;sup&gt;28&lt;/sup&gt; when formal sign taught/used) • Palm rotation errors&lt;sup&gt;7&lt;/sup&gt; 28 32 • Difficulty with pronoun use (not using point gesture to indicate others, fingerspelling name instead of using pronoun/point, “you”/”I” confusion in auditory/verbal children)&lt;sup&gt;7&lt;/sup&gt; • Rocking, twirling, flapping, spinning • Highly repetitive play with objects (e.g. persistence in lining up toys with significant upset if disrupted)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Restricted/Repetitive Patterns of Behavior</th>
<th>ASD</th>
<th>Typically developing D/HH</th>
</tr>
</thead>
</table>
| Excessive adherence to routines          | • Verbal rituals  
• Excessive resistance to change | • Given an understanding/communication, child will change routines, activities  
• The resistance seen is typical for all children or due to comprehension issues  
• May struggle with transitions if language level doesn’t yet support understanding first-then concept |
<table>
<thead>
<tr>
<th>Restricted/Repetitive Patterns of Behavior</th>
<th>D/HH + ASD</th>
</tr>
</thead>
</table>
| Excessive adherence to routines          | • May require parents/caretakers to say things in exactly the same way  
• Resistant to change, transitions are difficult (these difficulties are beyond that anticipated by language level)  
• Significant upset when routines are disrupted |
<table>
<thead>
<tr>
<th>Restricted/Repetitive Patterns of Behavior</th>
<th>ASD</th>
<th>Typically developing D/HH</th>
</tr>
</thead>
</table>
| Highly restricted, fixated interests that are abnormal in intensity or focus | • Preoccupation with a particular object or topic  
   • Highly unusual interest for child’s developmental age (i.e., ceiling fans) | • Usually not demonstrated or very brief; able to move to new toys, objects |
| Hyper-or hypo-reactivity to sensory input or unusual interest in sensory aspects of environment | • Unusual sensory interests (visual inspection, smelling objects), fascination with lights/spinning objects  
   • Indifference or oversensitivity to pain/heat/cold | • May have some atypical sensory responses—or hyper/hypo sensitivities, these are more typically differences with vestibular processing; less likely visual inspection or persistent tactile/olfactory exploration of objects |
<table>
<thead>
<tr>
<th>Restricted/Repetitive Patterns of Behavior</th>
<th>D/HH + ASD</th>
</tr>
</thead>
</table>
| **Highly restricted, fixated interests** | • Repeated play with toy or object (often rather than playing with a wide variety of toys)  
• Play with toy for other than intended purpose  
• Unusual interests of unusual intensity or for child’s developmental age (e.g., perseveration on street signs, ceiling fans, researching all presidents of the US at age 3) |
| **Hyper-or hypo-reactivity to sensory input or unusual interest in sensory aspects of environment** | • With some DHH children, may see limited response to amplification\(^{10}\) (seem to be more deaf than you would expect based on their audiogram or amplified responses)  
• May show sensitivity to wearing amplification  
• Hypo and hyper-sensitivities\(^{37}\)  
• Sensory seeking behaviors (pushing head on floor in inverted “V” position, repeatedly watching blinds opening and closing, sniffing non-food objects before use)  
• Unusual reactions to environment unlikely related to hearing loss (e.g., avoidance of smells/textures) |
### Other Diagnostic Considerations

<table>
<thead>
<tr>
<th>Learning/Communication:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Intellectual Disability</td>
</tr>
<tr>
<td>• Communication Disorders</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Behavioral Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• ADHD</td>
</tr>
<tr>
<td>• Anxiety disorder</td>
</tr>
<tr>
<td>• Obsessive compulsive disorder</td>
</tr>
<tr>
<td>• Sensory integration difficulties</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Medical Condition</th>
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<tbody>
<tr>
<td>• Medical Conditions:</td>
</tr>
<tr>
<td>• Tourette’s Syndrome</td>
</tr>
<tr>
<td>• Epilepsy</td>
</tr>
<tr>
<td>• Landau-Kleffner and other epileptiform language disorders (rare)</td>
</tr>
<tr>
<td>• Peripheral vision cuts</td>
</tr>
<tr>
<td>• Benign stereotypies</td>
</tr>
</tbody>
</table>
Interventions for Dual Diagnosis

• Evidence of effectiveness of interventions is lacking (mostly case studies).

• It is reasonable to take interventions which have been successful for hearing children to modify/adapt for children who are deaf/HH
Communication considerations

- Multifaceted approach to language is warranted
- Language must be accessible to children who are D/HH
- Child’s means of accessing language (receptive language) may differ from most reliable means of using language (expressive language)
- Targeting core symptoms of ASD (e.g., responsiveness to CI → may be ASD, not failure of CI; problems with ASL → poor motor in ASD)
Communication Considerations

• Features of ASD may impact language acquisition and should be targeted as symptoms of ASD
  – Joint attention deficits
  – Reduced eye contact
  – Motor imitation
• Not responding to sound may be a symptom of ASD rather than a failure of technology or the child’s hearing – ASD treatment helpful
• Sensory sensitivities may lead to device resistance
  – Treat with OT and desensitization protocol with consultation from behavioral specialist
• Use of Assistive/Augmentative Communication (AAC)
Supporting Families

Do not delay raising concerns with families

Families may not understand what is/is not attributable to hearing loss

Start with strengths and discuss concerns in a kind, clear manner

Help families recognize symptoms of ASD are broad: filter what does/does not apply to their child

Be able to help families identify resources for seeking diagnostic clarification and support

Connect with other families with children with similar strengths/needs
Why refer? Why diagnose?

- Result in differentiated treatment and better outcomes
- Different educational placement may be appropriate
- May impact communication decisions
- Families can more resources with ASD
- Families often find it helpful to know why particular things are more challenging for their child
- Adults with ASD report relief with knowing there is a cause that explains their struggles and strengths
Review of Interventions for ASD
(Warren et al, 2011, Pediatrics)

• 4120 studies; 34 met inclusion criteria – 1 rated good – 10 fair – 23 poor
• Interventions thought to show improved outcomes in cognition, adaptive functioning & early educational attainment
Categories of Effective Intervention
(Warren et al., 2011, Pediatrics)

- Lovaas-based & Early Intensive Behavioral Intervention (EIBI)
  - Discrete trial teaching (DTT)
  - Widely known in the public as Applied Behavioral Analysis (ABA)
  - Uses praise & reinforcers → transfer to naturalized settings

- Comprehensive Approaches - Children < 2 yr
  - Early Start Denver Model → ABA techniques in a functional developmental framework, sensitive to developmental sequence, positive, affect-based relationship
    - 2 yrs enrolled – significant cognitive & language gains
    - Must be “implemented with fidelity” and supervision

- Parent Training
  - Best at promoting social communication & language; less impact on child’s IQ
Implications of Communication on Interventions for Dual Diagnosis

• Communication needed:
  – joint attention, turn-taking, imitation, choice-making, play

• Communication modality can be complex
  – Picture Exchange Communication System (PECS)
  – Technology/Augmentative Communication
  – Signs, gestures, spoken
Implementation of Interventions Children with ASD who are D/Hh

• Lovaas/Early Intensive Behavioral Intervention
  – Direct teaching (breaking down a task and building the skill).
  – Generalization of skills learned
  – Finding appropriate motivators, rewards

• Comprehensive, developmental approaches
  – “What is ASD, what is hearing loss?”
  – Promoting interactions with typical peers – more challenges?
  – Begins early (12-18 mo.) – Delayed diagnosis of ASD in D/hh population may make this challenging?
Interventions for Dual Diagnosis: Social Communication

- Parent Training
  - Fostering social communication skills, teaching parents about importance of communication & language access in general
- Social Skills Groups
- Social Stories
- Who is the peer group?
  - Learning cultural norms for both hearing and Deaf worlds
Family Resources

• Seminars in Speech/Language special edition devoted to ASD among children who are D/HH (November, 2014, vol 4)

• Gallaudet Odyssey special editions re: deafness/autism

• Deafness and Family Communication Center of the Department of Child and Adolescent Psychiatry- Children’s Hospital of Philadelphia http://www.raisingdeafkids.org/special/autism/

• Colorado Hands and Voices- Deaf Plus http://www.cohandsandvoices.org/plus/index.html