

# Understanding your child's audiogram and the importance of the Ling 6 Sounds Test

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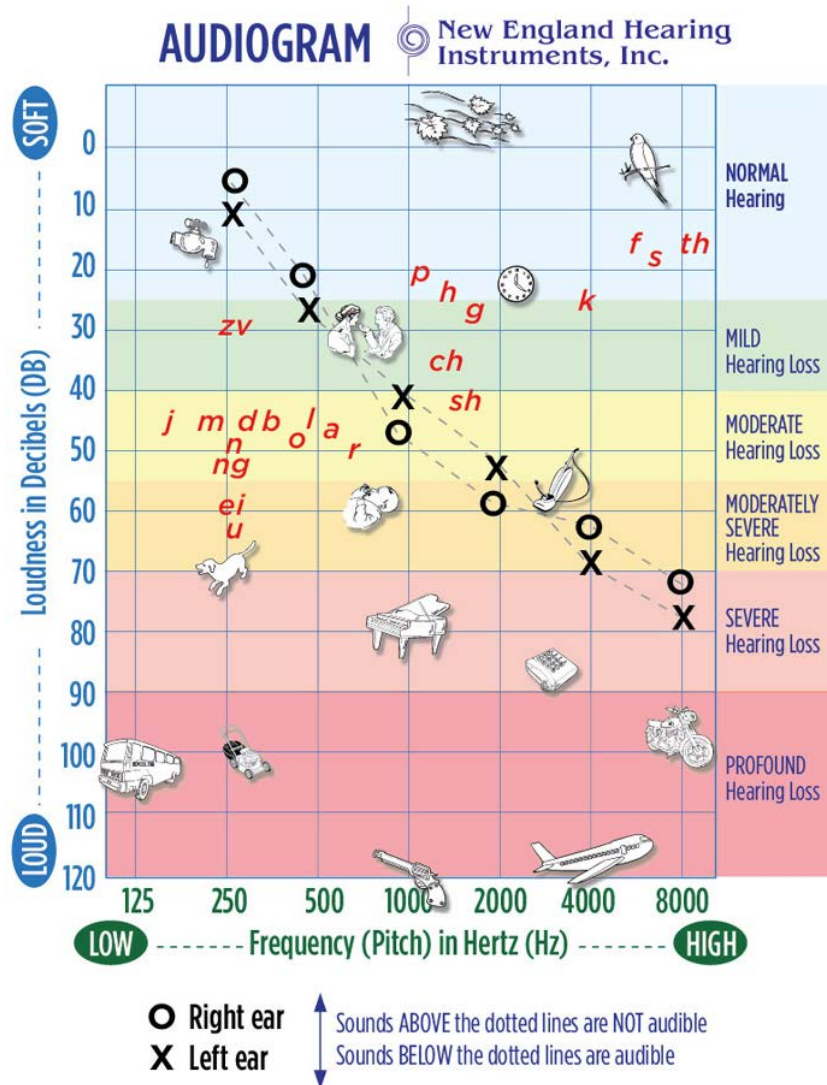


# Learning Objectives

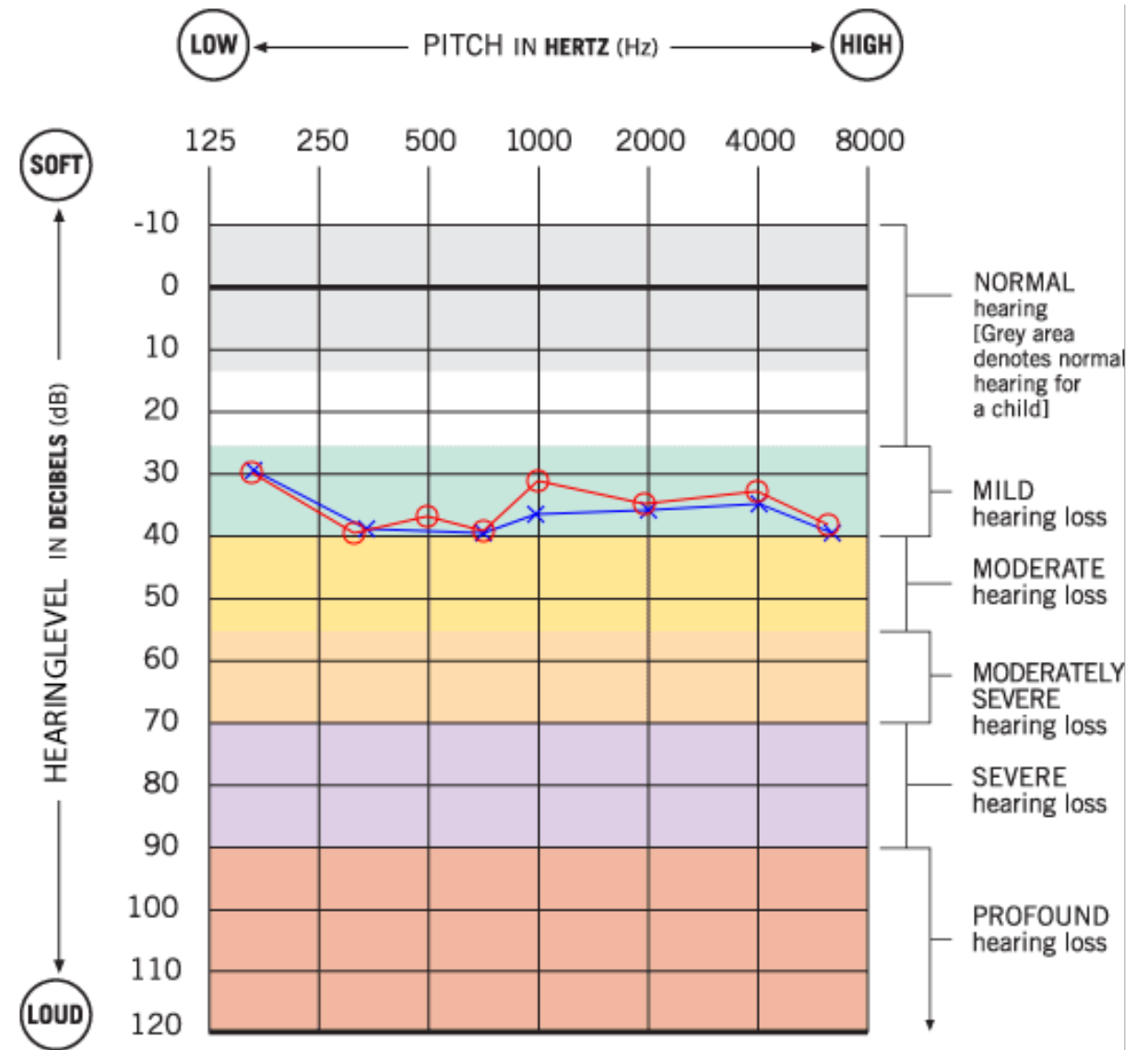
1. Describe basic terminology related on interpreting the audiogram
2. Explain the importance of the Ling 6 Sound Test
3. Perform a listening check
4. Explore different troubleshooting strategies
5. Understand important speech acoustic information for each of the 6 phonemes



# Audiogram Interpretation



Retrieved from: [www.advancedbionics.com](http://www.advancedbionics.com)



Retrieved from: [www.heartolearn.org](http://www.heartolearn.org)

# Severity Hearing Loss

Normal: 0-15 dB HL

Slight: 15-25 dB HL

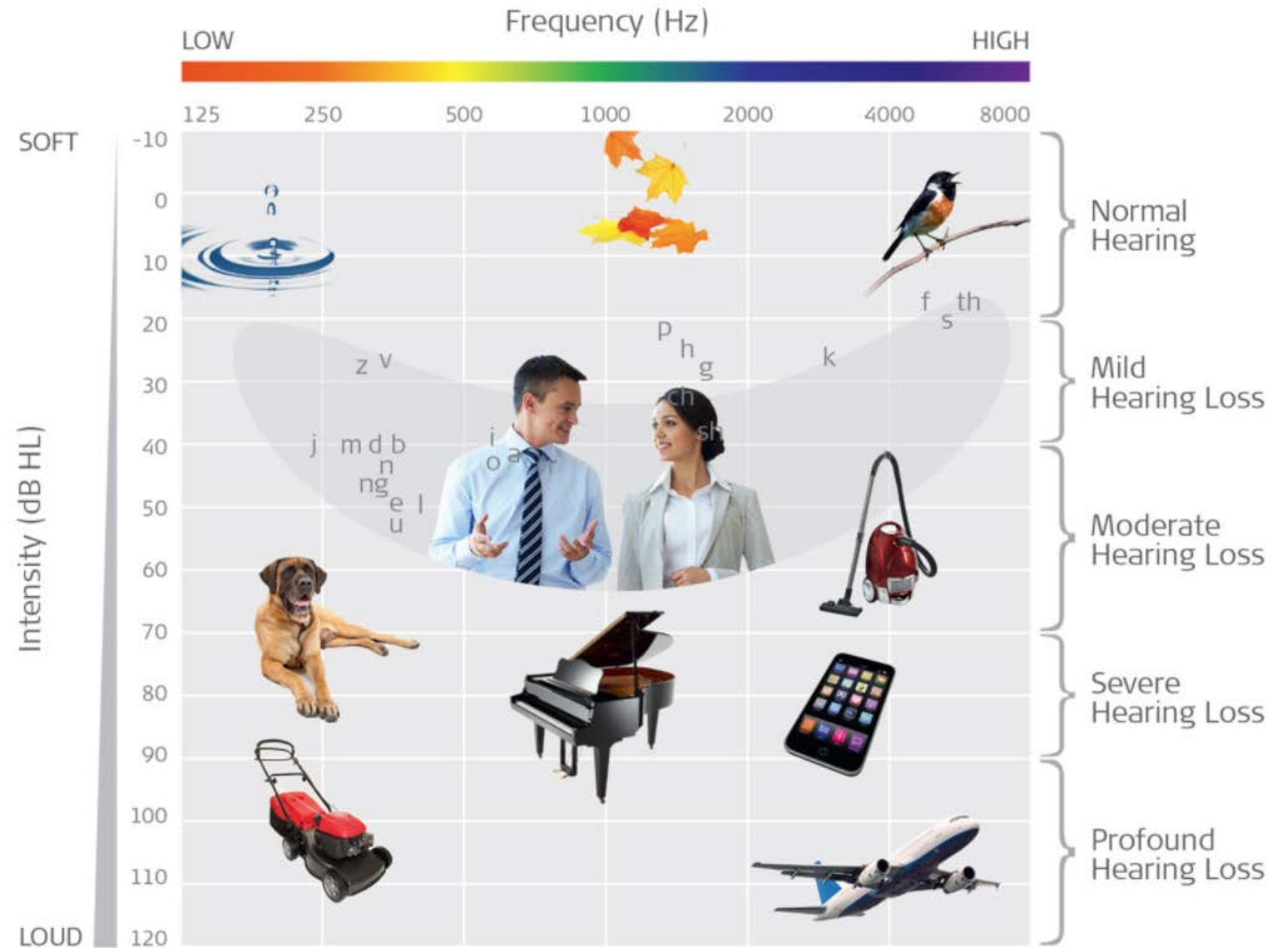
Mild: 25-40 dB HL

Moderate: 40-55 dB HL

Moderately-Severe: 55- 70 dB HL

Severe: 70-90 dB HL

Profound: 90+ dB HL





a



m



i



u



sh



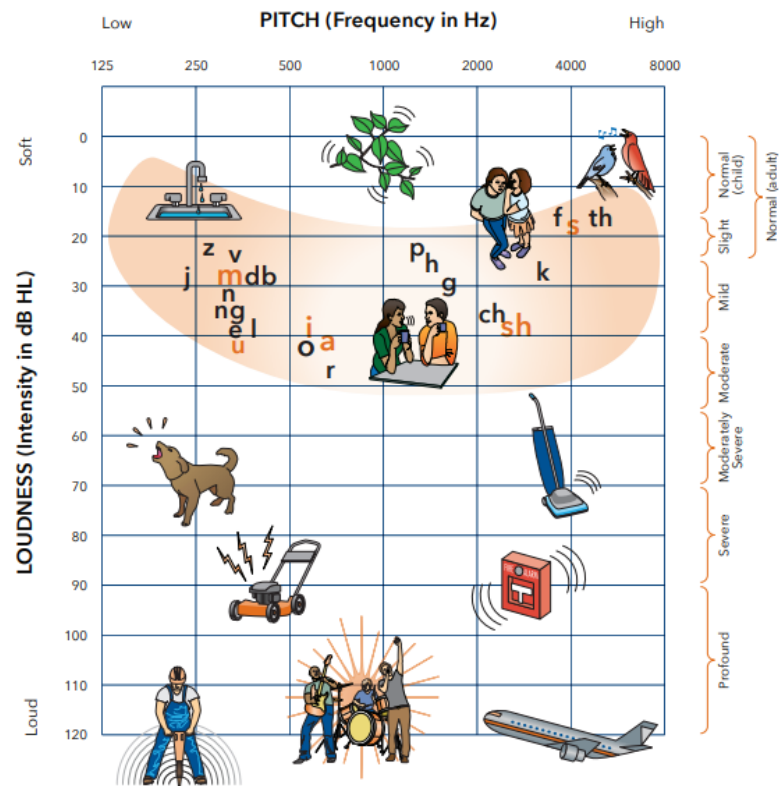
s



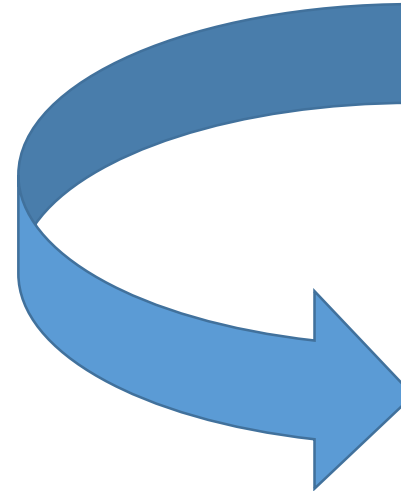
# The Ling-6 Sounds

# The Ling-6 Sounds

## familiar sounds AUDIOGRAM



Adapted from the American Academy of Audiology and Northern, J. and Downs, M. (2002).  
Hearing in Children (5th ed.). Lippincott Williams and Wilkins, Baltimore, Maryland.



mm, as in me  
oo, as in boo  
ah, as in car  
ee, as in see  
sh, as in wish  
s, as in us

# Ling 6 Sound Test: Why do we do it?

Quick, easy test that allows us to:

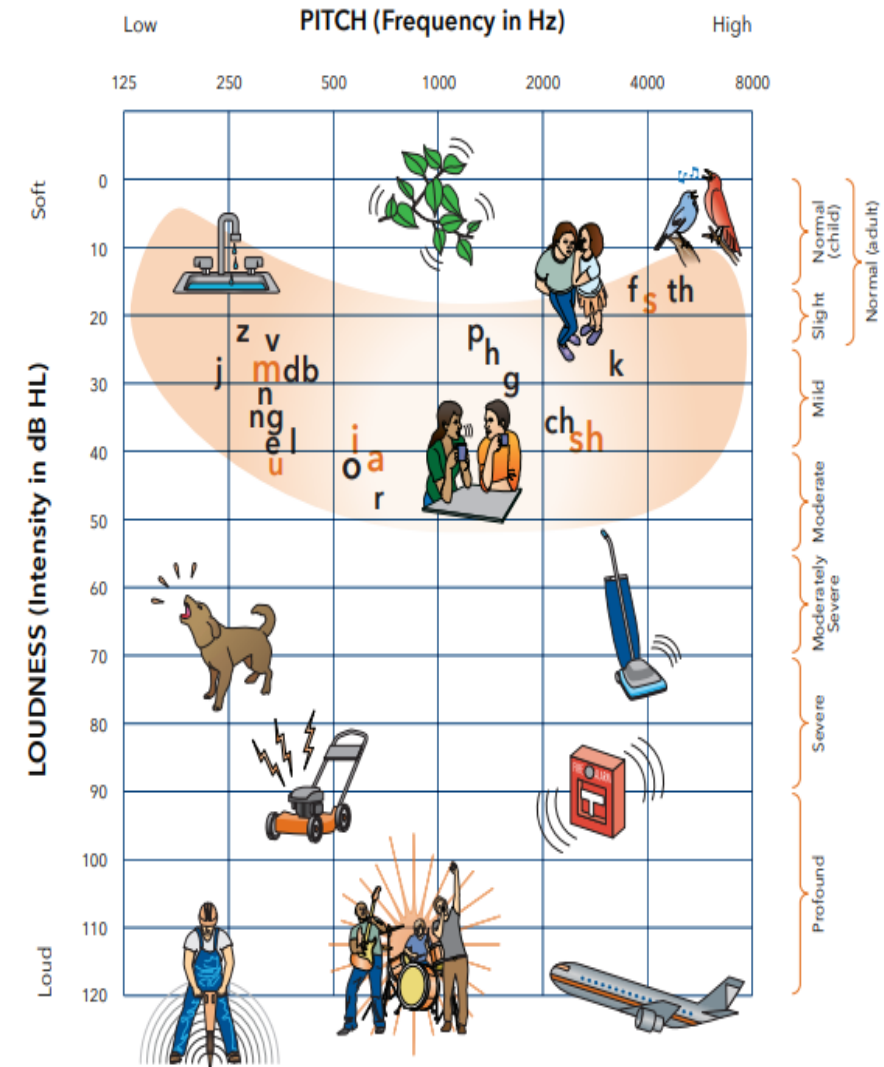
- Know if a child can detect/identify sounds across speech spectrum
- Monitor changes in hearing



# Why these Six Sounds?



Ling-6 Sound	Frequency it measures
m	/m/ is a very low frequency sound and if your child cannot hear this sound it is likely they will not have sufficient low frequency information to develop speech with normal prosody (tune) and without vowel errors.
oo	/oo/ – [u] has low frequency information.
ee	/ee/ – [i] has some low frequency information and some high frequency information.
ah	/ah/ – [a] is at the centre of the speech range.
sh	/sh/ is in the moderately high frequency speech range.
s	/s/ is in the very high frequency speech range. <sup>1</sup>



Adapted from the American Academy of Audiology and Northern, J. and Downs, M. (2002).  
Hearing in Children (5th ed.). Lippincott Williams and Wilkins, Baltimore, Maryland.



# /m/

- Low-frequency
- What if a child is unable to detect /m/?
  - Unlikely to hear other low frequency sounds and may result in poor prosody
  - Errors with vowel production
  - nasalized speech



# /u/

- Low-frequency
- Makes sure there's access to low-frequency information (including vowels)



# /a/

- Mid-frequency- center of the speech range
- If cannot hear this sound:
  - unstressed words likely to be missing
    - “I went to the park” --> “I went park”



# /i/

- both low and high-frequency
- If child says:
  - /s/: may not have access to low-frequency
  - /u/: may not have access to high-frequency



# /sh/

- Moderately high-frequency
- May not be accessible to someone with a severe to profound hearing loss who does not have a cochlear implant.



# /s/

- High-frequency sound
- High-frequency sounds carry most information required for discrimination, identification, and comprehension of speech



# How do I perform the Ling 6 sound check with my child?

1. Present each sound individually and randomly
2. Initially say the sound at a distance of 20cm from the child's microphone.
3. Make sure that the environment is quiet and calm
4. Once the child is consistently responding at that distance, increase it to 3-6-9 feet.
5. Use a normal speaking voice, and sit beside or behind the child
6. When the child responds ( smile, turn, becoming still ) give them positive reinforcement. ('You heard that!! ...Good listening!')
7. If the child does not respond to a sound, try saying the sound again with some intonation and longer.
8. If your child does not respond the second time, move on to another sound.



m



a



i



u



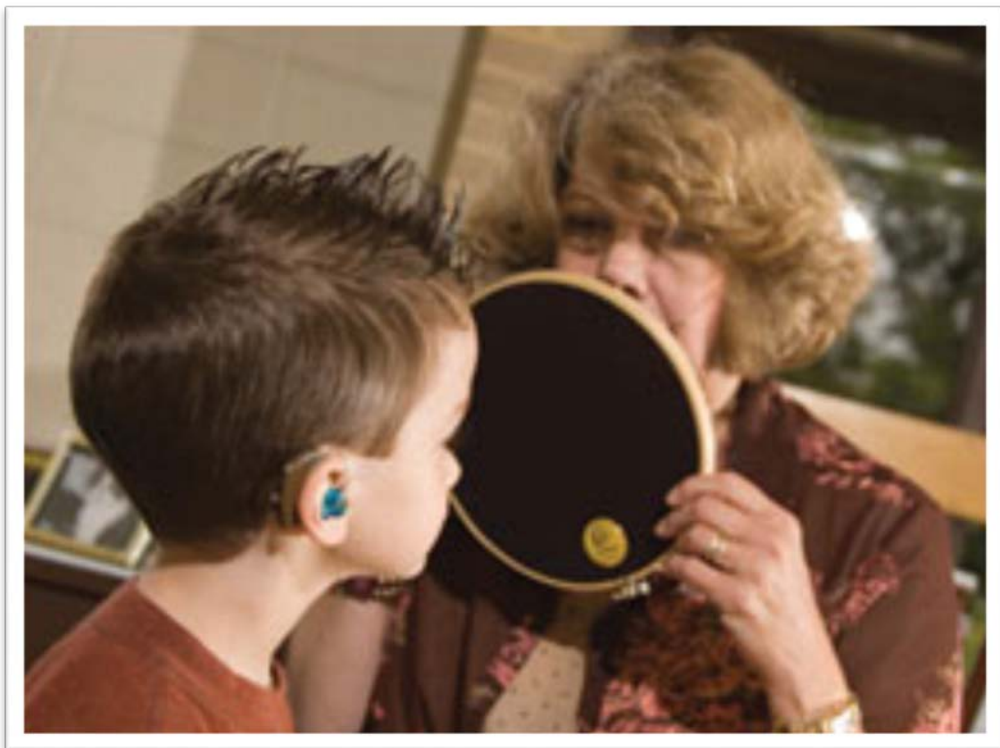
sh



s



# Considerations for Different Ages



Auditory Skill Level	Description
Detection – babies & very young children	Recognizing the presence or absence of sound
Identification – Older children	Reproducing a sound or pointing to a picture of the sound heard



☐ A hearing aid only  
☐ Both a cochlear implant and a hearing aid  
 Distance tested at: \_\_\_\_\_ Presentation Level: \_\_\_\_\_  
☐ Noisy situation OR ☐ Quiet situation

# Ling-6 Sound Daily Check

	ah	m	oo	sh	s	ee
<b>Week of:</b>						
Monday						
Tuesday						
Wednesday						
Thursday						
Friday						
Saturday						
Sunday						
<b>Week of:</b>						
Monday						
Tuesday						
Wednesday						
Thursday						
Friday						
Saturday						
Sunday						
<b>Week of:</b>						
Monday						
Tuesday						
Wednesday						
Thursday						
Friday						
Saturday						
Sunday						
<b>Week of:</b>						
Monday						
Tuesday						
Wednesday						
Thursday						
Friday						
Saturday						
Sunday						

✓ = correct response  
 – = no response

# Interpreting the Results

1. What speech sounds does my child respond to (detect)?
2. What speech sounds can my child repeat (identify)?
3. At what distances does my child detect and/or discriminate speech sounds?

Name:          Daniel Tang

Uses:

☒ A cochlear implant only

☐ A hearing aid only

metres         

☐ Both a cochlear implant and a hearing aid

Distance tested at: 3

Presentation Level:         

☐ Noisy situation OR ☒ Quiet situation

✓ = Correct response      — = no response

If your child says the wrong sound, record what sound your child actually says.

	ah	m	oo	sh	s	ee
Week of: 15.02.2009						
Monday	✓	✓	m	✓	✓	✓
Tuesday	✓	✓	m	✓	✓	- ✓
Wednesday	✓	✓	m	✓	✓	✓
Thursday	✓	✓	m	✓	✓	✓
Friday	✓	✓	m	✓	✓	✓
Saturday	✓	✓	m	✓	✓	✓
Sunday	✓	✓	m	✓	✓	✓

Interpreting the above results:

In this example:

- Daniel has excellent and consistent identification of /ah/, /m/, /sh/, /s/ sounds
- There was one missed response of the /ee/ sound on Tuesday, but Daniel correctly responded the second time. Since he correctly responded to this sound on every other day, it is likely he was tired or distracted on Tuesday.
- On every day, Daniel confused the /oo/ sound for /m/. This is great information for his audiologist who will take this into consideration when next programming Daniel's device.

# Hearing Aid Listening Check

**Why?:** Helps you to know if your child's hearing aids are working properly and amplifying the sounds – which helps to reduce the amount of time the child is not hearing well.

**Who?:** Parents, SLPs, Early Interventionists, and Teachers

**When?:** EACH MORNING



## What do I need? – Hearing Aid Care Kit:

1. Listening stethoscope
2. Battery tester
3. A wire loop and brush to remove wax from the earmold
4. An air blower to remove moisture from the earmold tubing



# Daily Hearing Aid Listening Check

**Look at the hearing aids and earmolds and note any:**

1. Broken or cracked areas
2. Blockage of openings
3. Build-up of moisture in tubing
4. Corrosion in battery compartment



# Daily Hearing Aid Listening Check

## Check sound quality:

1. Attach the earmold to the listening stethoscope
2. Check the microphone is not blocked
3. Perform the Ling-6 Sound Test  
(ah/oo/sh/s/mm/ee)

**Are the Ling Sounds clear?**





# Troubleshooting steps

Does the hearing aid amplify sound when it is turned on?	<p>If not:</p> <ul style="list-style-type: none"> <li>• Make sure the hearing aid is in the "on" position</li> <li>• Change the battery</li> <li>• Change the tone hook</li> </ul>
Does the hearing aid sound as loud as you expect it to?	<p>If not:</p> <ul style="list-style-type: none"> <li>• Change the battery</li> <li>• Listen to the hearing aid without the earmold (there may be blockage in the earmold tubing)</li> <li>• Change the tone hook</li> </ul>
Does the hearing aid amplify the sound consistently? (Does the sound cut in and out?)	<p>If not:</p> <ul style="list-style-type: none"> <li>• Change the battery</li> <li>• Check the battery compartment for corrosion</li> </ul>
Is the quality of the sound ok? (Is there a static sound or distortion?)	<p>If not:</p> <ul style="list-style-type: none"> <li>• Change the battery</li> <li>• Check the battery compartment for corrosion</li> <li>• Change the tone hook</li> </ul>
Listen to the hearing aid as you say the Ling sounds (ah, ee, oo, mm, sh, s). Are the Ling sounds clear?	<p>If not:</p> <ul style="list-style-type: none"> <li>• Change the battery</li> <li>• Check the battery compartment for corrosion</li> <li>• Change the tone hook</li> </ul>

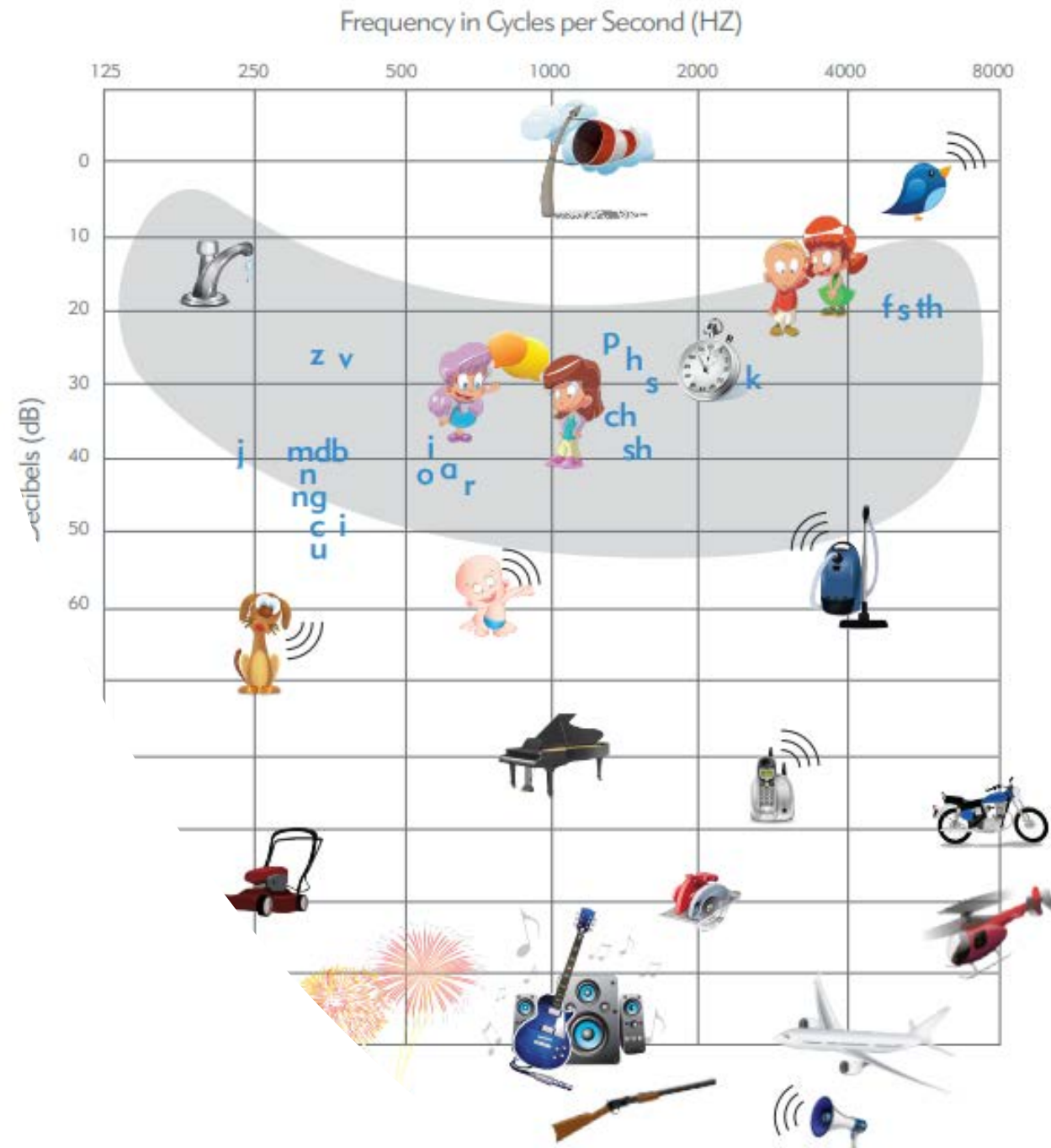


# Cochlear Implant General Maintenance Tips

1. Visually inspect the sound processor
2. Verify the systems battery is fully charged
3. Check battery is in place and properly seated
4. Inspect the headpiece cable
5. Check the headpiece for any cracks or damage



# Hearing Aid Listening Check IMPORTANCE





# Sitio Web

<http://heartolearn.org/>



# Tutorials

<http://heartolearn.org/tutorials>



Hearing Aid Care Guide



# Video: Hearing Aid Care Guide

<http://heartolearn.org/tutorials/hearing-device-management/hearing-aid-care.html>

# Resources

- ❑ Advanced Bionics: Tools For Schools
- ❑ John Tracy Clinic: [http://www.jtc.org/wp-content/uploads/2015/11/Audiogram\\_What\\_Does\\_Child\\_Hear.pdf](http://www.jtc.org/wp-content/uploads/2015/11/Audiogram_What_Does_Child_Hear.pdf)
- ❑ Hear To Learn: “Understanding the Audiogram” <http://www.heartolearn.org/tutorials/hearing-loss-management/understanding-the-audiogram.html>
- ❑ Future webinars: <http://heartolearn.org/communities/learning-together.html>

# For questions or to request materials, please visit our website:



Building Success  
One Step at a Time  
Hearing-Language-Literacy



## “Hear to Learn”



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