

A Guide to **Select Picture Audiometry** *for Hearing Screening*



Tricia K. Mikolai
Jennifer Duffey, MS, CCC-A
David Adlin

Select Picture Audiometry

The level at which a patient can understand spoken language can be a valuable screening tool, especially with young children.

Select Picture Audiometry is a unique approach that can screen the hearing of children as young as three years old.

Select Picture Audiometry can be used to determine the “speech reception level” of children and has been an accepted screening procedure in the clinical and school settings for over 20 years.



Hearing disorders in children

Hearing disorders entail different effects on children and adults.

An adult may have sustained a mild hearing loss of 35 dBHL without being conscious of the disorder. That is because an adult has more experience with the redundancy (i.e., information abundance) of speech and is able to add non-heard parts of words or even sentences automatically and unconsciously.

With children, particularly at the preschool age, a similarly mild hearing loss can be critical for further speech and language development. The capability of realizing the complicated rules of speech and transferring them to the child's own development of speech can be highly restricted.

Reasons for a hearing loss can be:

- malfunction of the outer or middle ear (conductive loss)
- malfunction of the inner ear (sensory loss)
- malfunction of the neural pathway (neural loss)

Sensory and neural losses can be caused by many different factors, including congenital disorders, ototoxic medications, disease or infection, and exposure to excessively loud sounds.

With children, the most widespread reason for problems with hearing is a loss caused by disorders of sound conduction. Mostly this is temporary and varying within rather wide limits. The hearing loss can differ from day to day by 5 to 30 dB. Reasons for this can be:

- excessive production of ear wax
- disorder of ventilation of the middle ear
- inflammation/infection of the middle ear (otitis media)

A complement to pure tone testing

The rationale for developing a complementary testing method to pure tone audiometry was to widen the capabilities of hearing screening for children. Select picture audiometry provides another method that increases the chances of identifying young children with hearing disorders so that further prevention or treatment can be quickly administered.

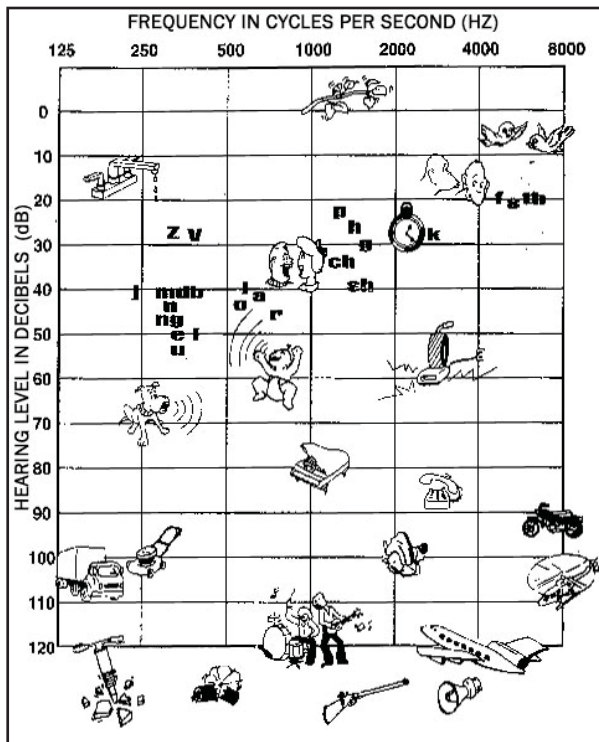
The challenge with pure tone audiometry is that children have short attention spans and exhibit problems with comprehending the directions associated with traditional tone testing.

Pure tone audiometers may seem threatening to young children and the instructions can be difficult to understand. Children may object to wearing the headphones, get distracted and forget to listen to the tones, or move around while the test is in progress. This means inaccurate test results since there is no way to be confident in the child's responses.

In comparison, speech reception screening incorporates simple, non-threatening directions. Children as young as three years old can be accurately tested.

Audiogram of familiar sounds

The following audiogram below¹ illustrates the placing of familiar sounds such as a dog barking or a telephone ringing. The hearing level in dB is plotted on the audiogram from top to bottom with the quiet sounds near the top. A range of frequencies that are important for hearing and understanding speech are plotted in Hz from left to right with the low-tones sounds on the left.



You can compare your audiogram to this example, and you will see whether the child has an actual hearing loss and how severe it may be.

¹Northern, J.L., & Downs, M.P. (1991). *Hearing in children* (4th ed.). Baltimore, MD: Williams & Wilkins.

Benefits of select picture audiometry

Select picture audiometry was specifically designed for testing preschool-aged children. It can present the hearing test as an interactive game that is easy for children to understand as well as less intimidating than traditional testing. You will also spend less time giving directions and retesting children.

How testing works

Through a headset, the child listens to a series of sentences. The decibel level of each sentences decreases by 5 dB as the test progresses (from 50 dB to 15 dB). Each sentence contains a two syllable “spondee” word which is one of the objects on the picture board.

“Show me the airplane.”	50 dB
“Point to the hotdog.”	45 dB
“Where is the sailboat?”	40 dB
“Point to the bathtub.”	35 dB
“Show me the cupcake.”	30 dB

Example of English sentences in descending decibels.

“Muéstrame el anillo.”	50 dB
“Dónde está la cabeza.”	45 dB
“Indícame el correo.”	40 dB
“Muéstrame la muñeca.”	35 dB
“Dónde está el sombrero.”	30 dB

Example of Spanish sentences in descending decibels.

The child responds to the sentence by pointing to the appropriate picture on the board. The test examiner records the results as correct, incorrect or no response (as the decibels reach a level that is too low to hear, the child may stop responding).



Example of English pictures on from a picture board.



Example of Spanish pictures on from a picture board.

Performing a test

The child will first need to learn the correct names for the pictures. This can often be accomplished with the help of a parent or teacher before the test. Start by having the child point to each picture and identify it. A small laminated sheet with the name of each object is provided to assist in the process of identifying the pictures.

The best way to prepare a child is to pretend that he/she is going to play the “Pilot Game.” This will reduce the anxiety associated with screening. Introduce the headset by telling the child that in order to help the pilot, he/she must put on the headphones – just like pilots wear – so that they can hear each other.

Explain that the pilot will ask where a picture is and he/she should point to it on the large picture board. The child should be told that the voice will start out loud and get softer, so he/she must listen very carefully. You are ready to begin.

Complete testing

Select picture audiometry is meant to provide an easy way to get an initial gage of the subject's hearing. The results of this test can flag a possible hearing loss that would prompt a more thorough examination. While select picture audiometry can be an alternative to pure tone testing when used in a "screening" setting, pure tone testing and tympanometry would provide a more complete picture of the child's hearing.

CPT code reimbursement

Select picture audiometry is reimbursable using CPT code 92583. While the reimbursement amounts vary by state and by carrier, \$36.00 is the national average per test.

The right equipment

Maico's Digital Pilot Test is an audiometer that provides both select picture audiometry and manual pure tone audiometry.

- Both English and Spanish tests are available in the unit
- The entire test is displayed graphically on the LCD screen while testing is in progress
- Using MP3 sound files for the highest level of clarity when conducting speech reception testing, you can be completely confident that the test levels are accurate throughout each sentence and neither time nor amount of usage will change the sound quality
- The manual pure tone audiometer gives you the control to manage the speed at which you present the tones and can be used without the select picture audiometry when testing older children
- An optional thermal printer is available and easily connects to the unit to provide fast test records in a variety of printout formats
- The entire system is portable using the optional carrying case and weighs about 5 lbs (9 lbs with printer)



Maico Digital Pilot Test Audiometer with accessories.

EXCELLENCE IN HEARING SCREENING **SINCE 1937**



MAICO DIAGNOSTICS • 7625 Golden Triangle Drive, Eden Prairie, MN 55344
phone 952-941-4200 • toll free 888-941-4201 • fax 952-903-4100 • www.maico-diagnostics.com