

Supplemental Appendix B. Copy of revised report, annotated to highlight improvements.

13/03/2014

Julie Twist
567 Titanic Road
New Brighton
Christchurch

Dear Julie,

Re	Jack Bean	DOB	08/01/2014
	567 Titanic Road	Gender	Male
	New Brighton	NHI Number	ABC1234

Thank you for bringing Jack in to have his hearing tested on 4 March and 13 March 2014. Jack came to us because he did not pass his newborn hearing screen.

The following report gives the results from both of these appointments. We have tried to write these in a way that is easy to understand. You will also find a copy of the medical report sent to other experts involved in Jack's care. We have added a glossary to this report to help you understand the terms used.

Outlining what parents can expect from the report.

Included a summary earlier in the report.

What did we find?

Use of question headings throughout the report to help parents find the information they want to know.

Our results show us that Jack has "near normal hearing sloping to a moderately-severe hearing loss" in both ears. This means that Jack has normal or near normal hearing for [low, bass-like sounds] in both ears. For [higher, treble-like sounds], Jack's hearing drops to a moderately-severe hearing loss in both ears. Our results point to this being a [lasting, or permanent], hearing loss.

Explanation of the configuration of the child's hearing loss by explaining frequency in common language.

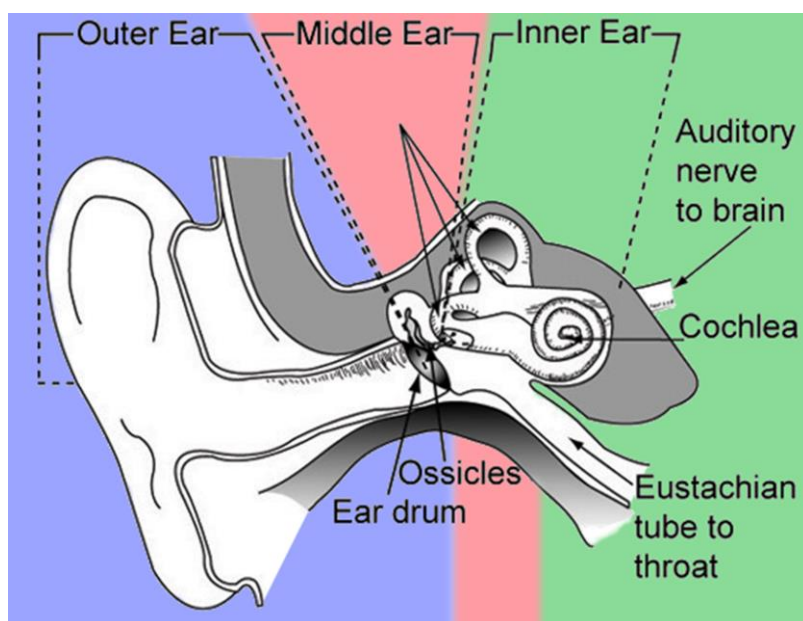
Explained that the hearing loss is permanent using common words instead of the term *sensorineural*

Please see the hearing chart on page 5 to help you understand how we describe hearing loss.

Can you tell me the results of each test?

We have given the results of each test in the order we did them at the first appointment. We have also colour coded each test to match the picture below. This helps show what part of the ear each test was looking at.

Explanation of how the results will be ordered; linking of appointment to report.



Inclusion of a figure to label the different parts of the ear and use of colour to distinguish the outer, middle and inner ear. Figure is clearly labelled and surrounded by relevant text.

Headings are coloured to match the figure above to show what part of the ear each test is assessing.

Image obtained from Wikimedia Commons and edited with the help of Dr Greg O'Beirne

1. Otoscopy

First, we looked inside Jack's ears. Both of his eardrums looked normal and healthy. We found that this was the same at both appointments.

2. Tympanometry

[Next, we checked how Jack's eardrums were working. To do this, we placed a rubber tip inside his ear and sent a small puff of air down the canal. This made Jack's eardrum move back and forth.] Our machine measured this movement and drew a shape like a ["mountain"]. [We call this a type "A". This told us that both of Jack's eardrums were moving normally on both days we tested them.]

3. Acoustic reflex testing

With the rubber tip in place, we also tested a reflex in Jack's ears. The reflex causes two tiny muscles in the middle ear to tense in response to sounds. During this test, we play different [beeps] to see if they trigger the reflex. This can give us helpful information about Jack's hearing. At the first appointment, we played beeps at a "screening" [volume]. This volume should [trigger a reflex] if the hearing is normal. In Jack's case, we found that this volume was not [loud] enough to trigger the reflex in either ear. This result agrees with Jack having a hearing loss. We did not do this test at the second appointment.

While Jack was asleep, we tested his hearing in two ways:

Use of language common to the appointment to help parents connect their experience during the appointment to the information contained in the report.

Clear explanation of what this result actually means.

Example of test procedure explanation.

Use of common language to explain a challenging concept.

4. Distortion Product Otoacoustic Emissions (DPOAEs) test.

This test measures how well a part of Jack's inner ear works. To test this, we [play different beeps] into Jack's ear. If everything is working normally, we can [measure soft sounds back from his inner ear]. It is important that children are very [still and quiet] when we do this test.

Reinforcement of information parents are likely to have been told during the appointment.

On the 4/3/14, we did not measure any sounds back from Jack's inner ear when we played the beeps. This result suggests that at least some of Jack's inner ear is not working normally.

5. Auditory Brainstem Response (ABR) test

Use of phrase audiologist likely to have used during appointment.

The ABR is our [most reliable way of testing hearing in infants]. To start, we put some sticky pads on Jack's head. We then played Jack some sounds through both earphones and a small [box behind his ear]. The sticky pads helped us detect whether Jack heard each sound. We found that:

Explanation of the meaning behind the term "near-normal."

Use of a lettering system to help differentiate the ABR results.

- a) Jack could hear low pitch, bass-like tones (500 Hz) at a normal or near-normal loudness in both ears. [Unfortunately, we cannot say for sure that Jack's hearing is normal at this pitch. This is because the ABR cannot measure hearing at these very quiet levels. At worst, Jack may have a mild hearing loss at this pitch. As Jack gets older, we will be able to do other tests to give us a better idea of his hearing at this pitch.]
- b) We needed to increase the loudness to a "moderate" level for Jack to hear middle pitch sounds (1000 Hz and 2000 Hz) in both ears. [This is about the same loudness as a dishwasher, or people talking in a quiet room.]
- c) We needed to turn the volume up to a "moderately-severe" loudness for Jack to hear high pitch sounds (4000 Hz) in both ears. [This is about the same loudness as a vacuum cleaner or people talking in a restaurant.]
- d) Jack's hearing was similar when we played sounds through the box and the earphones. This means he has a [sensorineural] hearing loss. This is a [permanent] type of hearing loss.

Inclusion of both the actual frequencies tested and a common language explanation.

Inclusion of personalized common sound examples to offer some context to these value judgment descriptors of the HI.

Use of both technical audiology term and common language. Bolding to reinforce permanent nature of HI.

In summary:

1. Both of Jack's ears looked normal and healthy.
2. Jack's eardrums were moving normally in both ears.
3. Jack had muscle reflexes in both ears. However, we needed to make the volume louder to trigger them.
4. Jack's inner ear did not produce its own sounds to all of the beeps played.
5. For Jack to hear middle- and high-pitched sounds we needed to increase the volume.

Color-coded and numbered summary of each of the test results.

The Audiogram- what does it show?

On page 7 you will find Jack's audiogram. This shows the softest level Jack could hear at different pitches.

- Each circle shows how well Jack heard when we played sounds to his right ear through earphones.
- Each cross shows how well Jack heard when we played sounds to his left ear through earphones.
- The triangles show how Jack heard when we played sound through the box behind his ear.

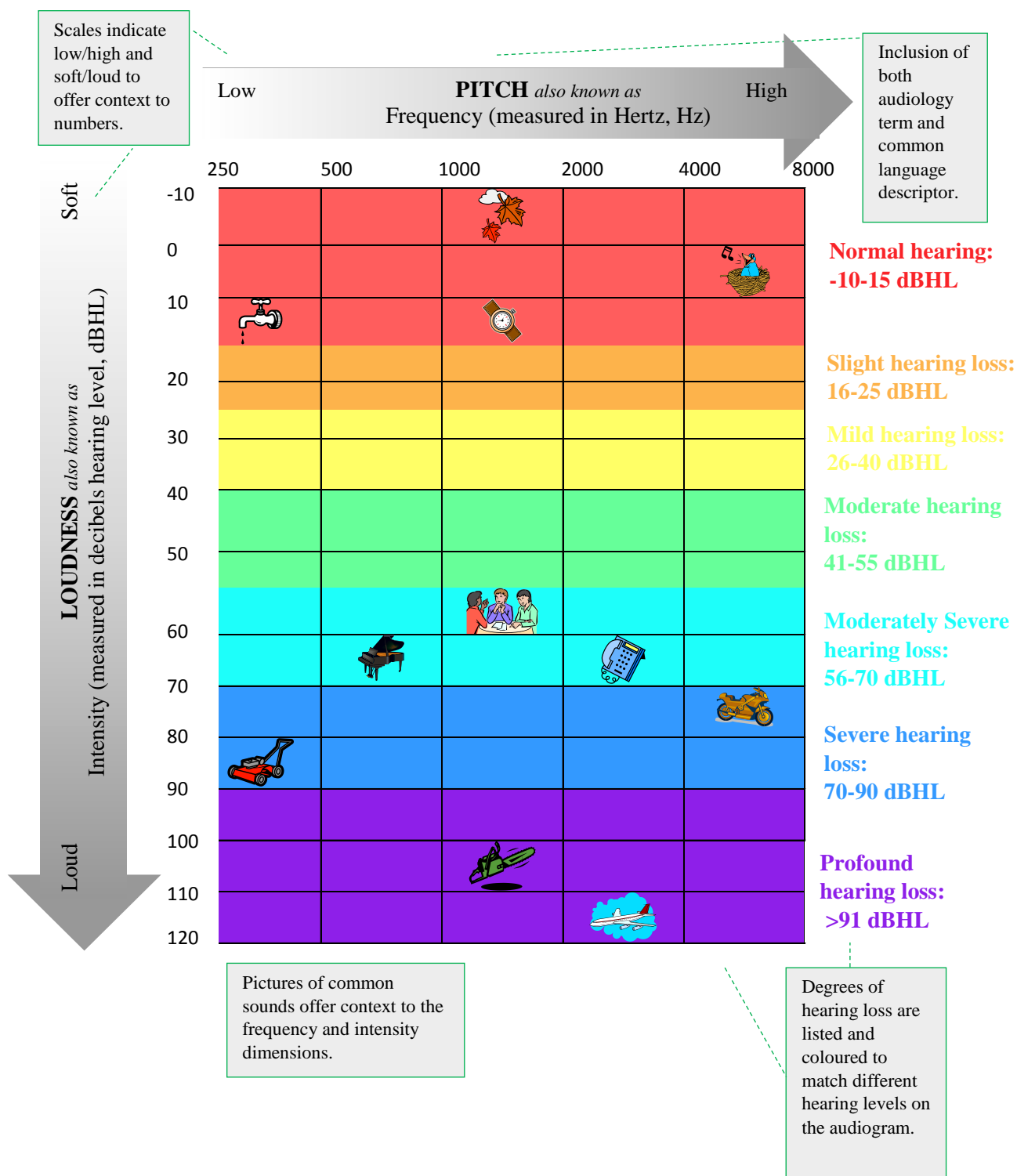
Explanation of the symbols used on the audiogram.

Explanation of frequency and intensity axes on audiogram using common language.

The numbers along the side of the graph show how loud the sound is. Loudness is measured in decibels. Very quiet sounds are at the top of the graph, and very loud sounds are at the bottom. The numbers along the top of the graph show the pitch of the sound. Pitch increases from the bass-like sounds on the left side of the graph to the treble sounds on the right side.

The picture below shows this information. Different levels of hearing loss are also shown on the right hand side of the graph. We have included some common sounds that are at a similar loudness level. [For example, a person with a severe hearing loss may not hear the phone ring.]

Example of how individuals with different degrees of HI may not be able to hear particular sounds.



What do we do now?

Another summary reiterates the main finding.

As you have read, [Jack has a moderate to moderately severe hearing loss in the middle to high pitches. This is a lasting hearing loss.] [Because of this, Jack may not develop normal speech and language without the help of a device like hearing aids.]

Brief mention of what this result may mean for Jack.

Therefore, we have referred Jack to the Children's Hearing Aid Services. They will contact you to arrange a time to talk about the best way we can help Jack to hear. An Adviser of Deaf Children will also be in touch with you. All of these people are here to support Jack and your family in any way we can.

Where can I go for more information?

Outlines the next step in plain language.

You can call the hospital if you want to talk about any of these results further. You can also have a look at some of these helpful websites:

Web addresses and brief overview of three sites where parents can go for further information

1. <http://www.audiologyonline.com/articles/what-parents-should-know-about-1163>

This link helps answer some common questions that parents have after finding out their child has a hearing loss.

2. <https://www.entnet.org/content/childrens-hearing-loss>

This link explains the different health professionals you may work with.

3. <http://www.asha.org/aud/Facts-about-Pediatric-Hearing-Loss/>

This link gives good facts about hearing loss in children. The website supports the facts with research results.

You will be given plenty of extra information and resources during your next few appointments.

Reassurance that additional information will follow.

Kind regards,

Ashleigh Donald
Master of Audiology Student