

To date, cochlear implant (CI) fittings have been completed in the clinic and then after a period of real-world use, the recipient returns for re-fitting. At that time, audiologists rely on feedback from the recipient or parent/caregiver on how, where and when the device was used. There is only so much that can be learned by asking a recipient about his/her hearing experiences. It can often be difficult for someone to remember their experiences day to day and over an extended period of several months. Even “good reporters” often fail to note many of the pertinent details that are needed to help improve their experience. This is often true even for older adult recipients, and especially true for small children who are often with different caregivers throughout the day.

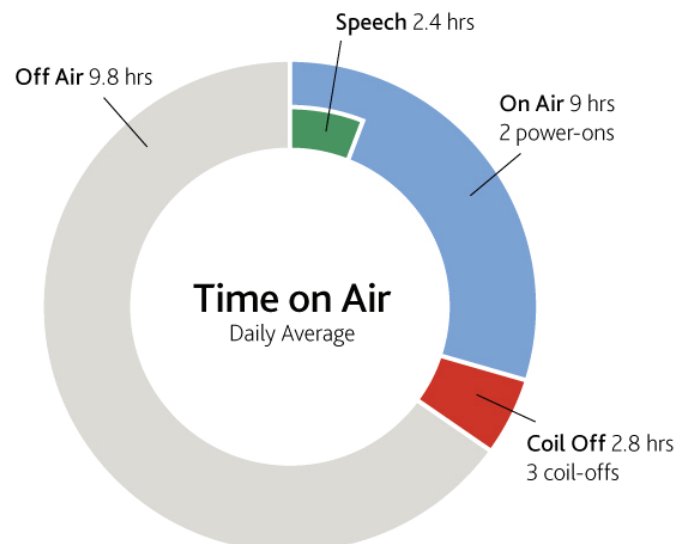
To address this issue, Cochlear has incorporated data logging into the Cochlear™ Nucleus® 6 System. According to Fabry, “Data logging is designed to provide additional, objective information to the hearing instrument fitting. In combination with directed questions to the recipient, it allows for a less ambiguous interpretation of his/her comments and complaints.”¹ It fills the knowledge gap with reports that paint a more complete picture of each recipient’s hearing experiences, and can ultimately help provide better fittings for optimal performance.

With data logging, questions that may have been nearly impossible to answer previously are now right at your fingertips, including:

- Which program is being used most?
- What sound environments are the recipient in?
- How is the recipient using programs on the processor?
- Is the recipient making adjustments to the volume and sensitivity settings?
- What accessories are being used and how often?

When data logging is presented clearly, themes can emerge that allow the clinician to make the right adjustments for individual recipient needs. According to Hockley, this can make the fine-tuning process easier and more efficient, saving valuable clinical time.²

With data logging, recipients can feel confident that their clinician is getting the most accurate information on their processor usage for fine-tuning that will optimize their hearing experience.



1. Fabry, David A., and J. Tchors. "Data logging: A clinical tool for meeting individual patient needs." *Hearing Review* 12.1 (2005).

2. Hockley, Neil S. "What Data logging is Not." *Hearing Review* (2006).

DATA LOGGING IN THE NUCLEUS 6

TIME ON AIR

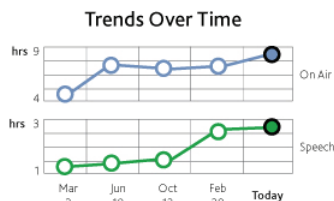
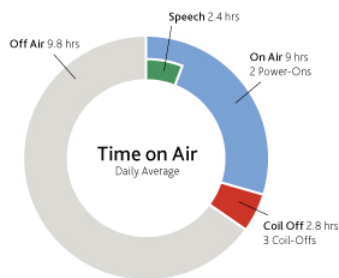
We know that regular use of a CI system is needed for recipients to achieve their hearing goals. One of the most important questions clinicians ask is, "Has the recipient been using his device?" The Time on Air chart gives you the answer. It tells how many hours per day the recipient has been listening with his device. This is averaged since the last clinic visit. The chart represents a 24 hour clock, and the blue is the time on air. So if it's less than 6 hours per day on average, you'll see less than a quarter filled, if it's 12 hours or more then more than half is filled and so on. Also on this data log, you can see the average number of hours the recipient has been in a speech environment since the last clinic visit. You can also see if the coil is off throughout the day which will decrease the average time on air each day. Finally, as you accumulate data on the recipient, you can see the historic or trending data across the past five programming visits.

WHY IT MATTERS

This data log supports you in counseling your recipient or the parent/caregiver on appropriate amount of device use each day. It provides valuable clinical insight to discuss why the coil may be coming off, why the device is not being worn and how the pattern of usage may be changing over time.

IS THE DEVICE BEING USED?

Understand system usage and track changes over time.



SCENES

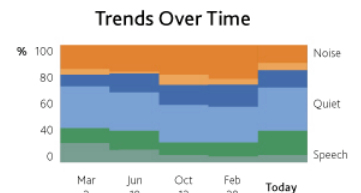
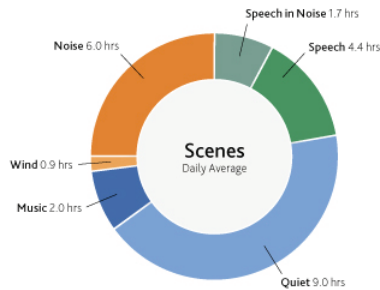
Knowing what listening environment recipients are experiencing during the day can help in counseling and in customizing settings for best outcomes. The scene data log provides the average time per day (since last clinic visit) a recipient is in the various sound environments; Speech in Noise, Speech in Quiet, Quiet below 50 dBA, Music, Wind, and Noise. As you accumulate data on a recipient, you can view the historic trending data between the last five programming sessions. You can also see how loud the environment is on average. The Loudness chart shows you the split of sound levels the recipient has been exposed to since the last clinic visit. It ranges from < 40 dBA, 40-50 dBA, 50-60, 60-70, 70-80, and greater than 80. All measurements are calibrated to the dBA scale, and sampled every second.

WHY IT MATTERS

This data log contains information about the recipient's listening environments throughout the day. It provides the clinician valuable insight on where the device is being used outside of the clinic. This information can guide counseling and programming adjustments. The ability to trend time spent in different environments provides insight to the recipient's lifestyle and how it may change overtime.

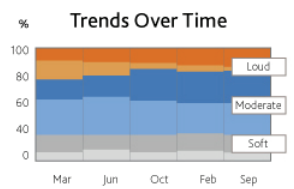
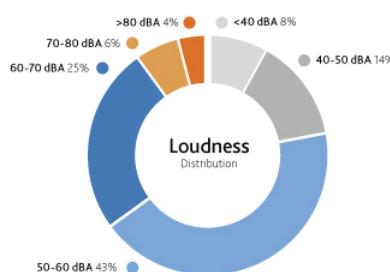
WHAT IS THE AUDITORY ENVIRONMENT?

Understand how much time is spent in each scene.



WHAT LOUDNESS RANGES ARE BEING USED?

Understand how much time your patients are spending in each loudness range.



PROGRAM USAGE AND VOLUME/ SENSITIVITY SETTING

Understanding a recipient's preferred settings can help with the fitting to maximize outcomes. How the recipient is using his processor is something clinicians often need to understand but haven't had a reliable way of knowing ... until now. The most common questions are, "Which programs is the recipient using?" and "How is the recipient changing volume and sensitivity?"

The Program Usage chart shows the split between the different recipient programs. It shows the average time per day – since the last clinic visit – that the recipient has been in each of the programs. In this way, you can see which program was used most often and whether a program wasn't used at all.

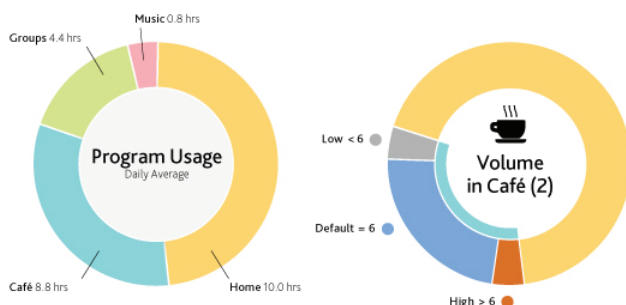
On the same chart, rolling the computer mouse or cursor on a program shows the use of Volume for that program. It indicates the time spent below default Volume or above default Volume, and on default – clinically programmed – Volume, i.e., whether the volume is unchanged. You can also view the sensitivity setting.

WHY IT MATTERS

Knowing a recipient's preferred or most frequently used program helps you understand if the recipient is making the most of his system. Knowing if volume and sensitivity have changed in each program can tell you if something needs adjusting, such as the need to make programming levels louder or softer.

WHAT PROGRAMS ARE BEING USED?

Identify programs most used and fine-tune settings.



ACCESSORY USE

Use of Assistive Listening Devices can help some recipients greatly in difficult listening situations. With data logging, you can now monitor the use of accessories like telecoil, FM systems, and other audio inputs to know if the recipient is getting the best of his Nucleus 6 System.

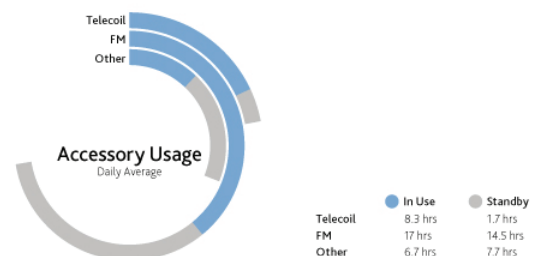
The Accessory Usage chart gives you a quick overview of three different accessories: built-in telecoil, ear-level FM receivers, and other connected accessories like personal audio cables and lapel microphones. The amount of time in use – averaged per day since the last clinic visit – is shown in blue. And the time in standby for each accessory is in grey. For the telecoil it represents AutoTelecoil ON but awaiting a signal; for FM and other accessory this represents the accessory connected but a signal is not detected. For ease of monitoring, the most used accessory is scaled to fit the three quarter circle, and all others relate to it – in that way, you can see which accessories are used most frequently. A mouse rollover any of the segments will show you the number of connections over this period – i.e. approximating the number of uses in this period.

WHY IT MATTERS

With the Accessory Usage data log, you can see if the child's FM system has been used as anticipated or if there is an opportunity to counsel on accessory usage to enhance recipient satisfaction in specific environments.

WHAT ACCESSORIES ARE BEING USED?

Understand accessory usage in both standby and usage modes.



VIEWING DATA LOGS

The data logging dashboard is presented for quick and intuitive access to the most important information on where and how the device is being used on a daily basis. By having the charts side-by-side, you're able to compare between the data logs easily and look for patterns. For bilateral recipients, the dashboard is laid out for bilateral comparison.

Be confident that you have the information to start your next recipient conversation with better insight.

Hear now. And always

As the leading global expert in implantable hearing solutions, Cochlear is dedicated to bringing the gift of sound to people all over the world. For thirty years, Cochlear has pioneered this technology, helping more than a quarter of a million people reconnect to their families and friends.

Along with the industry's largest investment in research and development, we continue to partner with leading international researchers and hearing professionals, ensuring that we are at the forefront of hearing science.

For our customers, that means access to our latest technologies throughout their lives, and the ongoing support they need.

That is why seven out of ten people worldwide who choose a cochlear implant choose Cochlear as their hearing partner.

Not all patients with hearing loss are candidates for cochlear implantation. Cochlear implantation is a surgical procedure, and carries with it the risks typical for surgery. For complete information regarding indications, warnings and adverse effects, please refer to the Nucleus Package Insert available at www.Cochlear.com/US/NucleusIndications

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