UNIVERSITY OF Southampton

# Music workshops for cochlear implant users
## A good practice guide

Arts & Humanities Research Council

# The value of music workshops

The value of being able to listen to music is often underestimated. Music is a powerful communicator; it enables emotion to be embodied, creates atmosphere and allows pleasure to be found and shared. Music can have an invaluable impact on a person's quality of life.

In the past deaf people were advised not to expect to be able listen to music with a cochlear implant (CI) and were not encouraged to try it but this should no longer be the case. Many CI users have found that they are able to enjoy music. However, the hardware and software limitations of the implant coupled with an impaired auditory system mean that music can sound poor in quality. There is a need to help individuals to optimise their listening skills and strategies so that they can reach their potential in relation to listening to music. Workshops provide an opportunity to share knowledge, skills, tips and experience and so can facilitate this.

There is a popular demand for workshops that focus on music, particularly from adults with memories of how music sounded before losing their hearing. The workshops which we have run at Southampton have attracted many CI users from various backgrounds and with a wide range of abilities. What's more, the positive feedback that we have had clearly demonstrates the value and significance of participating.

"When I first had my implant it [music] was one of the things I was determined to get good at..... Now I can hear music, I've got my pleasure back." CI user

"[Attending a music workshop] has rekindled an interest in music and has led to my teaching myself new (to me) music listening experiences." CI user

"I now have a new perspective of music." CI user

We encourage you to explore the potential of music workshops for CI users. Through this guide we would like to share our learning and experiences in order that you might maximise any opportunity you have to do so. We would like to share feedback from CI users that we hope will help you in the preparation and delivery of a workshop.

Within this guide we refer to the Interactive Music Awareness Programme (IMAP) which is a valuable resource designed and developed with adult CI users from the University of Southampton Auditory Implant Service and the UK National CI Users Association. The IMAP allows users to create and manipulate music focusing on specific listening skills. A series of structured sessions introduce music of many different styles and genres and gradually increase in difficulty. Each session ends with either a directed listening task or test to encourage users to explore new music and keep track of their progress. The IMAP can be found at www.morefrommusic.org.

This guide is written by different contributors for the benefit of professionals across disciplines, including health professionals, scientists and musicians. We have assumed limited knowledge in certain areas, in order to make this of value to all.

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# 1. How is music processed through a CI?

## What is a CI?

A CI is a surgically implanted device used for people with severe or profound hearing loss in both ears, who receive little benefit from hearing aids. The type of hearing loss is largely due to abnormalities in the cochlea.

A CI has an external part called a sound processor that is worn behind the ear and looks a bit like a hearing aid, but unlike a hearing aid, it bypasses the ear canal and middle ear. Instead, the sound processor has a transmitter coil that communicates with the internal, implanted device and is held in place on the scalp by a magnet.

1. Microphone(s)
2. Sound processor
3. Transmitter coil
4. Receiver/stimulator
5. Electrode array
6. Auditory nerve

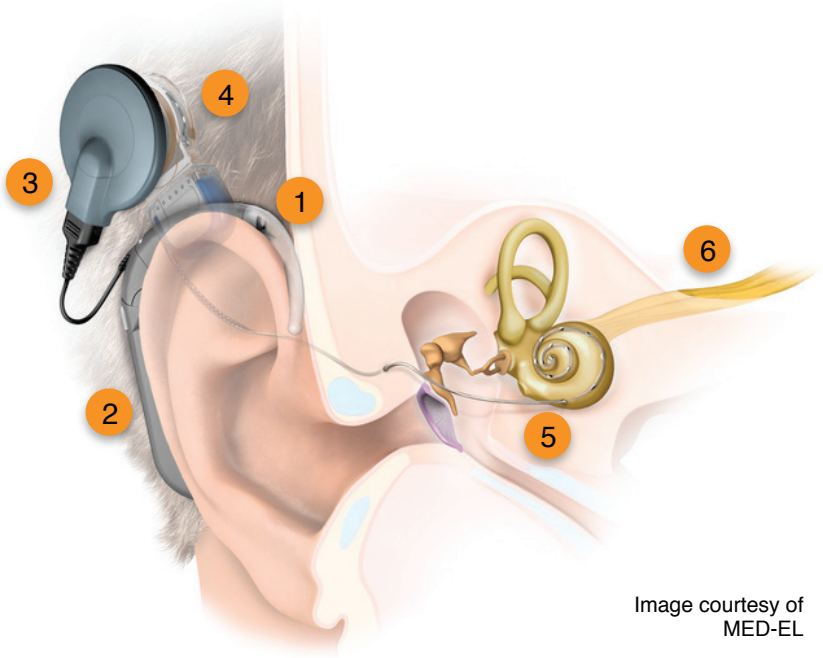



Image courtesy of MED-EL

The external part consists of:

- a microphone (or two) that captures sound and turns it into an electrical signal;
- the sound processor, which is typically worn behind the ear;
- a transmitter coil that transmits sound information using radio frequency to an implanted receiver coil and stimulator.

The receiver then stimulates an electrode array which is inserted into the cochlea in the inner ear. The electrodes stimulate the auditory nerve fibres in the inner ear using pulses of electrical current. In a healthy ear there are about 16,000 hair cells in the cochlea and these are connected to about 30,000 auditory nerve fibres. CIs typically have been 12 and 22 electrodes doing this job.

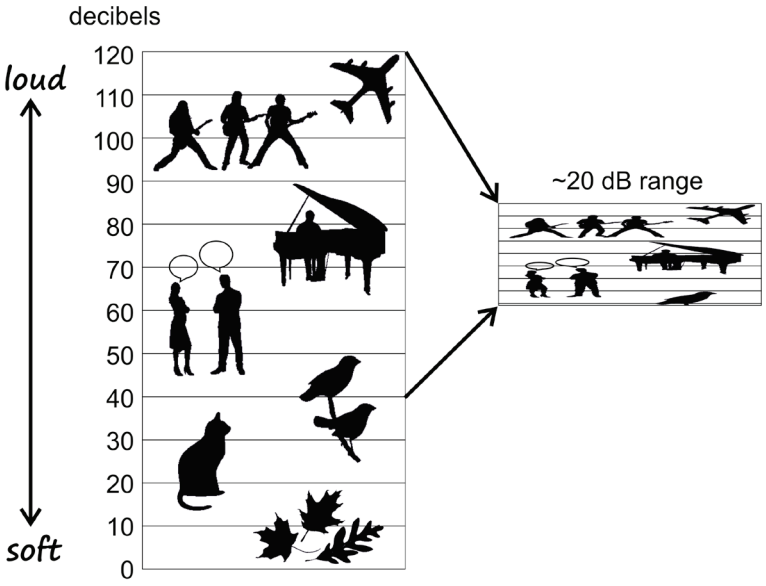
## How does hearing with a CI differ from normal hearing?

Hearing with a CI differs to normal hearing in a number of ways, not least because it involves stimulating the auditory nerve fibres artificially, with pulses of electrical current from a very small number of electrodes.

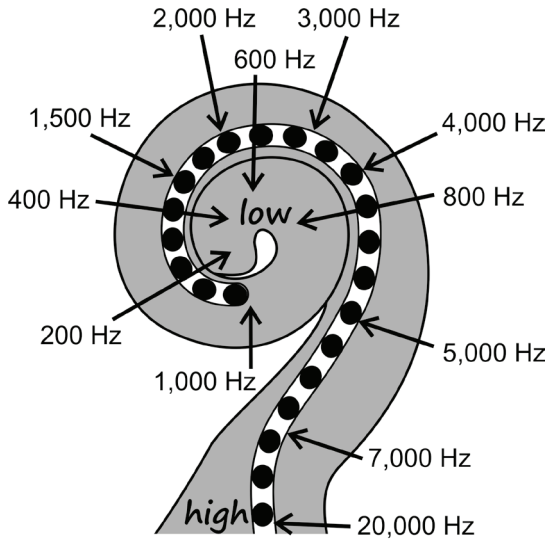
## Loudness

From the quietest sound that we are able to perceive to the loudest sound that causes pain, we typically have a dynamic range of about 120 decibels (dB). The sound of falling leaves may be somewhere between 0 and 10 dB and rock concerts can easily exceed 100 dB.

The sensitivity of a CI varies depending on the manufacturer and setting, but in general, there is a threshold below which the CI will not convey any information. For example, the sound of falling or rustling leaves may not be picked up by a CI. In addition, the range of loudness that can be conveyed by a CI is very small. It amplifies soft sounds and reduces the level of loud sounds, compressing the dynamic range to about 20 dB.




*The cochlea is a frequency analyser...*




*...a CI is inserted into the outer-most spiral*

## Pitch

The cochlea is a frequency analyser; it splits sounds up into different frequencies or 'pitches'. The outer-most spiral of the cochlea is responsive to high frequencies and the inner-most spiral of the cochlea is responsive to low frequencies.

A CI is inserted into the outer-most spiral. How deep it goes into the cochlea depends on factors such as the type of implant and the condition of the cochlea. The sound processor maps frequencies that are important, particularly for speech, to each electrode. Most CIs do not convey frequencies below about 100 or 200 Hz, as these are not deemed essential for speech.

The frequency region that an electrode stimulates in the cochlea does not necessarily match the frequency content that it receives from the sound processor. Because of this mismatch, sounds through a CI can be perceived as being too high in pitch.

Each electrode also stimulates a broad region in the cochlea and there is a lot of overlap between electrodes. This poor resolution of frequency information means that CI users can find it very difficult to discriminate between different instruments and many musical notes will sound the same.

## Rhythm

Rhythm and timing cues are conveyed by CIs very well. Studies have shown that CI users are able to perform as well as listeners with normal hearing on rhythm discrimination tasks.

# 2. What can be achieved and how might I manage expectations about listening to music?

It is important to remember that CI users vary widely both in their performance and in their aspirations of listening to music with their implants. The level of performance of the most successful performers is impressive: some are able to hear speech well in quiet and in moderate noise levels and are competent at using the telephone, even with strangers. However, some CI users (typically those who have been deaf for a long time) are aware of sounds with their implant and can hear that people are talking, but obtain very limited benefit from the implant for speech perception.

In relation to music perception, the performance of CI users also varies. CIs offer poorer pitch perception than is possible with natural hearing, but the most successful users can discriminate notes which are relatively close in pitch (down to one semitone apart within certain frequency ranges and for certain timbres). On the other hand, less able performers may have very limited pitch perception, but may still be interested in music and able to perceive rhythm, thereby offering an opportunity for enjoyment of music.

The majority of implanted adults are 'post-lingually' deaf (that is they were deafened after the acquisition of speech and language), are familiar with music and may have a very good memory of it. However, there are also implanted adults who were born deaf or lost their hearing early in childhood and had very limited exposure to music prior to implantation.

The aspirations of post-lingually deafened adults in relation to music listening are varied but are often influenced by their experience of music pre-implant. Many adults would like to be able to enjoy their old favourites again and the extent to which this is possible will depend on the characteristics of the music, their performance with their implant and their tolerance of imperfections in the sound quality. Others may have specific targets such as to sing in tune again and this is unlikely to be realised by attending a workshop (if at all).

A useful method of managing expectations prior to the workshop is to send a questionnaire asking participants what they would like to achieve during the workshop and only include targets that are likely to be realised. At the very least, participants should be aware of the content of the workshop when they sign up for it in order to avoid disappointment.

For those who are pre-lingually deaf, expectations may be lower but at the same time less predictable than for those who are post-lingually deaf. Workshop aims and objectives may need to be considered for this group of participants separately from those for the post-lingually deaf.

Opposite is an example of some questions which you might like to include in your pre-workshop questionnaire.

## 2.1 Pre-workshop questionnaire

Q1. In terms of listening to music through your implant, what would you like to achieve?

Q2. What would you like this workshop to help you with (please tick)?

| I would like this workshop to help me to... | ✓ |
|---|---|
| Find ways to make listening to recorded music easier | |
| Find ways to make listening to live music easier | |
| Find ways to develop my practical skills in music | |
| Find out which types of music are easier to hear | |
| Find out which instruments are easier to hear | |
| Pick out the rhythm in a piece of music | |
| Understand how the construction of pieces of music can help/hinder listening | |
| Understand why certain sounds are easier to hear than others | |
| Learn about the music rehabilitation resources available for CI users | |
| Not sure | |

Other? Please comment:

# 3. What are the best ways to recruit CI users to a workshop and encourage attendance?

CI users will typically have rehabilitation sessions during the first year of implant use although the number and content of these may vary between centres. It is recommended that the rehabilitationist should discuss listening to music with the implant user during these sessions and encourage him/her to attend a music workshop if and when this seems appropriate. An invitation to attend can be sent out after this discussion and the individual can be confident that their clinician feels that it would be useful for them.

For some CI users a music workshop may be considered inappropriate if the individual is struggling with their implant or they would not manage well in a group situation (or might prevent others from doing so). In this case the individual may still benefit from talking through the issues on a one-to-one basis and from access to appropriate music software such as the Interactive Music Awareness Programme (IMAP) available from www.morefrommusic.org

If it is not possible or convenient to discuss music in a rehabilitation appointment, it is still possible to send out workshop invitations without prior discussion by post and/or email, but take-up may be less. It is also worth noting that take-up of workshops is greater for more recently implanted patients than for those who have been implanted for a long time, whose listening habits have already been established. Nevertheless, invitations sent out to experienced CI users are still likely to attract interest, especially from those who are very interested in music. Workshops can also be advertised on websites and other social media if they are open to all.

> "I want to extend my ability to enjoy music and this [music workshop] shows me how far I have come and what I need to do to progress." CI user

# 4. Which musical activities could be included?

The purpose of a music workshop is to 1) enable attendees to explore which aspects of music they are able to perceive and appreciate and 2) to raise awareness of listening strategies, technology and rehabilitation resources for music. There are many aspects of music which might be explored in a workshop, but in order to equip CI users with relevant practical knowledge and skills it is important to carefully consider which to include. CI users have told us that it is helpful for them to know what the intention of each activity is, so try to make this clear when you begin an activity. Below are some popular activities we have used, along with their intended aims. These activities were rated highly as being both valuable and informative.

## EXPLANATION

An explanation (or presentation) of how music is processed through an implant, including diagrams that demonstrate the differences.

*CI users told us that they found it helpful to understand why music sounds different through their implant.*

- To help CI users understand how a CI works, to empower CI users to determine what might be easy and difficult to listen to with their implant.

"You are the first person who has enlightened me of the processing and it explains a lot as to why my memory of speech/music differs so much from my implanted hearing." CI user

*For an example PowerPoint presentation visit the 'music info' part of our website* www.soton.ac.uk/mfg

## LISTEN + RATE

Compare and rate existing rehabilitation materials. This allows common issues to arise, as well as individual differences in what CI users like and dislike, and find easy and difficult.

*You may wish to use TurningPoint zappers or a similar response system to allow participants to vote anonymously and see everyone else's responses.*

- To introduce current rehabilitation materials and to encourage CI users to be critical about the music they are listening to.
- To recognise what they and other CI users find helpful.

*For details of resources see 10.2 Music rehabilitation resources*

## TIPS

A session about different ways music can be accessed, sharing tips on: choice of environment; how to search for music with subtitles; utilising websites and audio-visual media; using accessories such as direct input.

- To point CI users to equipment, resources and websites that they might explore independently and at their own pace.
- To help make music more accessible and enjoyable, therefore reducing the risk of CI users becoming disheartened about listening to music.

*For tips and suggestions see 10.1 Tips for listening to music with your cochlear implant*

# What musical activities could be included?

## PRACTICAL

Practical music-making activities with tuned and untuned percussion instruments.

- To explore different sounds and textures with the visual aid of musical instruments and props.
- To encourage listening to other performers in the group.
- To demonstrate how short patterns can be combined and layered to create interesting music.
- To facilitate CI users being part of something musical.
- To encourage fun and creativity through music.

*See example musical activities page 11-12 for sample ideas*

## LIVE MUSIC

A small live music performance, or a DVD of live music with subtitles and clear sight lines between the performers and audience.

- To demonstrate the impact of visual cues.
- To identify the challenges and benefits.
- To encourage CI users who may be anxious about attending live music performances.
- To exchange strategies and share knowledge about listening to live music.

*People love the opportunity to hear live music. You may want to approach universities and colleges for student musicians who are keen for performance opportunities.*

## SOFTWARE

Introduce interactive music software by giving a practical demonstration and letting CI users try this out.

- To allow CI users to manipulate and control music that they are listening to.
- To encourage CI users to be creative through music, playfully exploring sound within set tasks.
- To help CI users identify what is easy and difficult to listen to.

*You may want to use our IMAP found at morefrommusic.org.uk, or for details of other resources see 10.2 Music rehabilitation resources*

# Musical building blocks

Without practice or experience of listening to music through a CI musical textures can be very difficult to differentiate and understand. Indeed, even relatively simply constructed music can be overwhelming.

One way of helping CI users to engage with complex musical textures is to explain that music can often be broken down into different parts or 'musical building blocks'. Most music is built from different musical layers, for example the melody line, accompaniment, bass line and rhythm track, which are played by particular instruments (e.g. flute, guitar) or instrumental groups (e.g. violins).

The construction of music can be compared to that of a building. For example rubble and brick form the foundations of a house in a similar way that a drum kit pattern provides the rhythmic foundation for a pop song. It is how sounds are combined that is the most interesting aspect of music rather than individual parts, which are often rather simple.

Helping CI users gradually build up the different instrumental/vocal/percussion lines (or building blocks) in a piece of music can help provide a better understanding of how different music is constructed. Practical music exercises or software applications such as the 'Mixer' applications included in the IMAP give CI users a better chance of differentiating melody lines and understanding how music is constructed. Comprehension can aid appreciation and enjoyment. Being able to manipulate the sounds can also lead to a sense of empowerment and of a sense of taking back control of the sound one is hearing.

When choosing music activities, it is important to remember that in order to appreciate music, you do not need to be able to accurately hear melody - melody is not essential. However, it is easier for a CI user to distinguish the shape of the music when the pitches are further apart. Rhythm and timing cues in general are conveyed very well by an implant.

Music that tends to work well for CI users includes music with:

- Clear and large changes in pitch
- A clear pulse and distinctive rhythms
- A simple arrangement with few instruments playing at the same time

# Example musical activities

Below are some examples of musical activities that we have used in workshops. Each of these can be used as a basic idea and adapted to a different theme or style.

**Heartbeat**

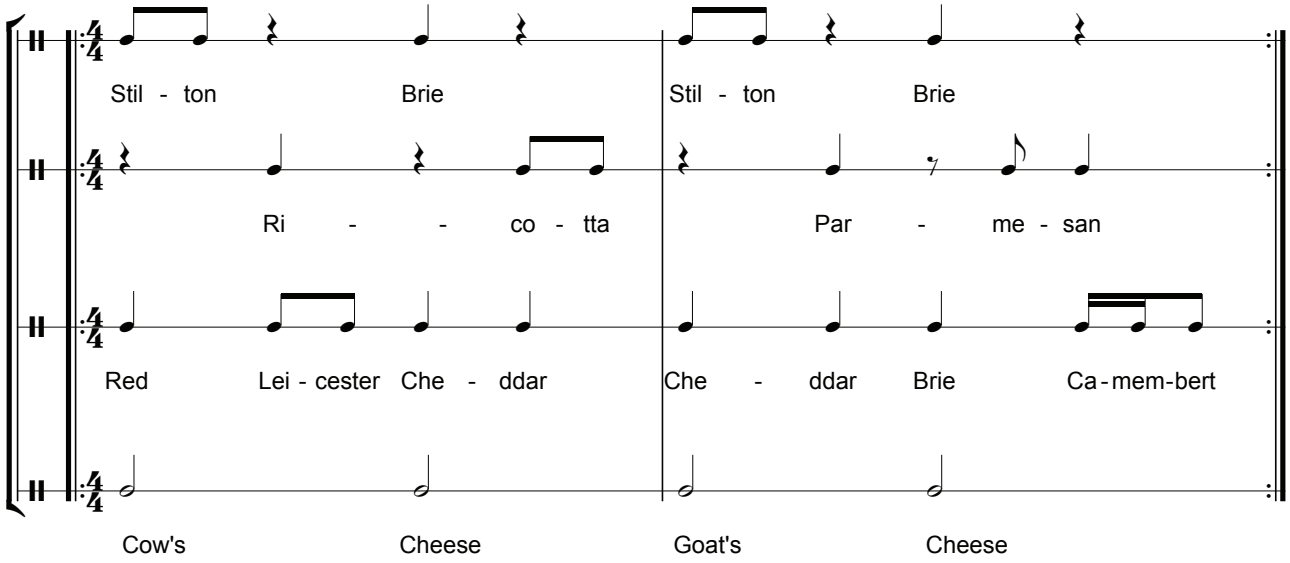
It is helpful to begin with an activity that is quiet and encourages listening. For example invite everyone (CI users, significant others and staff) to sit in a circle, making it easy to observe each other. Allow everyone to choose a drum or small piece of percussion. Ask each participant to play two beats like a heart-beat on their drum, passing this heart-beat rhythm around the circle, one person at a time. The heart-beat tempo will encourage everyone to create a slow tempo.

**Building up gradually**

Use the rhythm of words to teach participants simple rhythmic patterns, such as the cheese rhythms below. This technique of vocally articulating rhythms to learn patterns is sometimes called 'rhythm-speak'. You may wish to use graphic scores to demonstrate what you'd like them to play (a graphic score is shown on the next page). Depending on the ability of the group you may decide to teach only one or two of the lines below. Once confidence is established you can build up a piece of music with the different patterns, demonstrating how music can be gradually built from different 'musical building-blocks'.

**Cheese Rhythms**

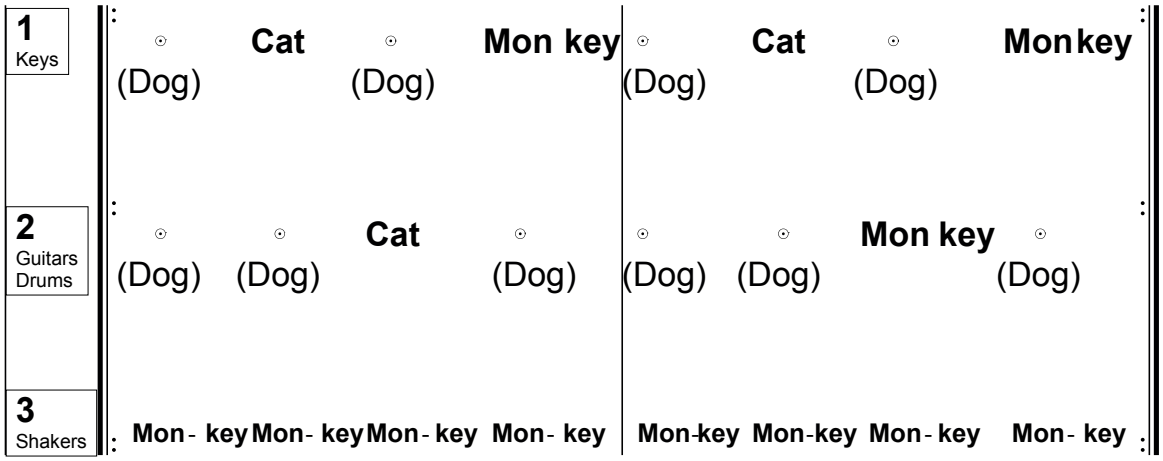
♩ = circa 110



**Introducing different styles**

Continuing with the technique of rhythm-speak you can teach various different styles and explain to participants how the pulse and patterns are often different, with sounds that are 'on the beat' and sounds that are 'off the beat' as below. Recognising these patterns in the rhythm section of a musical ensemble may help CI users identify patterns and piece together what they are hearing with their implant.

# Reggae




**Real time mixing**

If you have a band of musicians available, provide them with music for each of their parts (drums, bass, guitar, vocals and perhaps another instrument such as a flute). Choose a familiar piece of music, for example, "Hey Jude" and get the band to begin playing. Ask the CI users to start and stop various members of the band until they have a mix of musicians which is to their preference. As much as possible, try to make it so that the musicians are playing all of the time with few bars rest, to enable this concept to work.

# 5. What else is important to consider?

**Venue**

It is important to find a venue that prompts a feeling of safety, where nobody feels overly exposed. Try to choose a space that is quiet, avoiding rooms that have long reverberation times or lots of background noise. It is useful to be able to seat everybody in a semi-circle, to enable lip-reading and to optimise observation of each other. You may wish to use a venue that has computers or the capacity for laptops to be set up with internet connection.

**Participants**

We recommend a workshop size of about eight CI users, inviting them to be able to bring a significant other with them if they would like to. The abilities of CI users vary considerably and newly implanted users may need at least 3 months to get used to sounds through their implant before trying a music workshop.

**Staffing**

When using computers, it is helpful to have sufficient staff around to troubleshoot and to help CI users with any accessories they might use. Make sure that staff are clearly identifiable and try not to outnumber the CI users present as they may feel unconfident performing music to a large audience. Encourage staff and significant others to join in with practical music activities.

**Number of workshops**

It is helpful to have more than one workshop so that CI users can come back to report their successes and discuss issues that arose for them. It is important to leave some time between workshops to enable CI users to try out what has been considered.

**Length of workshop and breaks**

Listening to music can be effortful and tiring for a CI user, especially at first. Activities need to be short and breaks should be plentiful. It is difficult to predict an optimum length of time for each activity, as this will depend on the difficulty level of the activity and the musical and listening abilities of the CI user. Therefore it is wise to schedule breaks to pace everyone, and to allow participants to get to know each other. Including breaks, you might plan your workshop to last two to three hours maximum.

**Musicians**

Try to choose instrumentalists who provide clear visual cues. For this reason acoustic instruments may be preferable to electronic. If possible, you may wish to video and project a close-up image of the musician playing. Musicians should be sensitive to the needs of the CI users. It is important to brief musicians that music sounds different through a CI, particularly pitch and timbre, and therefore they should expect to hear critical comments about the quality of their sound!

**Experience of music**

Be aware that your workshop participants may have very different experiences of music. Those who are pre-lingually deaf, with no experience of music, will have few references to assist them in recognising different sounds. CI users who have been deafened might be familiar with a certain era or style of music that they are keen to explore. For the purpose of inclusion, it is sensible to assume that previous experience of music is limited and therefore to provide participants with background information and context about any pieces of music used in the workshop.

**Varying ability**

To avoid participants becoming distressed and to meet the needs of each CI user, you may consider providing separate workshops for those who are pre-lingually deaf and those who are deafened. Similarly, you may wish to provide different workshops for new CI users and more experienced CI users. If this is not possible, try to make sure you acknowledge the differences that may exist and help everyone to feel included.

**Arrival time**

It is recommended that you give participants an arrival time thirty-minutes before the workshop begins. This allows time for everyone to feel settled and allows for conversation and mingling to take place.

**Volume**

In our workshops, CI users preferred that the volume of the music was kept low. They were able to listen carefully to quiet sounds (such as body percussion) when there was no background noise. Try not to be tempted to use, or speak with, a loud volume.

**Sponsorship from a company**

Implant companies may be interested in this form of workshop and may wish to send someone to attend who will be able to report back to the company on what is available. The attendance of a company representative in turn offers an opportunity for CI users to interact with someone from the company responsible for manufacturing their implant and CI users often are pleased to have this opportunity.

"because we are all different, but the same so you don't feel so out on a limb." CI user commenting on meeting other CI users at a music workshop.

# 6. How can I maximise the potential for clear communication?

Even with highly performing CI users some communication difficulties are likely to remain, especially in group situations, large reverberant rooms and noisy environments.

In view of this, it is pertinent to maximise the potential for good communication. It is also advisable to have an idea of the level of performance of the individual participants and their preferred communication mode so as to gauge what level of support would be most appropriate.

If group discussion is to be included, it is necessary to think carefully about the seating arrangement and to ensure that the number of participants doesn't exceed that which can support group conversation. A horseshoe arrangement is generally suitable so that participants can see all those who may contribute to the discussion. In addition, extra equipment may be required such as a soundfield or loop system. We have successfully used a soundfield system with a limited number of individual microphones and this is helpful both to improve the sound quality but also to ensure that turn taking is maintained – participants may only speak once they have the microphone.

In large groups it is generally not possible to have a whole group discussion, but it may still be possible to give a presentation to the group. If the group is very large, speech to text may be preferable over a loop or soundfield system. Alternatively, if the participants are fluent in sign language, an interpreter may be appropriate.

The use of *PowerPoint* can also be beneficial to summarise the main points of a discussion and offer visual information to support what is being said.

With any group the lighting should also be considered. Lighting should be good and shadows should be avoided, especially on the speaker's face. Try not to stand the speaker in front of a window where the light coming through may hinder the ability to see their face.

The use of terminology and language level should be considered. Avoid using specialised terminology unless you are sure that participants are familiar with it. Straightforward explanations in simple English will help to ensure good communication, but don't forget your sense of humour – deaf people enjoy humour as much as everyone else! Also check to make sure that participants have understood what you have said before moving on to the next point.

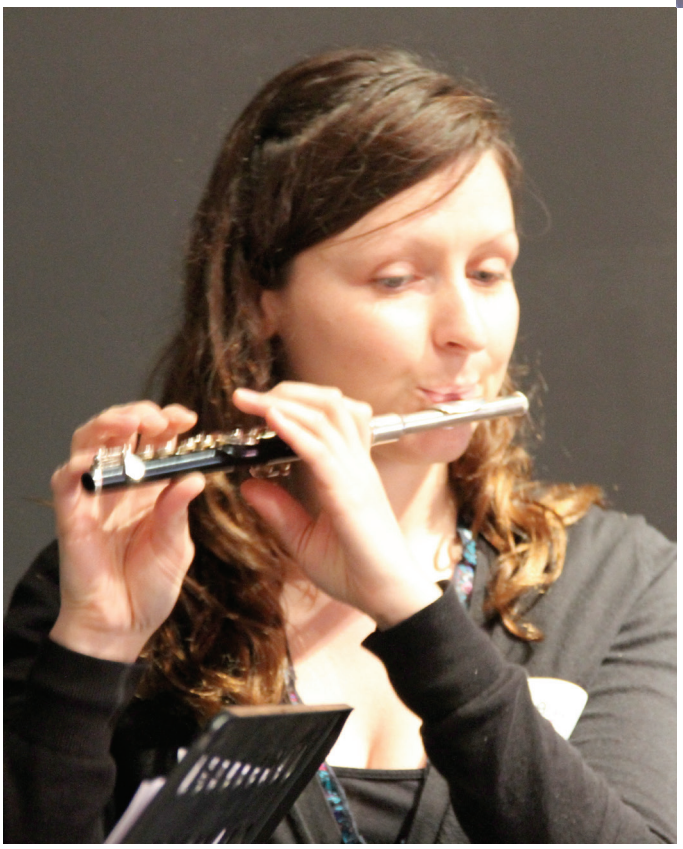
Communicating with a group of deaf people can seem a bit daunting if it is your first time. Check out this website for a light-hearted take on 'hearing people' from a deaf person's point of view.

http://tinyurl.com/lafoy7z

# 7. What difficulties might I face and how might I overcome these?

It is difficult to predict how a person will respond to music. It is important to remember that music can be powerful and emotive; be careful not to underestimate the effects of music.

In particular, music can stir memories and prompt unexpected associations. For CI users, music may evoke feelings associated with loss or frustration. There may be overwhelming sadness about how differently music sounds, loss of ability or even loss of an identity previously associated with music. There may be complex feelings surrounding the trauma of losing hearing, whether this was sudden or gradual. It is unlikely that you will know each individual' s history and therefore it is vital to be cautious and considerate.



Sometimes a particular song may upset a participant. It is impossible to predict such a circumstance, but much more important to manage this sensitively. Encourage all participants to be aware that music can catch us unaware. Try to facilitate discussion of memories that arise about music, noting the significance of music in a person's life, and acknowledging loss that is spoken of or alluded to.

Overall the group setting offers many benefits that would not be possible in a one-to-one situation. However, if the group proves overwhelming for an individual, you may wish to suggest that s/he explores music with you on a one-to-one basis, before perhaps returning to the group environment.

# 8. How might I evaluate a workshop?

Workshop evaluations are important for:
- determining the impact of the workshop on attendees;
- demonstrating the benefits to sponsors and other potential attendees;
- ascertaining how the workshop can be improved for next time.

If you want to gauge the immediate reactions of attendees following the workshop, you can do this using a workshop evaluation survey. This can be administered using pen and paper, using a computer or using a response system such as *TurningPoint*, which has the advantage of displaying the results immediately for attendees to see. Typically a workshop evaluation survey will include questions about the workshop content, delivery, impact and suggestions for future workshops.

A sample paper-based survey is shown on the following page. If you would like to, you can copy or print these pages and use the survey for your own workshop evaluation.

To evaluate the longer-term impact of the workshop, you may want to consider administering a survey on music listening habits and attitudes towards music before the workshop and again, a period of time after the workshop. This would help determine the extent of any changes.

# 8.1 Workshop evaluation questionnaire

**Workshop Content**
Q1. Please rate the workshop on the following criteria:

| **Overall, the activities were** | Strongly disagree | | | Neither agree or disagree | | | Strongly agree |
|---|---|---|---|---|---|---|---|
| Fun | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Difficult | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Interesting | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Confusing | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Useful | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Boring | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Q2. What were the most useful or interesting aspects/activities of the workshop?

**Workshop Delivery**
Q3. Please rate the workshop facilitators on the following criteria:

| **The facilitators were** | Strongly disagree | | | Neither agree or disagree | | | Strongly agree |
|---|---|---|---|---|---|---|---|
| Clear | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Helpful | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Well prepared | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Q4. Please rate the workshop on the following criteria:

| **The workshop** | Too slow/ short/ easy | | | Just right | | | Too fast/ long/ difficult |
|---|---|---|---|---|---|---|---|
| Pace | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Length | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Difficulty | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**Workshop Impact**

Q5. How do you think this workshop has helped you (please tick)?

| This workshop has helped me to... | ✓ |
|---|---|
| Find ways to make listening to recorded music easier | |
| Find ways to make listening to live music easier | |
| Find ways to develop my practical skills in music | |
| Find out which types of music are easier to hear | |
| Find out which instruments are easier to hear | |
| Pick out the rhythm in a piece of music | |
| Understand how the construction of pieces of music can help/hinder listening | |
| Understand why certain sounds are easier to hear than others | |
| Learn about the music rehabilitation resources available for CI users | |
| Not sure | |

Other? Please comment:

Q6. Did you find it helpful to meet with other CI users and why?

Q7. Is there anything that you anticipate doing differently as a result of the workshop?

| As a result of this workshop I will... | ✓ |
|---|---|
| Try new ways of listening to music | |
| Try listening to different styles of music | |
| Look for pieces of music/concerts with certain instruments in | |
| Watch and listen to more audio-visual music media | |
| Go to more live music performances | |
| Undertake/participate in more music activities | |
| Explore music rehabilitation resources | |
| Listen to more music generally | |
| Not certain | |
| Nothing | |

Other? Please comment:

**Future Workshops**

Q8) Based on your experience, please rate the following

| I would like... | Strongly disagree | | | Neither agree or disagree | | | Strongly agree |
|---|---|---|---|---|---|---|---|
| more opportunities to meet other CI users | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| to attend similar workshops in the future | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Q9) What aspects/activities would you suggest that we change or do differently in future workshops?

# 9. What resources might I need for a workshop?

This section suggests resources that you may wish to use for running a music workshop. You may wish to print this page and use it for your own workshop inventory checklist.

### General

o Sign language interpreter, note taker, lip speaker and/or speech to text reporter

o Soundfield reinforcement/loop system

o Name labels

o Flip chart and pens

o Workshop evaluation forms

o Resource packs with further suggestions for listening activities at home

o Refreshments

### Explanation/Presentation on how a CI processes music

o A computer with slides that can be projected (an example *PowerPoint* presentation is available on the 'music info' part of our website: www.soton.ac.uk/mfg)

### Listening and rating exercises

o A computer, internet connection, projector and audio playback equipment

o A response system. For example: *TurningPoint* (for use with Microsoft *PowerPoint*), available from www.turningtechnologies.co.uk

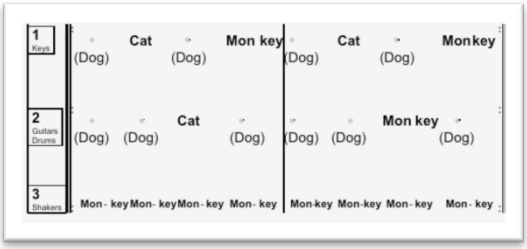
Indicating a response using a hand-held remote or "clicker/zapper" allows the individual to respond anonymously. Some systems (such as *TurningPoint*) can allow you to track individuals' responses, which may be useful for evaluating the workshop (see 8. How might I evaluate a workshop?). A cheaper, but less anonymous alternative is to use a show of hands, or raise cards with smiley faces or numbers on them.

o Access to or copies of music videos

o Access to or copies of rehabilitation materials. See 10.2 Music Rehabilitation Resources.

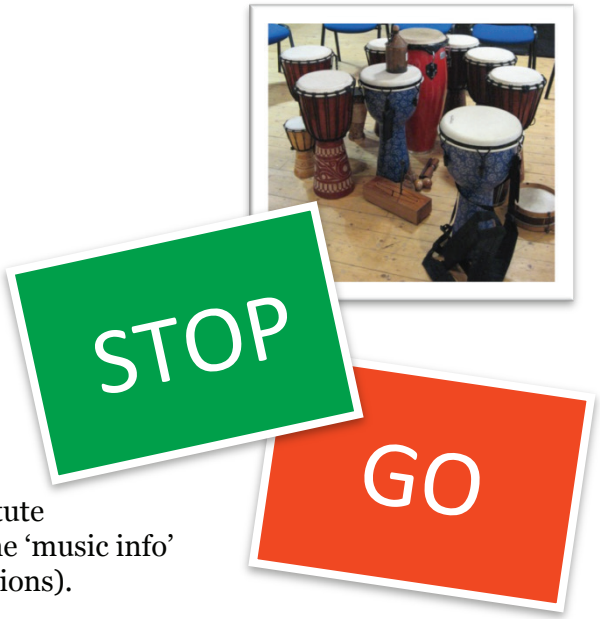
## Practical rhythm activities

o A range of drums and hand-held percussion instruments
o Music scores (these can be made accessible to non-musicians using “rhythm speak” and/or graphic scores (see chapter 3b)




## Listening to live music

o Musicians and their instruments!
o A PA system
o A music programme about the pieces being performed (with lyrics if appropriate)
o A video camera with leads and a projection screen for additional, close up visual cues
o A “stop/start” card for an audience member to switch on and off individual musicians as they play!




If it is unfeasible to arrange live music you can substitute this activity with a music DVD rating exercise (visit the ‘music info’ part of our website www.soton.ac.uk/mfg for suggestions).

## Computer-based activities

o Computers with pre-loaded software (e.g. applications from the *Interactive Music Awareness Programme,* available online at www.morefrommusic.org)
o Circumaural (full-size) headphones with audio splitters to allow more than one person to listen
o Spare CI TV/Hifi “direct input” cables*
o Various spare audio adaptors, cables and extension leads

**Direct input allows the CI user to listen to audio direct to their implant without using headphones or loudspeakers. The cables are manufacturer specific and may require additional adaptors and a specific sound processor setting. If attendees want to try using direct input, but are uncertain as to how to do this, you may want to advise that they are shown how to use these accessories by staff at their implant centre before attending the workshop.*

# 10. What is helpful to give CI users to take away with them?

It can be really useful to provide an information pack about listening to music with a CI for people to take away from the workshop. Workshops will hopefully provide inspiration for wanting to explore music further and some information and tips for engaging with recorded or live music can help provide focus for future musical exploration. Wherever possible it is a good idea to include information about suitable musical events or activities happening in the local area.

This pack might include:

- Information about how you can access music online. For example with Grooveshark, Spotify, YouTube, Vimeo, lyrics.com, etc.
- Links to internet videos of music that relates to the material covered in the workshop. For example if percussion activities are covered in the workshop then you might provide a link to Stomp's website (www.stomponeline.com) and information about local percussion groups.
- Links to videos on the internet (e.g. from YouTube) of music suitable for CI Users.
- Information about music resources currently available for CI Users.
- Tips for Listening to music through a CI. An example list of tips is given on the following page *10.1 Tips for listening to music with your cochlear implant*.
- Links to videos of specific instruments (e.g. from YouTube) to assist with instrument identification.

For an example Information Pack, visit the 'music info' part of our website www.soton.ac.uk/mfg

**Accessing music on the internet**

There are a number of fantastic music resources online that CI users might want to explore, several of which are listed on the 'music info' part of our website: www.soton.ac.uk/mfg

Grooveshark may be particularly useful, as it allows you to listen to a wide range of music for free: listen.grooveshark.com

www.lyrics.com is an excellent place to find lyrics for songs, and of course www.YouTube.com is a brilliant website to find videos of musicians performing. Be aware that the sound quality of recordings on YouTube varies tremendously.

## 10.1 Tips for listening to music with your cochlear implant

It's easier to listen to two instruments that are very different than two instruments that are very similar. For example, listening to a trumpet and a drum playing together is easier than listening to a trumpet and a trombone playing together.

Think about the place where you are listening to music. A quiet concert hall may be better than a reverberant church; a quiet living room may be better than a noisy car.

If the volume of the music is very quiet, you may miss some sounds. If the volume of the music is too loud, you may not be able to hear the sounds very clearly and they might all be at the same level.

A direct connection into your processor can help to improve the quality of the signal. Use a direct input lead if you have one available.

A song can be easier to pick up than an instrumental piece, as the words can help you to follow the music.

Being able to see the person who is performing will help you to hear the music. If they are singing, you can also try lip-reading them. If they are playing an instrument, the movements they make will help you to make sense of the music.

Try DVDs rather than CDs and watching live performances. Following the words or the music notation may help you to keep up.

Practice makes perfect! This very much applies to listening to music with your cochlear implant. The sound will improve and become more meaningful the more you try.

"Repetition sorts the mind out when it can't do it at first."
Cochlear implant user commenting on music rehabilitation.

Why not try the Interactive Music Awareness Programme (IMAP) to explore listening to different instruments and styles of music over 24 structured sessions. Available at www.morefrommusic.org

*"Easy to follow, easy to use, fun, interactive, interesting, enjoyable, addictive, useful"*
Cochlear implant users commenting on this software.

## 10.2 Music rehabilitation resources

**IMAP** [University of Southampton]

Online resource available from February 2014 onwards
www.morefrommusic.org

*"The IMAP has 24 sessions that link to stand alone applications, which enable users to create and manipulate music. The applications are introduced using written and subtitled video instructions, and each session ends with either a test or directed listening task. Users can also comment on the IMAP in a forum and give feedback."*

**HopeNotes** [Cochlear]

CD and DVD available from Cochlear
hope.cochlearamericas.com/listening-tools/HOPE-notes

*"A program uniquely developed for cochlear implant and hearing aid users designed to help improve music perception and appreciation using original songs, traditional Folk, Blues & Country styles and some familiar tunes played in unexpected ways."*

**Musical Atmospheres** [Advanced Bionics]

Available from Advanced Bionics
www.abmusicrehab.com/en

*"An online interactive program, which aims to introduce musical experiences through a positive and new method in listening with a cochlear implant. It can be used at home for the individual exploration of all aspects of music."*

**Deacon** [MED-EL]

DVD available from MED-EL
www.medel.com/uk

*"A music work for adults with cochlear implants commissioned by MED-EL and based on the story of William "Deacon" Brodie. Composed by Zack Moir."*

**Noise Carriers** [MED-EL]

CD and DVD available from MED-EL
www.medel.com/uk

*"A musical composition for cochlear implant users, commissioned by MED-EL, composed by Oliver Searle and performed by the Royal Scottish Academy of Music and Drama. Includes "Auld Lang Syne", "Afton Water" and "Ye Banks and Braes"."*

## Notes

# Notes

# Notes

# Notes

# www.morefrommusic.org.uk

"The workshops have definitely been instrumental in improving my music perception; they have encouraged my interest, concentration and further work at home." CI user

"I do think that listening to music when I find the time (rather than just having it on in the background which I do more often) has stimulated my brain for other things eg speech and environmental sounds." CI user

"I want to extend my ability to enjoy music and this shows me how far I have come and what I need to do to progress." CI user

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