Tinnitus Management
Handbook for Clinicians

oticon
life-changing **technology**

Our commitment

In the Tinnitus Management Handbook, we have taken a holistic approach to tinnitus treatment that encompasses both product and support tools. Your knowledge, skills and experience play an essential role in creating personalised treatment options for each patient's unique needs and preferences. Our aim continues to be to provide the tools and support you need to guide your patients to successful tinnitus management – whether you are an experienced tinnitus expert or would simply like to add tinnitus treatment to your practice. With you, we share an unwavering commitment to always put the needs of patients first.

How to use this handbook

The aim of this handbook is to help answer your questions and to give you the tools you need to confidently care for patients with tinnitus. The book provides a general overview and describes some of the different steps in a treatment flow. It can also serve as a helpful reference to look up specifics.

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Introduction

What is tinnitus and why is it relevant for hearing care professionals?

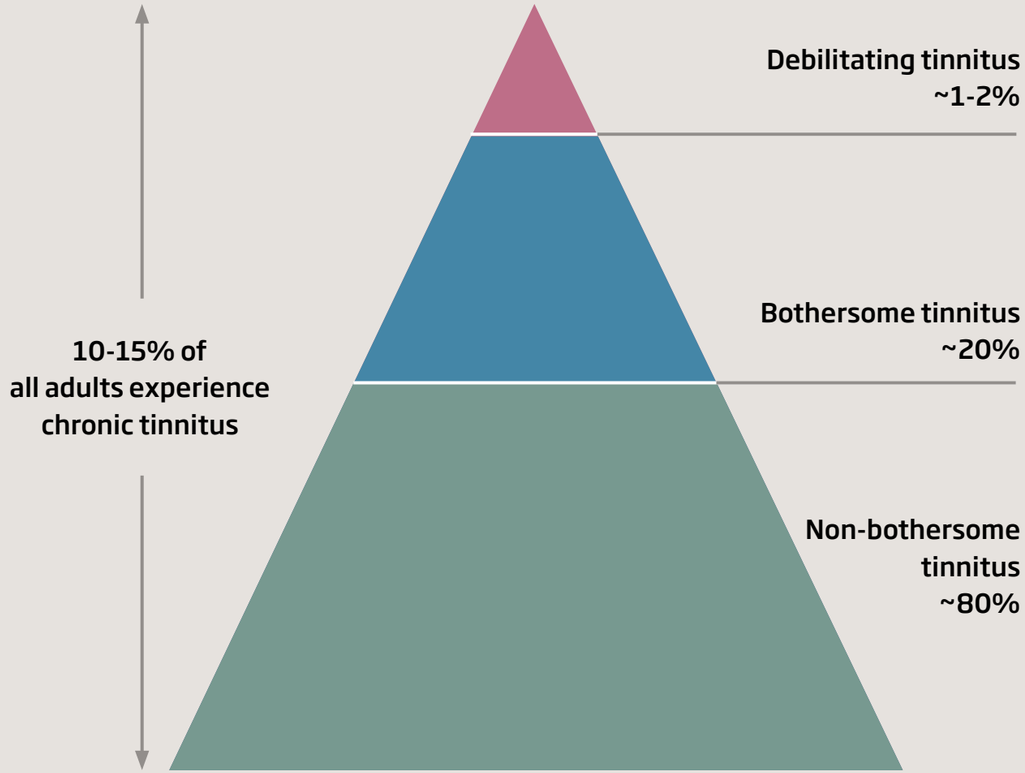
Tinnitus is defined as the auditory perception of sounds when no external sound is present. Tinnitus is a perception of sound generated somewhere in the auditory pathways (Jastreboff, 2008). It is described in many terms, for example, ringing, buzzing or hissing. There are two distinct types of tinnitus. Both are generated within the body, but subjective tinnitus is only heard by the patient, whereas objective tinnitus can be heard by others, such as a doctor placing a stethoscope over the patient's ear canal. Objective tinnitus is rare and requires medical intervention prior to any tinnitus management strategies being discussed. Tinnitus is often described as intermittent or chronic. Most of us have experienced intermittent tinnitus at some point in our lives. Chronic tinnitus is often defined as tinnitus (constant or frequently occurring) lasting longer than six months.

Globally, 10-15% of adults experience chronic tinnitus, compared to 10% of adults experiencing hearing loss (Beck,2012). Beck has suggested using the 80/80 rule to describe the overlap between hearing loss and tinnitus: 80% of people with hearing loss have tinnitus, and 80% of people with tinnitus have hearing loss. This significant overlap is one of the main reasons why hearing care professionals could benefit from learning more about tinnitus and are uniquely qualified to work with this population.

While there is no known cure, there are many treatment options that can be explored with patients so they can learn to manage their tinnitus in their daily lives.

Hearing care professionals have the medical knowledge, the compassion for helping others, and the technical skills to work with and successfully help individual patients with tinnitus symptoms.

How many people have tinnitus?



This figure illustrates the tinnitus population. Eighty percent of those with tinnitus are not bothered by it to a degree where they seek help. The other roughly 20% with chronic tinnitus tend to be bothered enough by their symptoms that it is disruptive to their daily life and general life quality. A mere 1-2% of those with tinnitus report that it is very disabling and is essentially preventing them from leading a meaningful life. The target treatment population for hearing care professionals is the 20% of people with tinnitus who actively seek help managing their tinnitus, whereas the small percentage of patients with disabling tinnitus are often referred out for additional help to other health care professionals.

Reference: Dobie, R. A. (2004). Overview: Suffering from Tinnitus.

> “ There is nothing you can do about your tinnitus ”

> “ You will just have to go home and live with it ”

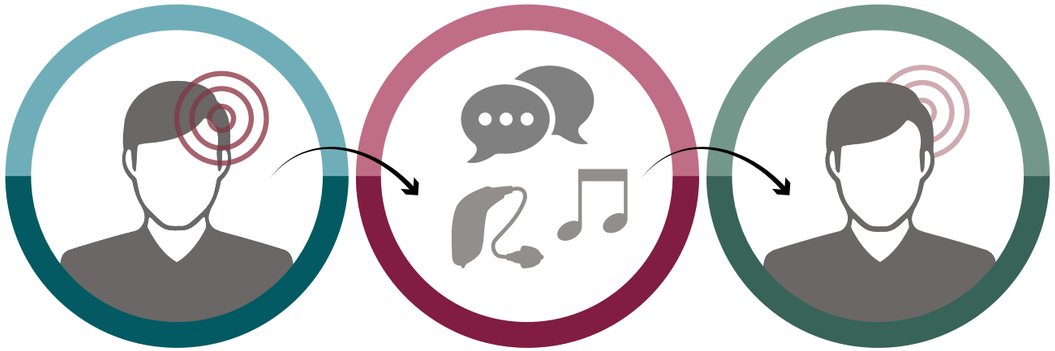
What can be done to help people with tinnitus?

If you ask a group of people with tinnitus how many of them have been told one or both of the messages quoted, most of them will raise their hands. Historically, tinnitus has been considered difficult to deal with by doctors, psychologists, audiologists and other health care professionals. Why? One reason is that we would like a way to treat tinnitus to make it disappear, and we do not have one. Instead, we need to understand the value of giving the patient the best set of tools to manage their tinnitus so that it goes from being a negative and emotionally charged sound to being a neutral presence that allows the joys of life to continue.

Treatment partnership

Tinnitus, even more so than hearing loss, requires a motivated patient and a knowledgeable professional. It takes two to treat tinnitus – you and your patient. The more you understand the impact of tinnitus on each their life, the more you can help your patient achieve their goals. Taking the time to really listen will create a dialogue that becomes a partnership with benefits for both you and your patient. For patients, this conversation helps them to accept responsibility for their treatment and helps to develop confidence that they can feel better. For the professional, setting expectations about what you are trying to achieve and asking the patient to actively participate reduces the stress of being the “expert” with the sole responsibility of “fixing” the patient. In a treatment partnership, both parties share responsibility for the success of treatment. The psychologist, Anne-Mette Mohr, who specialises in cognitive behavioural therapy for people with tinnitus has contributed greatly to this handbook by writing a piece on this topic towards the end of the handbook.

In the section, “Understanding tinnitus”, David Baguley, a long-time professor and expert in the area of tinnitus, gives his perspective on the mechanisms causing tinnitus and the various aspects of tinnitus distress experienced by the patient and how to manage them. You are not alone in helping your patient – many health care professionals, amongst them otolaryngologists and psychologists support various aspects of tinnitus treatment. The treatment partnership therefore extends to other health care professionals as well.



Core elements of tinnitus treatment

Tinnitus treatment is a combination of several important factors. An evidence- and patient-centered approach includes patient counselling and sound therapy, including the use of hearing aids for the patients who have hearing loss. Other important factors include sleep management, relaxation exercises and sometimes medication for co-existent and exacerbating symptoms such as depression or anxiety (under management of a medical doctor) (Folmer et al, 2014).

Core elements of tinnitus treatment

- Counselling
- Sound therapy
- Amplification
- Relaxation
- Sleep management
- Medication

Before tinnitus treatment

Case history

Audiological evaluation
- Otoscopy
- Tympanometry
- Air and bone conduction testing for pure-tones and speech

Optional tests
- Minimum masking levels
- Tinnitus pitch and loudness matching
- Loudness Discomfort Levels (LDLs)
- Distortion Product Otoacoustic Emissions (DPOAE)

Tinnitus screening and questionaires
- Tinnitus Handicap Inventory (THI) and screening tool
- Tinnitus Functional Index (TFI)

No single treatment approach exists that will work for every patient. You will need to help your patients determine the combination of personal techniques and sound-generating devices that is most effective for them. The treatment flow suggested here is for Oticon Tinnitus SoundSupport™ combination device fittings. The following sections will guide you through the steps of a suggested treatment approach.

Case history

A basic case history of the patient with tinnitus should include information related to the history of tinnitus and identifying medically treatable causes of tinnitus, prior to potentially starting treatment. The Tinnitus Research Initiative has compiled a Tinnitus Sample Case History Questionnaire with a list of recommended questions and topics to include when taking a case history from a tinnitus patient. You can find the list in Appendix A. You are encouraged to create a case history form for your facility or include tinnitus items in an already existing case history form.

Audiological evaluation

The conventional audiological evaluation is a cornerstone of the consultation. This includes otoscopy, tympanometry and air and bone conduction testing for pure-tones and speech. The audiometric results influence the direction of sound treatment and counselling. The need for amplification is determined here.

Optional tests

Tinnitus pitch and loudness matching: Some clinicians include tinnitus pitch and tinnitus loudness matching in their consultation routine. This can offer some confirmation to patients that their experience is real and measurable. The tinnitus community does not agree upon the clinical utility of these measurements but it can be useful as a counselling tool. Test-retest reliability of these measurements is not high.

Minimum masking levels: The minimum level needed to mask tinnitus historically is considered useful in treatment and may have some predictive value towards the success of treatment.

Loudness Discomfort Levels (LDLs): The measurement of LDLs contributes to the setting of the maximum output of the hearing aid. Be aware that a fair number of tinnitus patients experience an intolerance to loud or moderately loud sounds and can find this test uncomfortable.

Distortion Product Otoacoustic Emissions (DPOAE): DPOAEs contribute to the differential diagnosis of cochlear dysfunction.

Tinnitus screening and questionnaires

There are several widely translated and validated tinnitus questionnaires that can help you to measure tinnitus perception and experience before, during and after treatment. Many tinnitus self-report measures are available. Two commonly available and reputable options are the Tinnitus Handicap Inventory (THI) (Newman, Sandridge & Spitzer, 1996) and the Tinnitus Functional Index (TFI) (Meikle et al. 2012). These tests have good test-retest reliability, internal consistency and are validated for demonstrating changes related to treatment. See Newman & Sandridge (2013) for additional information related to self-report measures. The THI can be found in Appendix C. The THI screening tool adapted from the THI in 2008 by Newman, Sandridge and Bolek can be found in Appendix F.

Advantages of using a questionnaire for tinnitus

- The patient becomes aware of how tinnitus affects different aspect of their life
- You can see degree of tinnitus severity and whether or not treatment is needed (bothersome versus non-bothersome)
- You can see the effect of treatment before, during and after
- You can use it as a counselling tool and to show progress
- Test administration is quick and scoring is also easily and quickly done
- Pinpoints areas of particular difficulty for the patient
- Helps you to know when a referral to other health care professionals is needed

Treatment

Helpful tip

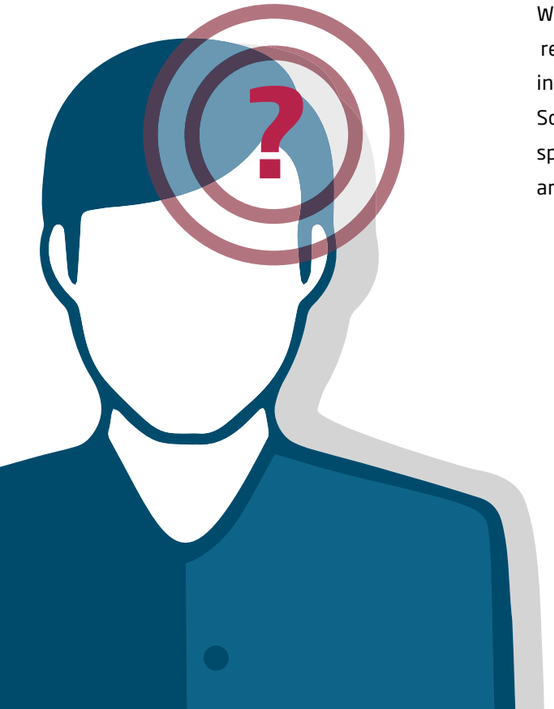
The treatment Fitting checklist in Appendix D can help you feel confident that you have covered everything you need to cover at the appointments with your patient.

The tinnitus consultation is where you discuss patient expectations, give educational information and explain available treatment options to consider.

Prior to starting the tinnitus consultation, it is important that you consider whether or not you should be treating the patient in front of you. In regards to tinnitus treatment, there are a few red flags which should alert you to refer the patient to other healthcare professionals prior to treatment or instead of treatment. Some patients may require medical or psychological care before tinnitus treatment can begin.
If the patient has physical trauma, facial palsy, or unexplained sudden hearing loss, then you should refer the patient to Emergency Care or Otolaryngology. If the patient expresses suicidal thoughts or demonstrates mental health problems such as depression or anxiety, you should refer the patient to Emergency Care or Mental Health and report suicidal thoughts. Keep in mind that these scenarios are rare.

If the patient has objective tinnitus, symptoms related to movement of head or neck, active ear infection or pain or vestibular symptoms (e.g., dizziness/vertigo), refer the patient to Otolaryngology.

We recommend seeking out information about sleep management, relaxation techniques, psychiatric treatment and medical interventions from local professionals in their respective fields. Sound therapy, amplification and counselling are the areas specifically covered in this handbook since hearing care professionals are uniquely qualified to help in these areas.



Education and counselling

The purpose of patient education for tinnitus is to provide the patient with information about tinnitus, the causes of tinnitus and general mechanisms behind tinnitus. The purpose of tinnitus counselling is to help patients recognise and understand their reaction to tinnitus and create changes in their attitude, feelings and thoughts about tinnitus.

Patient expectations

First, before you get too deep into education and counselling topics, discuss your patient's expectations. What do they expect to get out of treatment? How do they see their role in treatment - and yours?
You may need to adjust your recommendations and counselling based on what the patient says. Conversely, you may have to discuss with them whether or not their expectations are realistic and set clear goals and expectations together with them.

The good dialogue

Just like all patients that come into your office, patients with tinnitus have a story to tell and come to you with a unique background. Perhaps they have had negative experiences seeking various health care professionals for their symptoms. Perhaps they know nothing about their condition or they may have read every book about it to try to solve the problem on their own. Regardless of their situation, the best way you can learn more about the person sitting in front of you is to ask good questions.

Helpful tip

Along the way

- Ask one question at a time and give the person time to answer
- Ask open-ended questions
- Ask yes/no questions, if appropriate. Ask follow-up questions
- Take notes to show your interest in the responses of the patient.

Sample questions

Initial consultation

- What brings you in today?
- Can you describe your tinnitus for me?
- What concerns you most about your tinnitus?
- Have you tried other treatments for your tinnitus?
- What have you tried so far?
- Have you seen other professionals for your tinnitus? What did they say?
- Is your tinnitus better at times and worse at other times? What happens at those times?
- How does tinnitus affect your daily life or routines?
- How does your tinnitus make you feel?
- What do you want to get out of this visit?

Counselling and education session

- How has tinnitus affected your sleep (family life, working, social activities ...)?
- What are your thoughts about your tinnitus?
- What have you learned about your tinnitus?
- How do you feel about _____?
- Tell me more about _____

Follow up questions

- What do you mean by _____?
- Can you tell me more about _____?
- Why do you think _____ happened?
- Can you explain what you mean?
- How did _____ make you feel?
- What might happen if you _____?

The following suggestions can provide some inspiration for questions and discussion with your patient at different stages of the treatment flow.

Listening
The flip side of asking good questions is effective listening. The obvious benefit of listening is gaining information. Furthermore, listening contributes to your connection with your patient by demonstrating respect. If patients feel listened to and appreciate the value of being listened to, they will be more open to listening to what you have to tell them.

Reflective listening is an effective listening technique that ensures understanding. Examples of reflective listening are repeating keywords or asking “What I hear you say is .... Is that correct?”.
You may find that you already use many of these questions and the techniques described. Remember that this is partly what makes you a great clinician and a very qualified and empathetic individual to sit across from for a person with tinnitus.

The patient education and counselling tool

Oticon has developed a short and very visual guide to help you when you are counselling your patient. It consists of seven pictures with accompanying explanations. When you have gone through the pictures in the book, you can be confident that you have covered the major areas of tinnitus patient education. The guide has pictures and keywords throughout the guide and full script explanations in the back that are optional for you to read and use.

The cycle of distress

As an example from the counselling tool, the cycle of distress illustration is shown here. It is a simplified interpretation of the causation of tinnitus model used by McKenna, Baguley and McFerran (2010). It is meant to be an easy-to-explain and easy-to-understand way to talk about a complex process in the brain. In the illustration, tinnitus is likened to a dripping faucet. First, you may notice the tinnitus, like you would notice a leaking kitchen faucet while laying in your bed at night. As the sound continues, it sets off a subconscious alarm in your head. This alarm causes you to react negatively to the sound. In other words, you have a negative emotional response to the sound, such as irritation, anxiety or anger. This distress in the emotional part of your brain triggers a physical, bodily response, such as increased heart rate, tensing muscles, or sweaty palms. This adds to your distress and this chain reaction causes you to put even more focus on the distressing sound. What started as a small, insignificant sound, grows into an all-consuming, stress-inducing roar, and the cycle continues as the brain adapts to constantly focusing on a sound that brings no value and takes away from the person's quality of life.

There are many ways of telling this story and you are encouraged to find a way of explaining this process that works for you. The counselling tool can serve as inspiration and guide for any clinician who needs to make sure they are covering all their bases during the patient education and counselling session. A walk-through of McKenna, Baguley and McFerran's model can be found for further study in Appendix B.

The cycle of distress

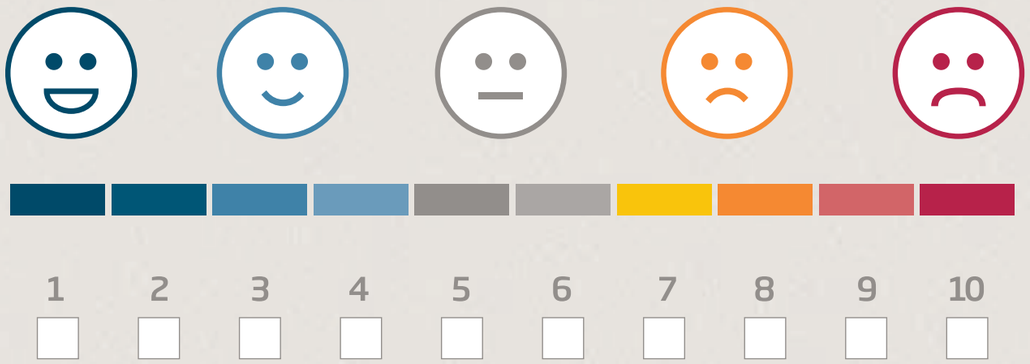
IDA tools

The IDA Institute has developed a set of three new tinnitus management tools to support both clinicians and patients. Two of these tools, the Tinnitus Thermometer and the Tinnitus forecast are designed to help clinicians build their counselling skills and apply a holistic approach to care of patients with tinnitus (IDA website, 2016). These tools are readily and freely available and they have been developed by leading tinnitus experts from around the world.

The tinnitus thermometer

The tinnitus thermometer is for you to use at the start of every appointment with your patient. The graphic gives your patient a very quick and easy way to communicate how they are experiencing tinnitus on that particular day. This can be enormously helpful, since tinnitus varies and you may be catching your patient on a good or a bad day.

There are three open-ended questions to help start the conversation and this is how the thermometer guides you to know how and where to start the conversation at every appointment. It can be used to track and monitor the patient's perception of their tinnitus over time and it only takes a few minutes.



Reference: The Tinnitus themometer, IDA Institute (2016)

Tinnitus forecast

The way you talk to your patient about their tinnitus can affect them tremendously. If you have listened to their frustrated stories of not being listened to or taken seriously, then you know the importance of being a health care professional who listens to your patient's concerns and meets them where they are. This tool can help you communicate effectively and compassionately about tinnitus with patients in a way that comforts and encourages this. The tinnitus forecast is a simple graph that illustrates that although tinnitus may always be present at more or less the same level of sound, the level of distress it causes and how intrusive it is will likely decrease significantly over time.

This helps to make an important and encouraging point: that almost everyone with tinnitus finds it becomes more manageable and less intrusive over time.

Reference: The tinnitus forecast, IDA Institute (2016)
This illustration builds on prior work with patients of Dr. Laurence McKenna and Dr. David Scott, Royal National Throat, Nose and Ear Hospital, London

Helpful Tip

Oticon Opn hearing aids are all combination devices. This means that in addition to being a hearing aid, the device also has a built-in sound generator which can be activated to play tinnitus relief sounds that can help the patient cope more easily on a daily basis. The sound generator in Oticon hearing aids is called Tinnitus SoundSupport.

Consistent use of amplification and Tinnitus SoundSupport is recommended to obtain optimal results at the start of sound therapy treatment. Therefore you should encourage your patient to wear the hearing aids for as long as possible every day. The duration of sound generator use per day may decrease over time as the person gets accustomed to living in a world with more sound. Tinnitus treatment may last one to two years and then phases into maintenance of achieved results.

Sound therapy

The purpose of sound therapy is to reduce the perception of tinnitus loudness and the patient's reactions to tinnitus, using sound. Sound can include something as simple as turning on background music in a quiet room, turning on a fan, listening to a radio show, or taking a walk on a windy day. If the patient has hearing loss, it makes sense to expose them to the sound they are missing out on by using hearing aids. This is because the additional sound can help move mental focus away from the internally created tinnitus sound. Many patients with tinnitus are unknowingly already using sound therapy in an unintentional way to alleviate the tinnitus symptoms. The hearing care professional can help them be much more aware of the sounds around them, learn how to use sound in an effective way, and how to surround oneself with pleasant sounds and sounds that carry positive meaning for the individual.

Hearing aids alone can provide a starting point for treatment because the use of amplification alone gives relief from tinnitus for some patients. Often tinnitus patients are resistant to the use of hearing aids because they consider their tinnitus to be a greater problem than their hearing loss and they do not associate hearing aids with tinnitus treatment. Emphasise that the purpose of the hearing aids is for relief of their tinnitus. They may come back to you and report improvement in their hearing too. Sound therapy, including hearing aid use, is a proven effective treatment (Searchfield, Kaur & Martin, 2010).

Tell your patient:

Hearing aids: small ear devices that amplify sound. More sound makes the tinnitus stand out less

Music: soothing music or nature sounds can reduce the contrast between tinnitus and quiet environments

Combination devices: : hearing aids with built-in sound generators that emit specific tinnitus relief sounds

Sound generator: a stand-alone device for the bedside that can play various sounds to reduce tinnitus

Listening exercises: can help the patient learn to focus on sounds other than tinnitus

Audio books: can for some, provide just the right mix of sound, brain stimulation and comfort

Relaxtion and mindfulness: yoga and meditation have provento be particulary effective tools for relief

Fitting hearing aids with Tinnitus SoundSupport™

Fitting Oticon Opn hearing aids with a tinnitus sound generator is easy. If you would like to get started right away, it is recommended that you read the Quick Fitting Guide, a two page overview. It can be found in Appendix E.

Tinnitus treatment can be started with amplification only or with amplification plus Oticon Tinnitus SoundSupport. This decision is yours, based on the needs of your patient and it is easy to add a tinnitus program at any point in time.

Primary amplification settings in the hearing aid
Create a normal amplification program in P1. Include the Personalisation questions so that the amplification settings right from the start are set at a good baseline for your patient. This is especially important since the noise reduction settings in OpenSound Navigator are important to how well your patient with tinnitus handles noisy and complex listening environments.

When to add a program with Tinnitus SoundSupport
Discuss with your patient when you will introduce a program with Tinnitus SoundSupport into your treatment plan. They may be ready straight away, but it may also be beneficial to wait until they have acclimatised to wearing hearing aids. Keep in mind that the use of amplification without Tinnitus SoundSupport can also be a great source of relief because a richer sound picture takes the focus away from tinnitus (see section on Sound therapy).

Setting up the Tinnitus SoundSupport program
Set up a Tinnitus SoundSupport program in P2 and optionally in P3/P4, depending on patient preference. These will be the programs your patient uses most for relief of tinnitus. Follow the recommended strategy for presenting tinnitus relief sounds to your patient as shown in Table 1. When you turn on Tinnitus SoundSupport, the default relief signal is “Shaped to Audiogram”, but be sure to present all relief sound options: Red, Pink, White, Ocean 1, Ocean 2 and Ocean 3. It is very likely that your patient will have a clear preference for one sound over another.

Table 1. How to present relief sounds (5-10 min)

1. Present default relief sound, adjust volume level to comfortable
2. Present white, pink and red relief sounds, adjust volume levels individually
3. Present all four sounds again and note patient’s preferred sound
4. Present the three ocean sounds and adjust volume levels individually
5. Present all three sounds again and note patient’s preferred sound
6. Now, you have a clear starting point for your patient and what programs to give them initially

Modification of broadband and ocean sounds
The four broadband sounds can be modified in several ways.
Apart from the volume level of the sound, frequency shaping can be done by modifying the frequency content with the trimmers in the software, similar to how you would adjust gain when fine-tuning the hearing aids. Furthermore, you can add four variations of modulation to these broadband sounds or activate Automatic Level Steering which turns down the relief sound when the surrounding environment is louder. The hearing aid microphone can be turned on or off and is set to on by default.

The three ocean sounds are nature-like sounds that mimic the rhythm of the ocean. Apart from setting the level of these sounds, they are fixed and cannot be modified further. Automatic Level Steering and hearing aid microphone on/off can be set for ocean sounds.

Volume and volume control settings

The needs of patients with tinnitus vary greatly and it is often a good idea to make sure the patient has control of the relief sounds. One way to ensure this is to give the patient the ability to adjust the volume of the relief sounds (see next section). However, when you activate a relief sound, it is important that the relief sound is audible and adjusted to a comfortable level for the patient as a solid baseline.

Setting the volume control to adjust the tinnitus relief sound (optional)
You will have to adjust the volume level for each relief sound you present separately, since the frequency content in the various relief sounds mean that they may be heard very differently.

Set the level of each relief sound in one of three ways

1. **Patient preference.** Tinnitus relief sound level is acceptable, audible and comfortable
2. **Mixing point**. A term used to describe the tinnitus relief sound level where the patient's tinnitus and the relief sound are equally audible (Jastreboff & Hazell, 2004)
3. **Masking.**The tinnitus relief sound level that completely masks the patient's tinnitus

In the fitting software, you can activate the volume control for the tinnitus relief sound under End Fitting/Buttons and Indicators/ Tinnitus Volume control. For the different hearing aid styles, volume control for tinnitus has slightly different parameters available because they have one or two buttons:

Important note 1: In a program with Tinnitus SoundSupport, volume of the tinnitus relief sound can be controlled using the hearing aid buttons or the Oticon ON app.

Important note 2: In a program with Tinnitus SoundSupport, volume of the hearing aid gain can only be controlled using the Oticon Remote Control or the Oticon ON app.

miniRITE
If VC Binaural Coordination is turned off: then button presses on the hearing aid adjust the volume of the tinnitus relief sound for that hearing aid only. A button press will increase the volume until the peak volume is reached. Then, a button press will decrease the volume until the bottom of the range is reached. The cycle repeats.

If Binaural Coordination is turned on: then button presses adjust the volume of the tinnitus relief sound in both hearing aids. That is, a button press of the right VC turns the volume up and button press on the left VC turns the volume down.

miniRITE-T and BTE 13 PP
If VC Binaural Coordination is turned off: then the VC on one hearing aid changes the tinnitus relief sound of that hearing aid only. If VC Binaural Coordination is turned on: then the function of VC control for the tinnitus relief sound is the same as the normal function. Either VC changes the volume in both hearing aids

Setting the volume control range (optional)
You have the option of adjusting the volume control range.
The default range for a miniRITE is 15 dB with 7.5 dB on either side of the initial signal level. The step size is 1.5 dB. The default range for miniRITE-T and BTE 13 PP is also 15 dB with 7.5 dB on either side, but the maximum volume control range can be expanded to 30 dB. The reasons for adjusting the range vary and it is completely optional to do so. For a first fitting, it might be preferable to adjust fewer rather than more parameters.

At later appointments, you then have adjustment options to present to your patient, if needed.

Safe listening levels and Maximum Wearing Time - IMPORTANT

Always consider the amount of sound going into your patient's ears. When they are wearing a combination device, there is added sound from the sound generator. The maximum output of the sound generator is 90 dBA SPL and this can put limitations on the amount of time your patient can safely use the sound generator if they listen to it at high levels.

To help you counsel your patient appropriately on safe use, the fitting software lets you know when you should limit use time. The Max Wearing Time indicator will appear when you turn up the level of the tinnitus relief sound above a certain point. As you increase the level more, you will see that the number of hours your patient can safely use the hearing aid to avoid excessive noise exposure, will decrease. To the left is an example of what you may see in the fitting software.

	Max wearing time	
	at start up volume	at max volume
P1	no limit	no limit
P2	18 hours	4 hours

Keep in mind that activating the tinnitus volume control for your patient allows them to turn the tinnitus relief sound up higher than the default/start-up volume that you have chosen. You will see a maximum use time for the start-up level that you have set and a maximum use time for the maximum volume that the sound generator can reach. Be sure to counsel you patient on safe use at different tinnitus relief sound levels and write down the hours of use in the back of your patient's instruction booklet (table provided).

Following up with your patient

Once you have counselled your patient and implemented a sound therapy treatment approach, it is time to give the patient at chance to live with tinnitus under new treatment conditions. Below are suggestions for what to include at the follow-up visits with your patients.

1st follow-up visit (2 weeks) - Standard follow-up visit after hearing aid fitting

- Administer your preferred tinnitus questionnaire, e.g. Tinnitus Handicap Inventory
- Continue patient education and tinnitus counselling, try using IDA Tinnitus Thermometer
- Introduce amplification plus Tinnitus SoundSupport in P2, if not done previously.
- Fine-tuning of amplification and Tinnitus SoundSupport optional settings as needed

2nd follow-up visit (4 weeks)

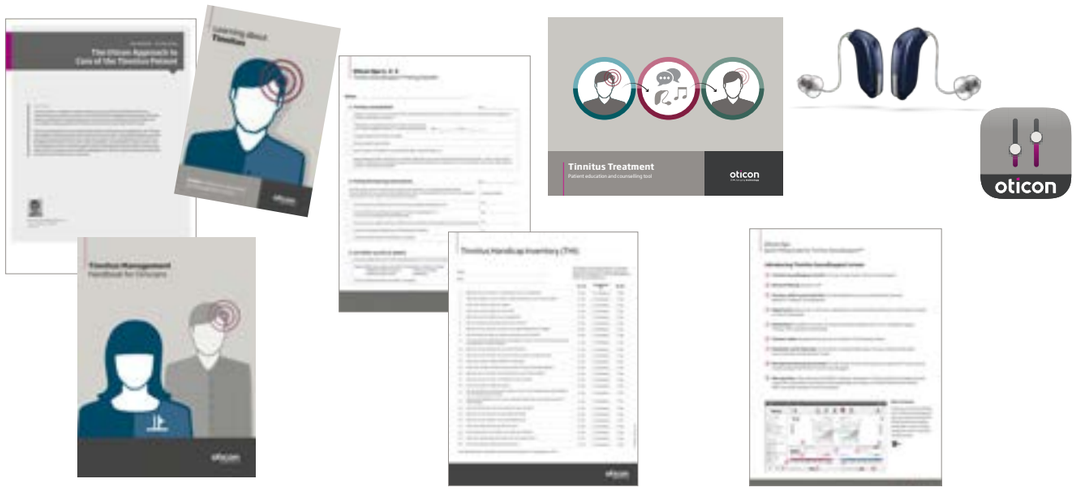
- Administer your preferred tinnitus questionnaire, e.g. Tinnitus Handicap Inventory
- Continue patient education and tinnitus counselling, try using IDA Tinnitus Thermometer
- Fine-tuning of amplification and Tinnitus SoundSupport optional settings as needed

Additional follow-up visits are recommended at 3, 6, and 12 months, or as needed. At each of these visits, it is recommended to administer your preferred questionnaire as well as to gauge your patient's tinnitus perception on the specific day by using the IDA Tinnitus Thermometer. Not only does it give you a good way to start the conversation, it also gives you a simple and quick way to track both progress and temporary set-backs experienced by the patient. Being able to show your patient their progress over time is a powerful counselling tool for you and very valuable information for your patient.

Clinician support

An overview of the clinician support that we can provide you with throughout the tinnitus patient journey is shown here. Oticon has developed materials to help support both you and your patient throughout tinnitus treatment.

Build knowledge	Initial contact	Evaluation	Identify needs	Develop treatment plan	Patient education and counselling	Sound therapy	Follow up



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A word from Anne-Mette Mohr

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Partnering with your patient

Partnering can be understood as a situation where two people – the hearing care professional and the tinnitus patient – are establishing a trusting relationship. The trust is based on a willingness to work as a team and to share the efforts, the risks and the responsibility of the outcome. For the audiologist, this way of working reduces the stress of being the "expert" with the sole responsibility of fixing the patient. When working as partners, the responsibility of how to reach a positive outcome is shared. The audiologist and the patient are in the process together.

From the beginning, the patient should be provided with clear information on:

- how many sessions to expect
- duration of sessions
- what to expect from the audiologist, and
- what is expected from the patient himself

Setting a clear framework ensures that the partners can focus on teamwork.

The term relationship emphasises that the partners are meeting each other equally as a "you" and an "I". This is opposed to an unequal situation where one person is "the specialist" meeting the other as an "it"–something that needs fixing. In the partnership, the tinnitus patient is seen as a client with tinnitus, indicating that the client plays just as important a role as his partner, the audiologist. Consequently, when joining the partnership, the client is expected to bring in both an open mind and a willingness to work actively with the audiologist.

The audiologist brings to the partnership her thorough knowledge about tinnitus and her readiness to investigate what exactly might help this particular client. During the process, the audiologist will shift between asking questions and repeating what the client has said.

This ensures that she has heard and understood the client accurately. On this well-informed platform, the audiologist can start counselling, presenting strategies that might help decrease the impact of tinnitus.

The patient's feelings of trust towards the audiologist and her knowledge develop from the realisation that the audiologist's counselling and strategies are founded on a true understanding of him as a particular client in a particular situation. The counselling is not based on assumptions of what generally helps "patients" with tinnitus. This will typically make the client even more ready to contribute actively to the teamwork.

During the teamwork, the client will try out the different strategies suggested by the audiologist. Together they will find out which strategies are useful and which are better left alone. The audiologist will refrain from imposing strategies on the client, and instead share her ideas and knowledge with him. Focus should be on supporting the client and keeping up his good spirits while he is trying out different strategies. Some of these may lead to a dead end while other may bring the client hope and perhaps even a promising direction in which to proceed.

In this way, the partners share the efforts, risks and the responsibility of the outcome - they are never alone, but in the process together.

A word from David Baguley

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Understanding Tinnitus

One of the many encouraging things about the tinnitus field is that many different disciplines are interested and engaged with understanding tinnitus and advancing our knowledge about this complex and challenging symptom. Each of these disciplines will bring their own unique perspective, but each will also have a specific focus, and perhaps miss the wider picture. As such, we would expect auditory neuroscientists to focus upon issues of maladaptive neuroplasticity, and aberrant synchronicity in the auditory system, pharmacologists to be reflecting upon neurotransmitters, and psychologists to be considering the themes of emotion and attention.

Audiologists and Otologists also have specific perspectives, and what brings a particular urgency to these is the fact that we are charged with the responsibility for treating the majority of people with troublesome tinnitus. Some may find their way to Neurologists and Psychologists, and in the case of children, to Paediatricians, but, in general, a tinnitus patient wants to know what is amiss with their ears and hearing. How then can we explain troublesome tinnitus, both to empower our patients and their families to deal with their challenges, but also to satisfy our own need to understand the situation that has befallen them?

The model presented in this booklet in Appendix B represents a distillation of experience and reflection on how to understand the paradoxes of tinnitus distress (McKenna et al., 2010). Dr Laurence McKenna is an eminent Clinical Psychologist, and known internationally for his insights into the development of distress in people with tinnitus, and Mr Don McFerran FRCS is an Otologist specialising in tinnitus and associated conditions – the three of us have collaborated for many years, and decided to try and put our perspectives in the public domain.

The model, shown in Appendix B seeks to describe the interrelationships between the tinnitus signal, mechanisms of prioritizing that signal, and the physical and emotional response to the tinnitus. The movement between the boxes is emphasised, as is the fact that troublesome tinnitus can develop over time – with some patients finding their tinnitus curious and trivial at first, but going on to develop a severe problem, without any further cochlear injury.

The model has some implications for treating tinnitus. The first is that an effective intervention should attempt to treat all three of the consequences boxes (last of the four models shown), namely the fear, the activation of the sympathetic autonomic nervous system, and the awareness of tinnitus. Intervention that omits any of these aspects is unlikely to achieve the treatment aim of a patient living well with tinnitus, and reduced distress and impact.

Specific aspects of treatment to address each of these issues is indicated in the table below. The place of sound therapy embedded within a framework of informational counselling, and of relaxation techniques ensures the optimal efficacy of device use for tinnitus. Randomised controlled trial evidence indicates that the combination of such techniques has benefit for treatment outcomes and the cost efficacy of treatment (Cima et al., 2012, Maes et al., 2014).

Aspects of tinnitus distress	Treatment options
Anxiety, fear, dismay	Informational counselling, including mechanisms, impact and prognosis. Formal psychological therapy if needed.
Increased sympathetic autonomic activity	Relaxation therapy Anti-anxiety medication on rare and short term occasions
Awareness of persistent tinnitus	Sound therapy with hearing aids and combination devices to reduce the starkness of tinnitus

Appendix A - Tinnitus case history

"Items list" from Tinnitus Sample Case History Questionnaire (Source: Tinnitus Research Initiative, 2016)

Items are ordered according to their level of significance.

Background

1. Age
2. Gender
3. Family history of tinnitus (parent, sibling, children)
4. Handedness

Tinnitus history

5. Initial onset. Time?
6. Initial onset. Mode? Gradual or abrupt?
7. Pattern. Steady? Pulsatile? Other?
8. Site. Right ear? Left ear? Both ears? (symmetrical?) Inside head?
9. Loudness. Scale 1-100. At worst & at best?
10. Percentage of awake time aware of tinnitus?
11. Initial onset. Associated events? Hearing change, Acoustic trauma, titis media, Head trauma, Whiplash, Dental Treatment, Stress, Other
12. Intermittent or constant?
13. Fluctuant or non-fluctuant?
14. Quality. Own words / Give a list of choices
15. Pure tone or Noise? Uncertain / polyphonic?
16. Pitch. Very high? High? Medium? Low?
17. Percentage of awake time annoyed by tinnitus?
18. Previous tinnitus treatments (no, some, many)?

Modifying influences

19. Natural masking? Music, everyday sounds, other sounds?
20. Altered by head and neck movement or touching of head or upper limbs (specification of the respective movements)?
21. Aggravated by loud noise?
22. Daytime nap. Worse? Better? No effect?
23. Effect of nocturnal sleep on daytime tinnitus?
24. Effect of stress?
25. Effect of medications? Which?

Related conditions

26. Hearing impairment?
27. Hearing aids (No, left ear, right ear, both ears; effect on tinnitus)?
28. Noise annoyance or intolerance?
29. Noise induced pain?
30. Headaches?
31. Vertigo/dizziness?
32. Temporomandibular disorder?
33. Neck pain?
34. Other pain syndromes?
35. Under treatment for psychiatric problems?

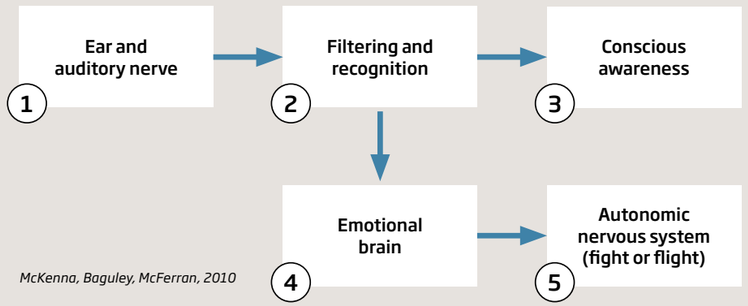
From Tinnitus Research Initiative.

Appendix B - Model of the cause of tinnitus

This appendix explains the cause of tinnitus using a model put forth by McKenna, Baguley and McFerran in their 2010 book for patients and their families as well as clinicians.

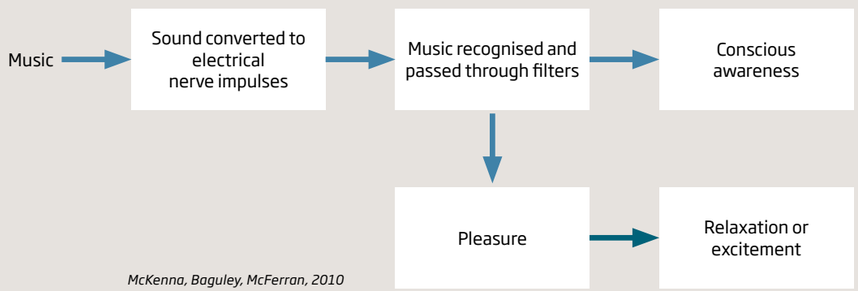
What happens in the brain?

Let's go through a very simplified view of how tinnitus develops. Typically, sound enters the ear (1) and the brain becomes aware of it (2) (3). The emotional brain (4) decides if the sound is something to worry about or not (5).



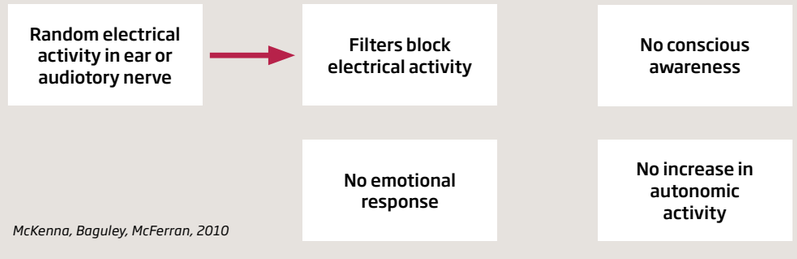
McKenna, Baguley, McFerran, 2010

When the sound is pleasing, like music, the emotional brain reacts in a positive way.



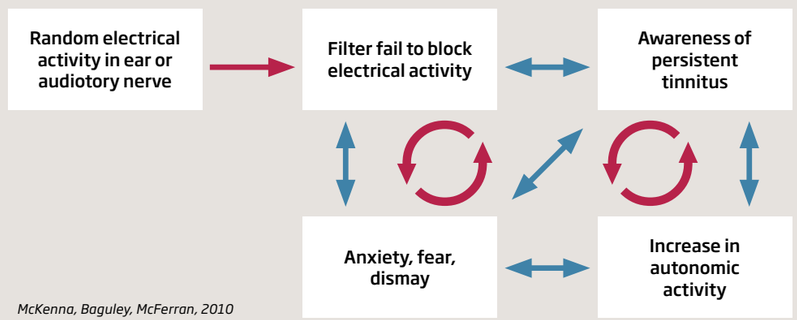
McKenna, Baguley, McFerran, 2010

Sometimes, random activity from the auditory nerve goes up to the brain. The brain should realise that this is not important and ignore it. There is no emotional response to the random nerve activity.



McKenna, Baguley, McFerran, 2010

Tinnitus occurs when, for some reason, the brain does not ignore the random activity and the brain becomes constantly aware of this noise. The emotional brain doesn't know what to make of this new noise and reacts with negative emotions. These negative emotions feed into each other creating a continuous loop.



McKenna, Baguley, McFerran, 2010

Appendix C- Tinnitus Handicap Inventory (THI)

Name: _____

Date: _____

The purpose of this questionnaire is to identify the problems your tinnitus may be causing you. Check 'Yes', 'Sometimes', or 'No' for each question. Please answer all questions.

		Yes (4)	Sometimes (2)	No (0)
1	Because of your tinnitus, is it difficult for you to concentrate?	☐ Yes	☐ Sometimes	☐ No
2	Does the loudness of your tinnitus make it difficult for you to hear people?	☐ Yes	☐ Sometimes	☐ No
3	Does your tinnitus make you angry?	☐ Yes	☐ Sometimes	☐ No
4	Does your tinnitus make you confused?	☐ Yes	☐ Sometimes	☐ No
5	Because of your tinnitus, are you desperate?	☐ Yes	☐ Sometimes	☐ No
6	Do you complain a great deal about your tinnitus?	☐ Yes	☐ Sometimes	☐ No
7	Because of your tinnitus, do you have trouble falling asleep at night?	☐ Yes	☐ Sometimes	☐ No
8	Do you feel as though you cannot escape from your tinnitus?	☐ Yes	☐ Sometimes	☐ No
9	Does your tinnitus interfere with your ability to enjoy social activities (such as going out to dinner or to the cinema)?	☐ Yes	☐ Sometimes	☐ No
10	Because of your tinnitus, do you feel frustrated?	☐ Yes	☐ Sometimes	☐ No
11	Because of your tinnitus, do you feel that you have a terrible disease?	☐ Yes	☐ Sometimes	☐ No
12	Does your tinnitus make it difficult to enjoy life?	☐ Yes	☐ Sometimes	☐ No
13	Does your tinnitus interfere with your job or household responsibilities?	☐ Yes	☐ Sometimes	☐ No
14	Because of your tinnitus, do you find that you are often irritable?	☐ Yes	☐ Sometimes	☐ No
15	Because of your tinnitus, is it difficult for you to read?	☐ Yes	☐ Sometimes	☐ No
16	Does your tinnitus make you upset?	☐ Yes	☐ Sometimes	☐ No
17	Do you feel that your tinnitus has placed stress on your relationships with members of your family and/or friends?	☐ Yes	☐ Sometimes	☐ No
18	Do you find it difficult to focus your attention away from your tinnitus and on to other things?	☐ Yes	☐ Sometimes	☐ No
19	Do you feel that you have no control over your tinnitus?	☐ Yes	☐ Sometimes	☐ No
20	Because of your tinnitus, do you often feel tired?	☐ Yes	☐ Sometimes	☐ No
21	Because of your tinnitus, do you feel depressed?	☐ Yes	☐ Sometimes	☐ No
22	Does your tinnitus make you feel anxious?	☐ Yes	☐ Sometimes	☐ No
23	Do you feel you can no longer cope with your tinnitus?	☐ Yes	☐ Sometimes	☐ No
24	Does your tinnitus get worse when you are under stress?	☐ Yes	☐ Sometimes	☐ No
25	Does your tinnitus make you feel insecure?	☐ Yes	☐ Sometimes	☐ No

For clinician use only

Total THI Score: (number of 'Yes' responses x 4) + (number of 'Sometimes' responses x 2) = _____

For Clinician Use Only

Determine presence of perceived tinnitus handicap based on total THI score.

0-16: Slight or no handicap (Grade 1)
18-36: Mild handicap (Grade 2)
38-56: Moderate handicap (Grade 3)
58-76: Severe handicap (Grade 4)
78-100: Catastrophic handicap (Grade 5)

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Appendix D – Tinnitus SoundSupport™ Fitting Checklist

Oticon Opn 1, 2, 3

Name: _____

1. Tinnitus consultation

Date _____

☐	Obtain a case history. The Screening Tinnitus Handicap Inventory, (Newman et al, 2008) may be useful to determine the candidacy to continue with tinnitus evaluation.
☐	Administer your preferred self-report tinnitus questionnaire, e.g. Tinnitus Handicap Inventory, or Tinnitus Functional Index. Test _____ Score _____
☐	Complete audiometric testing, if needed.
☐	Discuss patient's expectations.
☐	Discuss options for treatment, e.g. patient education, sound therapies, etc.
☐	Begin patient education and tinnitus counselling. Begin discussion and provide initial materials about tinnitus, causes, and reaction to tinnitus. Include discussion of positive aspects of tinnitus management, as opposed to a "cure" for tinnitus. Oticon has a wide range of tinnitus counselling tools available.

2. Fitting the hearing instruments

Date _____

This step may be done at the time of the Tinnitus Consultation or in a subsequent appointment. Tinnitus treatment can be started with amplification only or with amplification plus Tinnitus SoundSupport. This decision is yours, based on the needs of your patient.

☐	Fill out the personal profile and create the primary amplification program in P1.
☐	Set up a Tinnitus SoundSupport program in Tinnitus SoundSupport, P2. See Tinnitus SoundSupport Quick Fitting Guide.
☐	Discuss with your patient when you will introduce the tinnitus sound program within your treatment plan.
☐	Instruct your patient regarding use of the hearing instruments.
☐	Continue patient education and tinnitus counseling.

Program settings:

P1: _____

P2: _____

P3: _____

P4: _____

3. 1st follow-up visit (2 weeks)

Date _____

☐	Introduce amplification plus Tinnitus SoundSupport in P2, if not done previously.
☐	Adjust amplification settings and Tinnitus SoundSupport settings, if needed. ▸ Additional tinnitus programs ▸ Frequency shaping ▸ Volume changes ▸ Additional relief sounds ▸ Modulation ▸ Automatic level steering
☐	Continue patient education and tinnitus counselling.

4. 2nd follow-up visit (4 weeks)

☐	Discuss changes in reaction to tinnitus. Date _____
☐	Administer questionnaire given during Tinnitus Consultation to monitor changes in perception of tinnitus. Suggested tools are the IDA Institute tinnitus tools. Test _____ Score _____
☐	Continue patient education and tinnitus counselling.
☐	Adjust amplification settings and Tinnitus SoundSupport settings, if needed.

5. Additional follow-up visits

A suggested schedule for follow-up visits is 2, 3 and 6 months after the initial fitting. These visits should include the same items as in the 2nd follow-up visit.

NOTE: This treatment flow is suggested for Oticon Tinnitus SoundSupport fittings. As all patients are different, modifications to the treatment flow and treatment schedule may be needed.

Follow-up tinnitus questionnaire scores:

Test _____ Score _____ Date _____

Test _____ Score _____ Date _____

Test _____ Score _____ Date _____

Appendix E – Quick Fitting Guide for Tinnitus SoundSupport™

Oticon Opn 1, 2 ,3

Introducing Tinnitus SoundSupport screen

1. **Tinnitus SoundSupport on/off:** Activate or deactivate Tinnitus SoundSupport
2. **Binaural linking:** Default is off
3. **Tinnitus relief sound selection:** Four Broadband Sounds and three Nature Sounds. Default is "Shaped" (to audiogram)
4. **Signal Level:** Adjust one or both ears, depending on binaural linking setting (2). Initial level is based on client's audiogram
5. **Modulation:** Broadband sounds can be personalised by adding one of four modulation types: Tranquil, Mild, Spirited, and Bustling
6. **Trimmer table:** Broadband Sounds can be shaped in 16 frequency bands
7. **Automatic Level Steering:** On/off option. Automatically lowers tinnitus relief sounds when environmental sounds become louder
8. **Microphone Hearing Instrument:** On/off option to turn hearing aid microphone off if you want to create a program with only Tinnitus SoundSupport
9. **Max wearing:** A Max wearing time (MWT) indicator will appear if tinnitus relief sound levels exceed a level that could lead to permanent hearing damage and exposure should therefore be limited. MWT may differ between tinnitus programs

Nice to know:

Once you are done setting up Tinnitus SoundSupport, you can mute/unmute the relief sounds during the remainder of your fitting using this icon in the fine-tuning screen.

Three steps for easy tinnitus fitting

1. Get ready for Tinnitus SoundSupport™

- Fit the hearing aid to the client's audiogramIn the Fitting screen, select the program where you would like to add Tinnitus SoundSupport
- In the left task pane, click on "Tinnitus" under More Tools and activate Tinnitus SoundSupport by clicking the ON button

2. Present the different sounds options

- Start by presenting the default sound, "Shaped" (to audiogram) and adjust the level according to your protocol and/or your client's preference
- Present White, Pink, and Red sound and adjust the signal levels for each to a comfortable level. Present all four broadband sounds again and note your client's preferred sound
- Click on Nature Sounds and present Ocean 1, Ocean 2, and Ocean 3. Adjust signal levels and present all three Ocean sounds again. Note your client's preferred sound
- Together with your client, decide which relief sound(s) best suits his/her tinnitus and your protocol. Add the sound(s) to the program(s)
- **Optional:** You can modulate sounds, trim frequency bands, activate Automatic Level Steering, or turn the hearing instrument microphone off, depending on your protocol and/or your client's needs.

3. Set the volume controls for relief sounds

- Go to End Fitting (1), select "Buttons and Indicators" (2) and select Tinnitus Volume Control (3)
- Tick Binaural Coordination if you would like binaural adjustment of relief sound volume. Otherwise, tick left or right volume control individually (4)
- Select the Volume Control Range if needed (5). Step size is 1.5 dB

If there is a risk of noise exposure, a table will appear showing the Max wearing time (6) (in hours) for each program in which Tinnitus SoundSupport is activated. Note the max wearing time for each program and write the values into the table "Tinnitus SoundSupport: Limitation on use", in the Instruction For Use booklet. Instruct your client accordingly.

Appendix F – Tinnitus Handicap Inventory screener

Tinnitus screening

A screening survey may be done prior to the tinnitus consultation. A screening survey can quickly identify the effect of tinnitus on your patient's life. Newman, Sandridge and Bolek (2008) developed a screening tool based on the Tinnitus Handicap Index, shown in Appendix C. A score of 6 or more suggests a need for tinnitus treatment.

The purpose of this questionnaire is to identify problems your tinnitus may be causing you. Check Yes, Sometimes, or No for each item. Do not skip a question.

Because of your tinnitus, is it difficult for you to concentrate?	☐ Yes	☐ Sometimes	☐ No
Do you complain a great deal about your tinnitus?	☐ Yes	☐ Sometimes	☐ No
Do you feel as though you cannot escape your tinnitus?	☐ Yes	☐ Sometimes	☐ No
Does your tinnitus make you feel confused?	☐ Yes	☐ Sometimes	☐ No
Because of your tinnitus, do you feel frustrated?	☐ Yes	☐ Sometimes	☐ No
Do you feel that you can no longer cope with your tinnitus?	☐ Yes	☐ Sometimes	☐ No
Does your tinnitus make it difficult for you to enjoy life?	☐ Yes	☐ Sometimes	☐ No
Does your tinnitus make you upset?	☐ Yes	☐ Sometimes	☐ No
Because of your tinnitus, do you have trouble falling asleep at night?	☐ Yes	☐ Sometimes	☐ No
Because of your tinnitus, do you feel depressed?	☐ Yes	☐ Sometimes	☐ No

Scoring: Yes = 4 points, Sometimes = 2 points, No = 0 points for a total possible score of 40 points.

Notes

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