


# Establishing a Tinnitus Clinic: what should I know about tinnitus care?

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# study objectives

- No evidence-based, multidisciplinary clinical practice guidelines to assist clinicians with management.
- The focus of this guideline is on tinnitus that is both bothersome and persistent (lasting 6 months or longer)
- The target audience for the guideline is any clinician, including non-physicians.
- The target patient population is limited to adults (18 years and older) with primary tinnitus that is persistent and bothersome.

# purpose

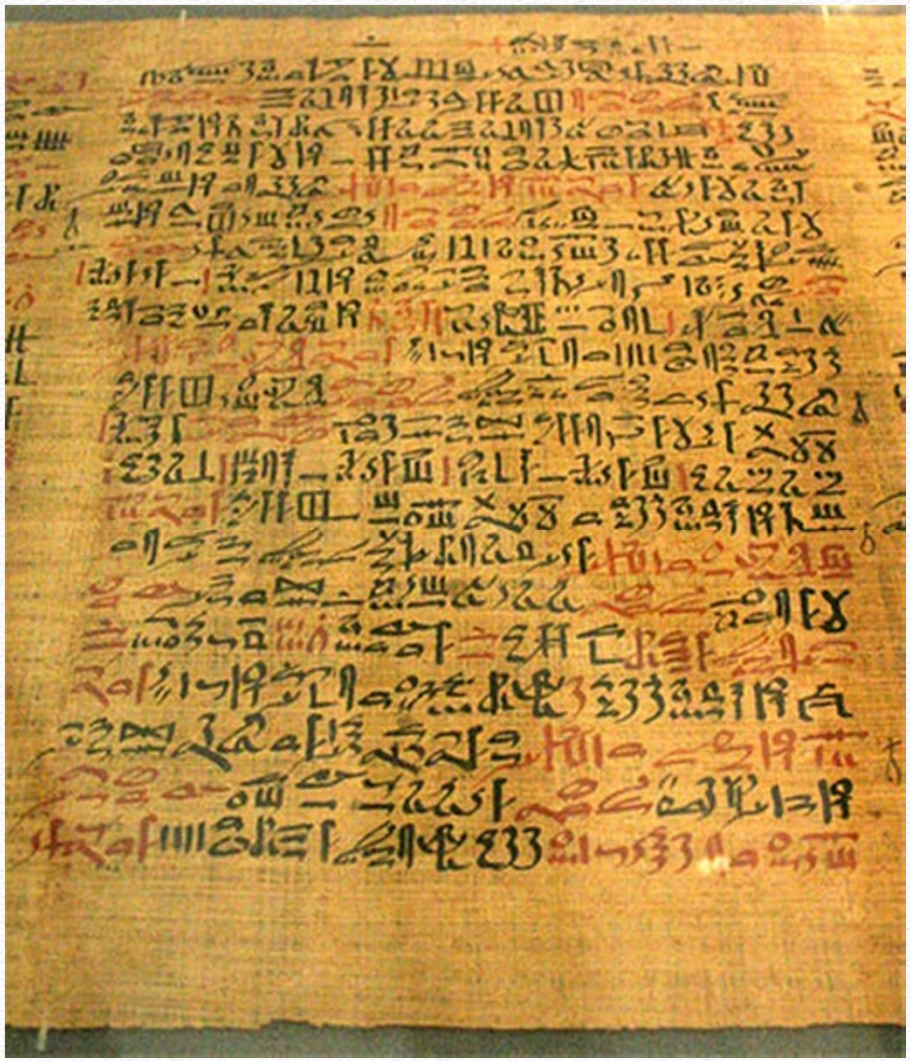
provide evidence-based recommendations for clinicians managing patients with tinnitus.

logical framework to improve patient care.

evaluation of patients with tinnitus, including selection and timing of diagnostic testing and specialty referral to identify potential underlying treatable pathology.

determine the most appropriate interventions to improve symptoms and quality of life for tinnitus sufferers.

It is a symptom, that affects people since ancient times, and it was first studied in 2500 B.C, as it is documented in Ebers papyrus .

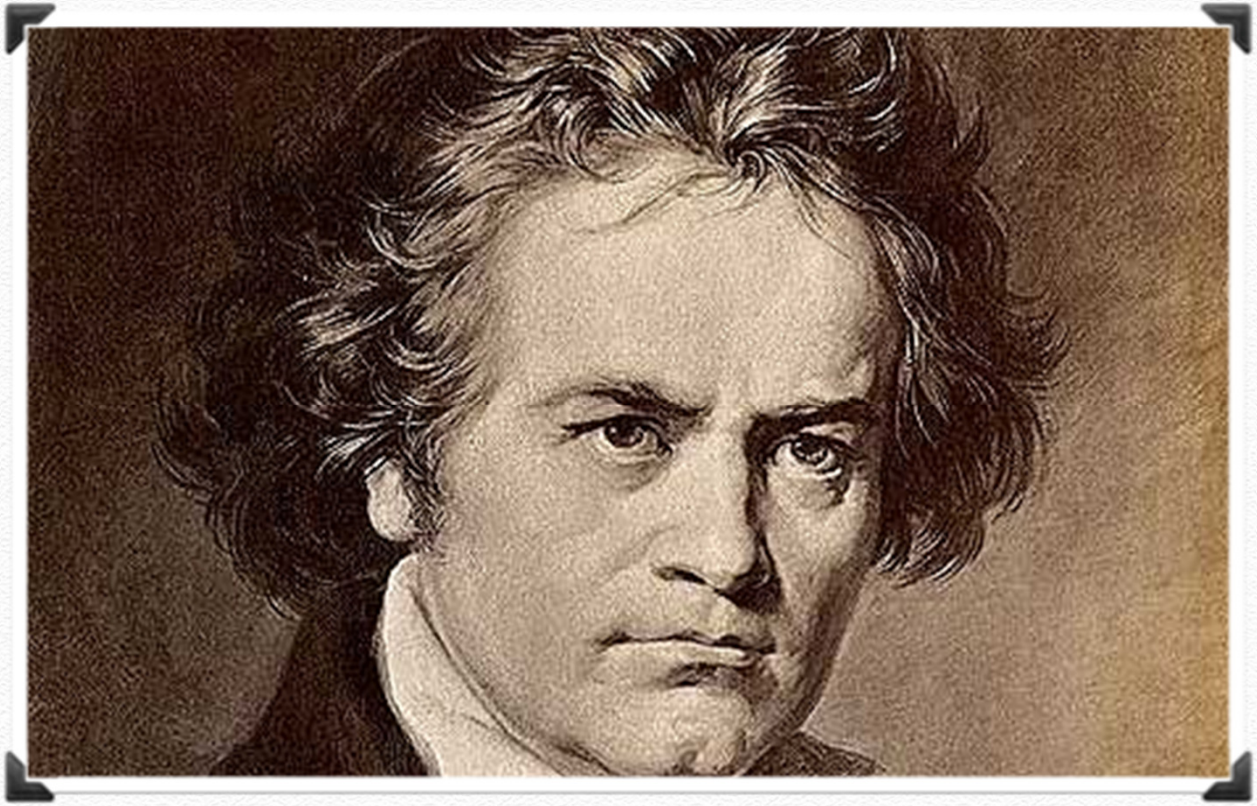


“Another type of problem is when the ears produce a ringing sound within themselves; and because of this it also comes about that they cannot receive sounds from outside. This is least serious  when it comes about through a cold; worse, when caused by diseases or prolonged head-aches; worst of all when it precedes the onset of serious illnesses, especially epilepsy”.



Hippocrates

“My ears whistle and buzz all day and night. I can say I am leading a wretched life”



# What is it like to have tinnitus?



# Definition

Perception of sound with no external source

- Buzzing, hissing or ringing
- Not fully-formed sounds e.g. speech or mus
- Not sound hallucinations experienced during bouts of mental illness
- Occurs in one or both ears, or arising within the head
- Profound effect on the sufferer

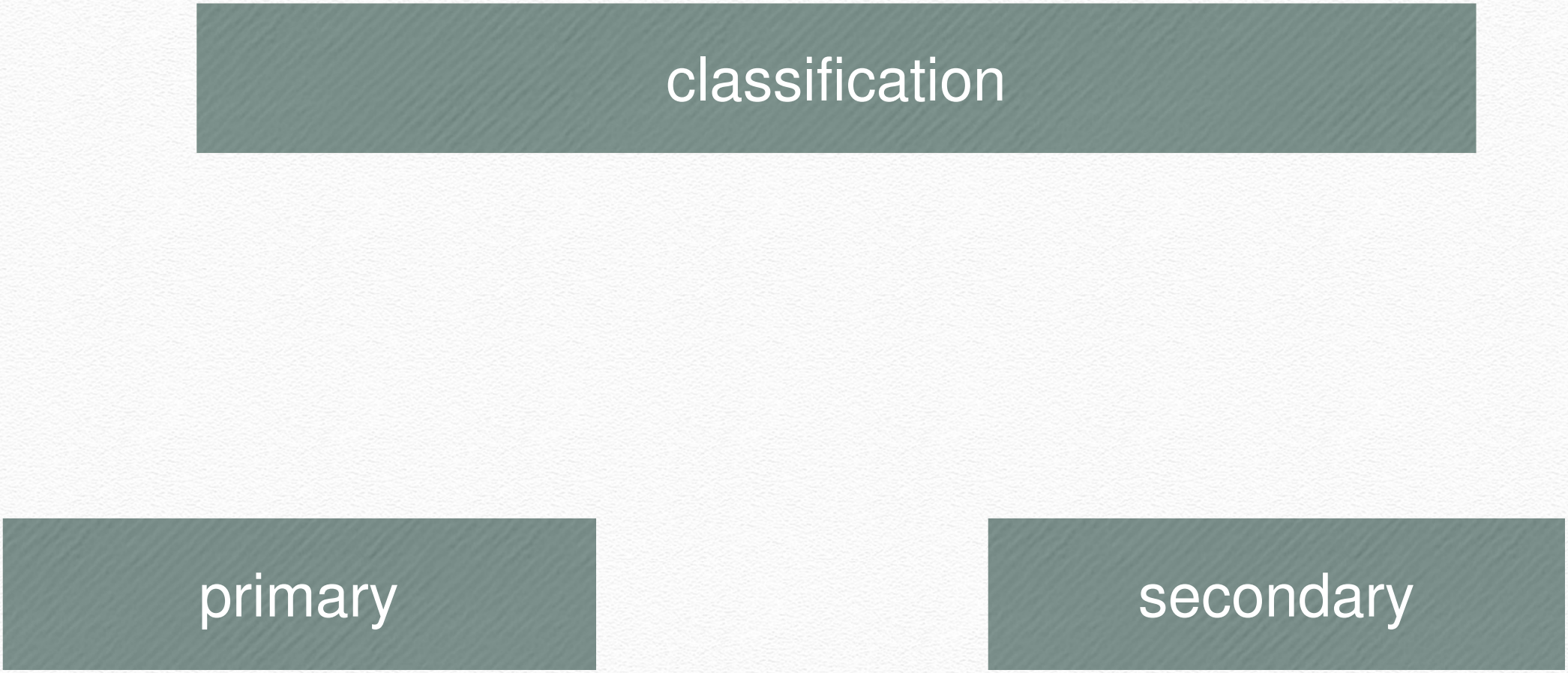
# epidemiology

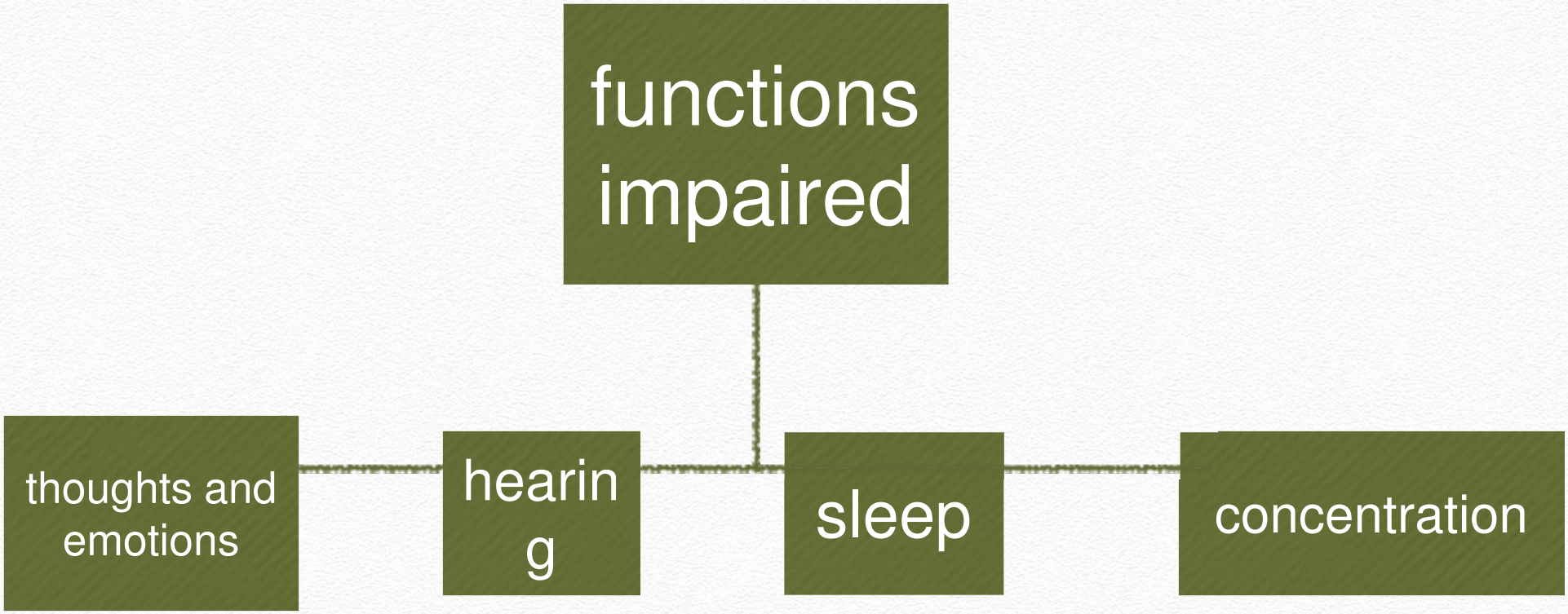
- More than 50 million people in the United States have reported experiencing tinnitus, resulting in an estimated prevalence of 10% to 15% in adults.

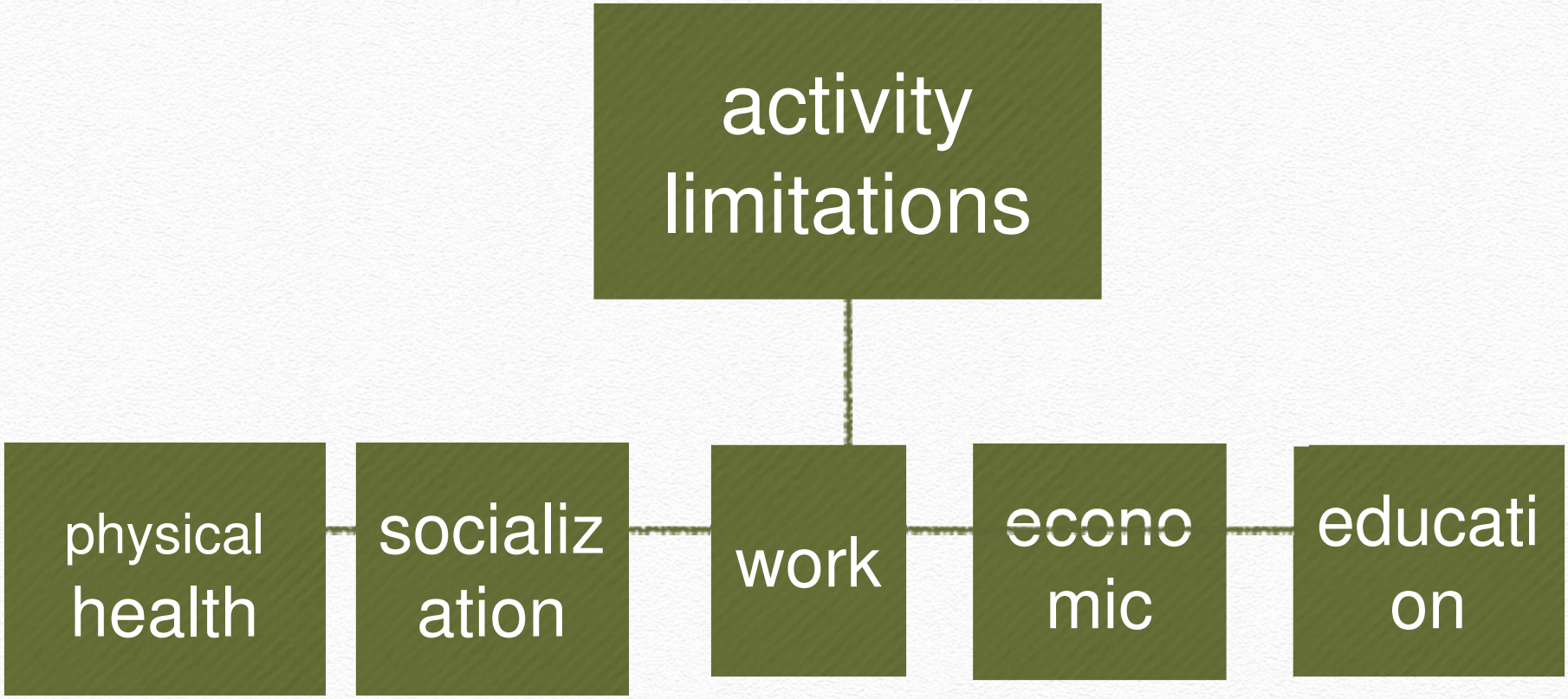
- About 20% of adults who experience tinnitus will require clinical intervention.




"My tinnitus is so loud it keeps my wife awake."


classification
primary
secondary


functions impaired
thoughts and emotions
hearin g
sleep
concentration


activity limitations
physical health
socializ ation
work
econo mic
educati on

# management

## Three responses to tinnitus

- Defeat → overwhelmed
- Control → Some habituation
  Wishing for it's cessation
- Accept → habituate

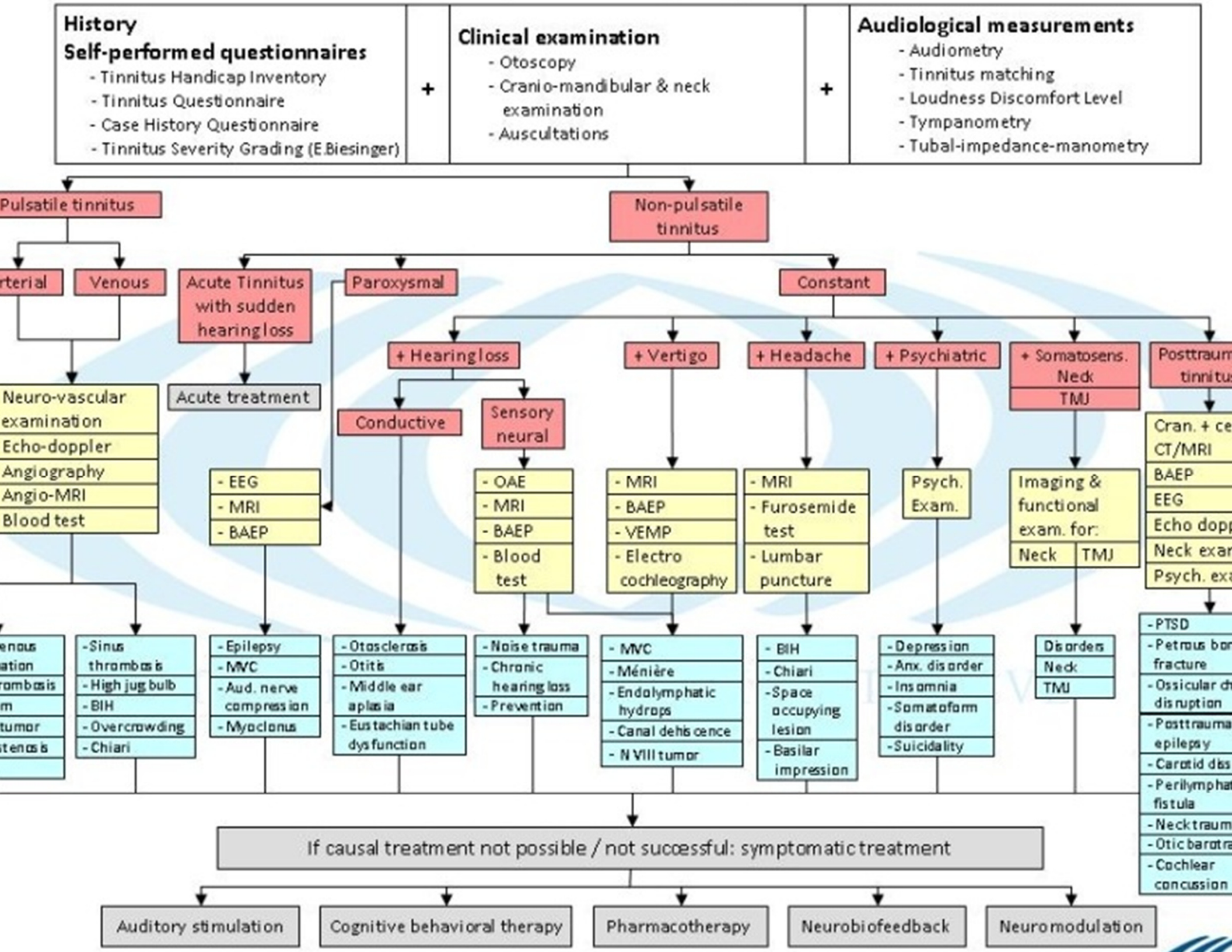
# roles of the tinnitus specialist

- identify
- educate
- persuade
- facilitate
- coordinate
- follow
- modify

# goal of management program

- Reduce perception of and reaction to tinnitus until it is no longer a controlling factor in the person's life

- Provide long-term relief and control


History
Self-performed questionnaires
- Tinnitus Handicap Inventory
- Tinnitus Questionnaire
- Case History Questionnaire
- Tinnitus Severity Grading (E.Biesinger)
+
Clinical examination
- Otoscopy
- Cranio-mandibular & neck examination
- Auscultations
+
Audiological measurements
- Audiometry
- Tinnitus matching
- Loudness Discomfort Level
- Tympanometry
- Tubal-impedance-manometry
Pulsatile tinnitus
Non-pulsatile tinnitus
rterial
Venous
Acute Tinnitus with sudden hearingloss
Paroxysmal
Constant
+ Hearingloss
+ Vertigo
+ Headache
+ Psychiatric
+ Somatosens. Neck TMJ
Posttraum tinnitus
Neuro-vascular examination
Echo-doppler
Angiography
Angio-MRI
Blood test
Acute treatment
Conductive
Sensory neural
- EEG
- MRI
- BAEP
- OAE
- MRI
- BAEP
- Blood test
- MRI
- BAEP
- VEMP
- Electro cochleography
- MRI
- Furosemide test
- Lumbar puncture
Psych. Exam.
Imaging & functional exam. for:
Neck
TMJ
Cran. + ce CT/MRI
BAEP
EEG
Echo dopp
Neck exar
Psych. ex
enous ation
rombosis
m
tumor
tenosis
-Sinus thrombosis
- High jug bulb
- BIH
- Overcrowding
- Chiari
- Epilepsy
- MVC
- Aud. nerve compression
- Myoclonus
- Otosclerosis
- Otitis
- Middle ear aplasia
- Eustachian tube dysfunction
- Noise trauma
- Chronic hearingloss
- Prevention
- MVC
- Ménière
- Endolymphatic hydrops
- Canal dehiscence
- N VIII tumor
- BIH
- Chiari
- Space occupying lesion
- Basilar impression
-Depression
- Anx. disorder
- Insomnia
- Somatoform disorder
-Suicidality
Disorders
Neck
TMJ
- PTSD
- Petrous bon fracture
- Ossicular ch disruption
- Posttrauma epilepsy
- Carotid dis
- Perilymphat fistula
- Necktraum
- Otic barotra
- Cochlear concussion
If causal treatment not possible / not successful: symptomatic treatment
Auditory stimulation
Cognitive behavioral therapy
Pharmacotherapy
Neurobiofeedback
Neuromodulation

# Diagnostic Approach to Tinnitus

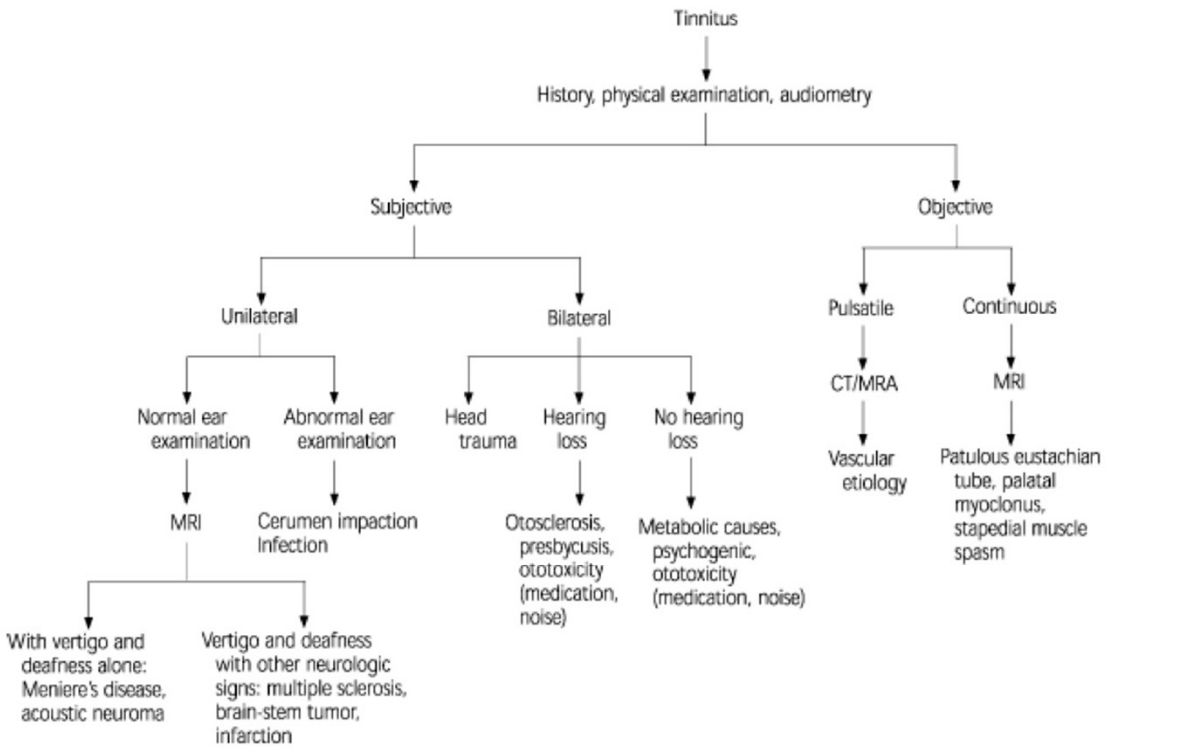



**FIGURE 1.**

A proposed algorithm for diagnostic approach to tinnitus. (CT = computed tomography; MRA = magnetic resonance angiography; MRI = magnetic resonance imaging)

*Adapted with permission from Collins RD. Algorithmic diagnosis of symptoms and signs: a cost-effective approach. 2d ed. Philadelphia: Lippincott Williams & Wilkins, 2003:568–9.*

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# examination

# Tinnitus Handicap Questionnaire (Kuk, Tyler, Russell, & Jordan, 1990)

- Validated n= 275
- 27 items, scored from 0-100
- used worldwide, translated in many languages (Google Iowa tinnitus)
- Validity & reliability independent verified by Newman et al (1996) and Dauman et al. (1998) in French
- Designed to test treatment effectiveness

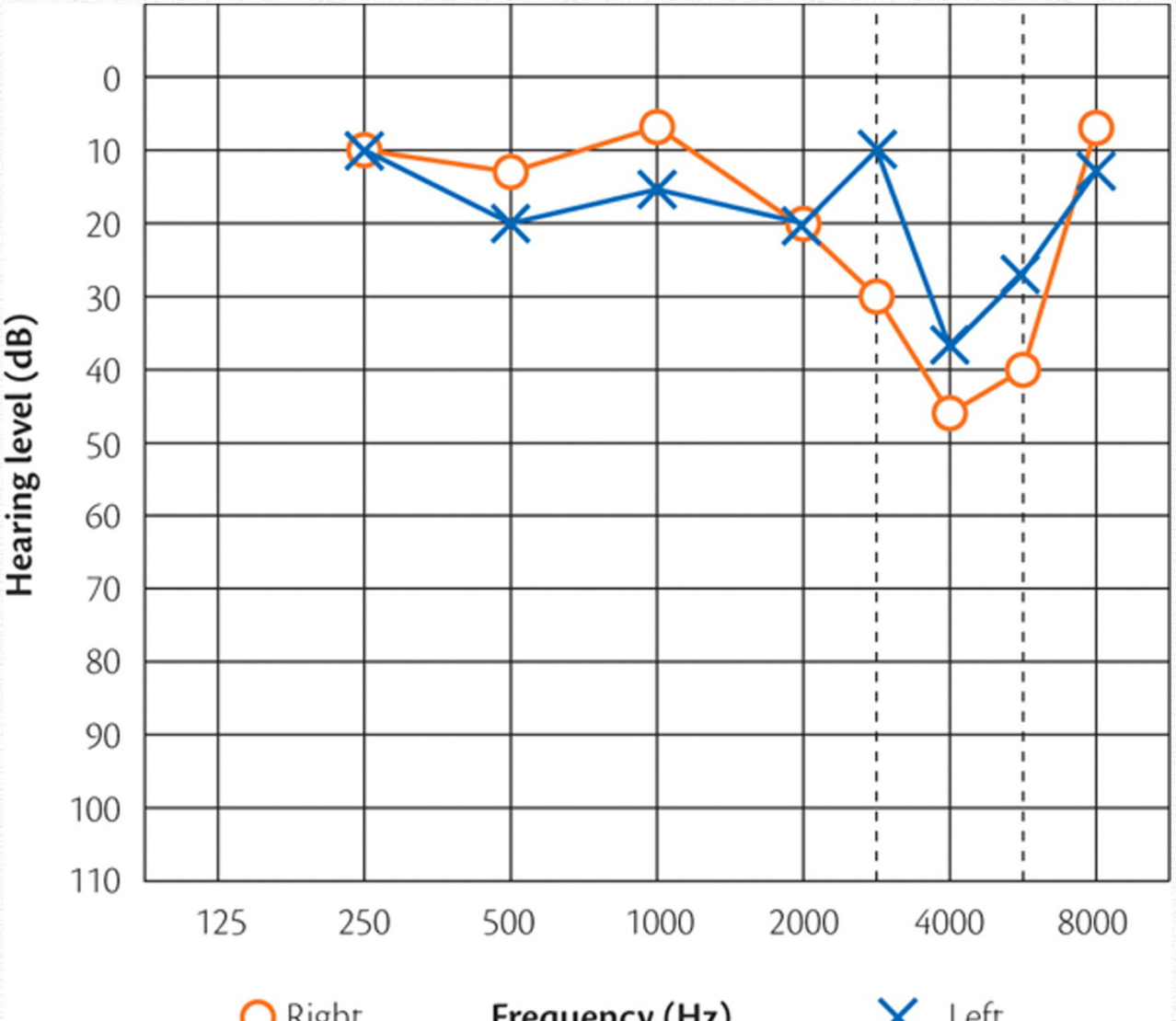
Because of your tinnitus, is it difficult for you to concentrate? Yes Someti
Does the loudness of your tinnitus make it difficult for you to hear people? Yes Someti
Does your tinnitus make you angry? Yes Sometimes
Does your tinnitus make you feel confused? Yes Sometimes
Because of your tinnitus, do you feel desperate? Yes Sometimes
Do you complain a great deal about your tinnitus? Yes Sometimes No
Because of your tinnitus, do you have trouble falling to sleep at night? Yes Sometimes
Do you feel as though you cannot escape your tinnitus? Yes Sometimes
Does your tinnitus interfere with your ability to enjoy your social activities
uch as going out to dinner, to the movies)? Yes Sometimes
10. Because of your tinnitus, do you feel frustrated? Yes
ometimes No
. Because of your tinnitus, do you feel that you have a terrible disease? Yes Sometimes
. Does your tinnitus make it difficult for you to enjoy life? Yes Sometimes
. Does your tinnitus interfere with your job or household responsibilities? Yes Someti
. Because of your tinnitus, do you find that you are often irritable? Yes Sometimes
. Because of your tinnitus, is it difficult for you to read? Yes Sometimes
. Does your tinnitus make you upset? Yes Sometimes
. Do you feel that your tinnitus problem has placed stress on your relationships
th members of your family and friends? Yes Sometimes
. Do you find it difficult to focus your attention away from your tinnitus and
other things? Yes Sometimes No
. Do you feel that you have no control over your tinnitus? Yes Sometimes
. Because of your tinnitus, do you often feel tired? Yes Sometimes
. Because of your tinnitus, do you feel depressed? Yes Sometimes
. Does your tinnitus make you feel anxious? Yes Sometimes
. Do you feel that you can no longer cope with your tinnitus? Yes Sometimes
. Does your tinnitus get worse when you are under stress? Yes Sometimes
. Does your tinnitus make you feel insecure? Yes Sometimes
. Tinnitus makes me feel anxious. Yes Sometimes

| STAGE | SCORE | DESCRIPTION |
|---|---|---|
| 1 | 0-16 | Slight: Only heard in quiet environment, very easily masked. No interference with sleep or daily activities. |
| 2 | 18-36 | Mild: Easily masked by environmental sounds and easily forgotten with activities. May occasionally interfere with sleep but not daily activities. |
| 3 | 38-56 | Moderate: May be noticed, even in the presence of background or environmental noise, although daily activities may still be performed. |
| 4 | 58-76 | Severe: Almost always heard, rarely, if ever, masked. Leads to disturbed sleep pattern and can interfere with ability to carry out normal daily activities. Quiet activities affected adversely. |
| 5 | 78-100 | Catastrophic: Always heard, disturbed sleep patterns, difficulty with any activity. |

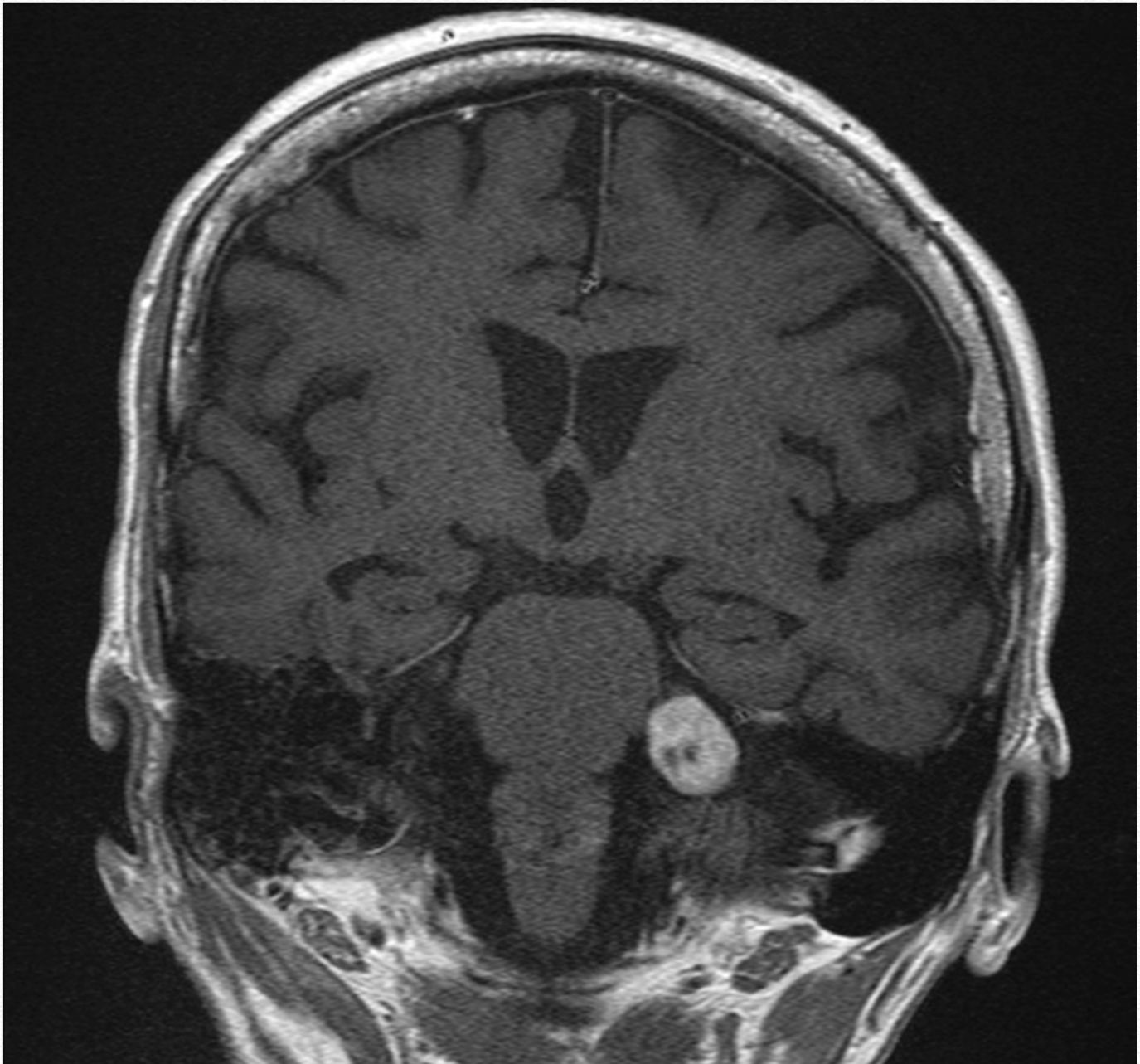
# physical examination

- The external canal and tympanic membrane should be inspected for signs of cerumen impaction, perforation, o infection.
- The cranial nerves should be examined for evidence of brain-stem damage or hearing loss.
- Auscultation over the neck, periauricular area, orbits, ar mastoid should be performed.
- Tinnitus of venous origin can be suppressed by compression of the ipsilateral jugular vein.
- The Weber and Rinne tests

# audiologic examination



# imaging studies



# Treatment

# hearing aids



# Medical Therapy

- antidepressants
- anticonvulsants
- anxiolytics
- intratympanic medications

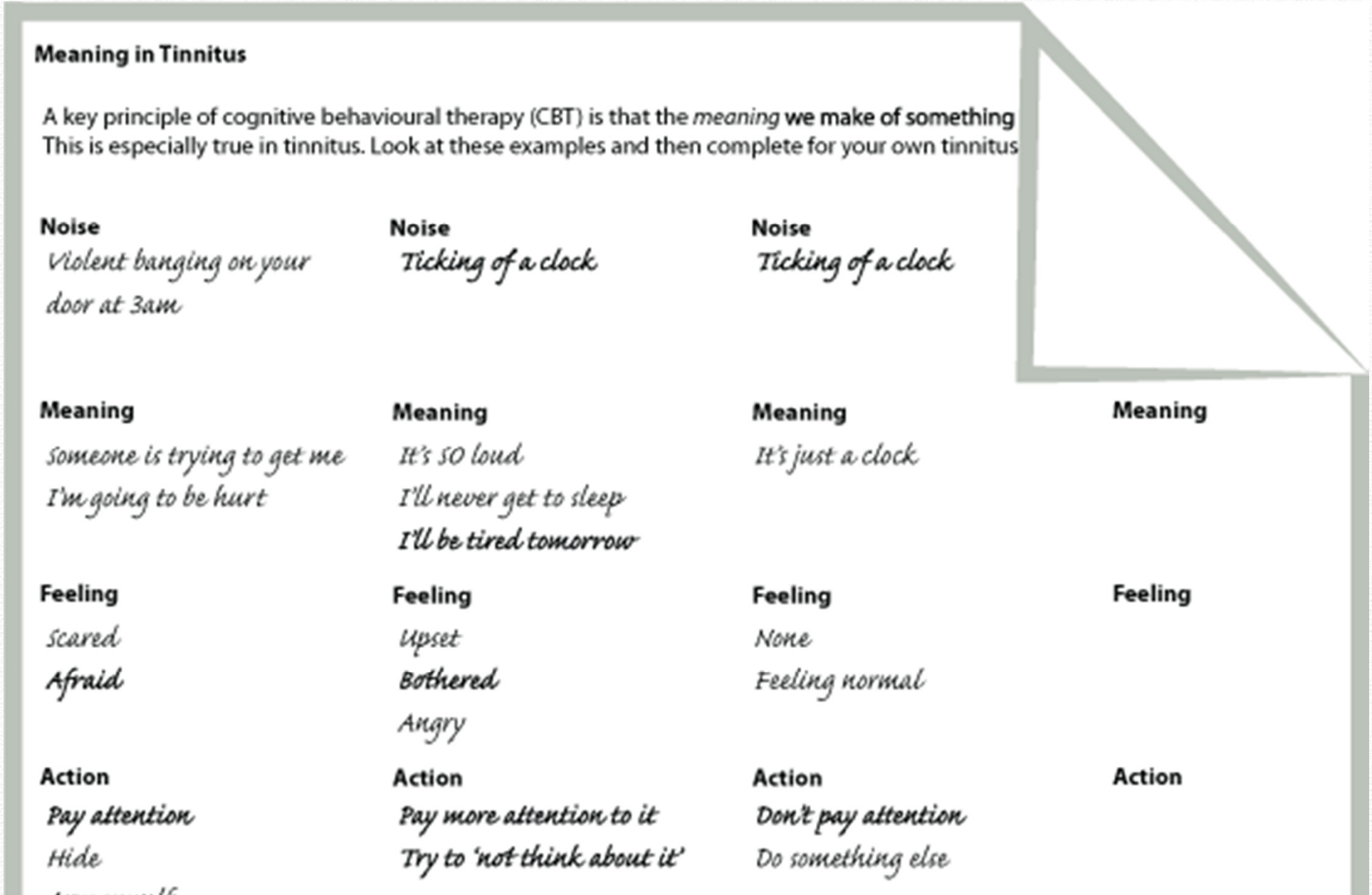


# Sound Therapy (Tinnitus Retraining Therapy)




Best Relaxation & Meditation Apps

# Cognitive Behavioral and Mindfulness Based Stress Reduction



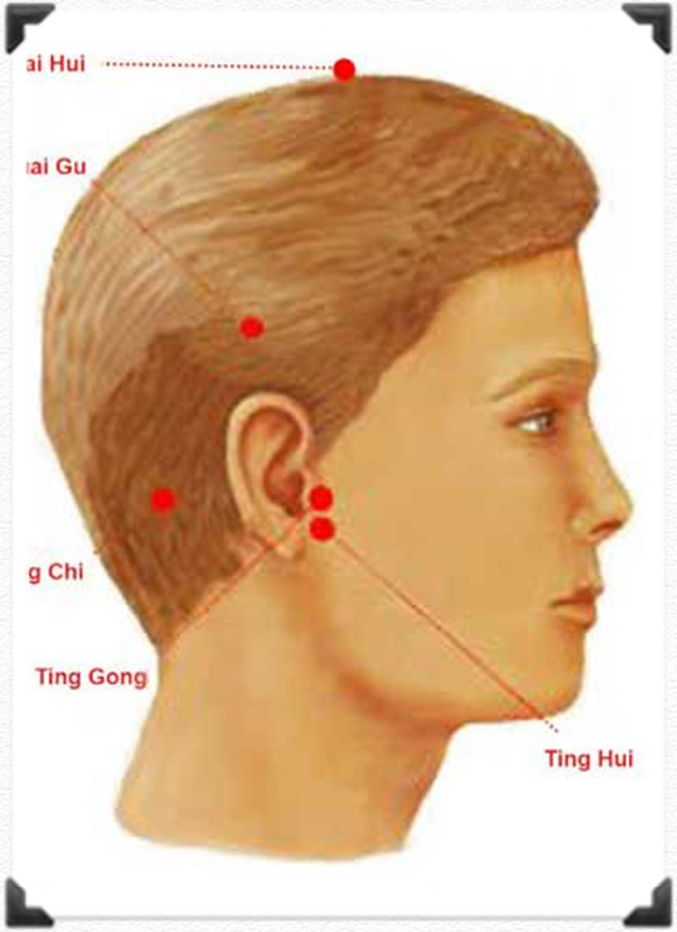
**Meaning in Tinnitus**

A key principle of cognitive behavioural therapy (CBT) is that the *meaning* we make of something
This is especially true in tinnitus. Look at these examples and then complete for your own tinnitus

| | | | |
|---|---|---|---|
| **Noise** | **Noise** | **Noise** | |
| *Violent banging on your door at 3am* | *Ticking of a clock* | *Ticking of a clock* | |
| **Meaning** | **Meaning** | **Meaning** | **Meaning** |
| *Someone is trying to get me* *I'm going to be hurt* | *It's SO loud* *I'll never get to sleep* *I'll be tired tomorrow* | *It's just a clock* | |
| **Feeling** | **Feeling** | **Feeling** | **Feeling** |
| *Scared* *Afraid* | *Upset* *Bothered* *Angry* | *None* *Feeling normal* | |
| **Action** | **Action** | **Action** | **Action** |
| *Pay attention* *Hide* | *Pay more attention to it* *Try to 'not think about it'* | *Don't pay attention* *Do something else* | |

# alternative therapies

- acupuncture
- craniosacral therapy
- biofeedback
- magnets
- hyperbaric oxygen
- hypnosis



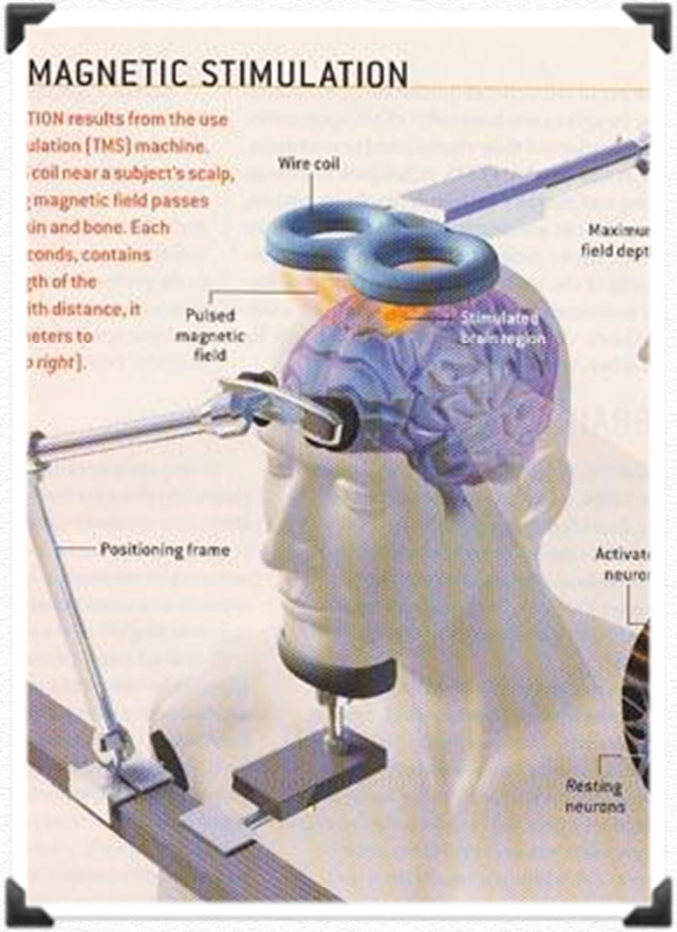
etary Supplements

nkgo biloba
elatonin,
nc
t B supplements



# TRANSCRANIAL MAGNETIC STIMULATION

- uses a pulsed magnetic field to influence electrical activity in the brain. Depending on stimulation frequency, this electrical field can either decrease or increase the electrical excitability of the brain



# TMJ therapy



## Characteristics of good Clinician

- Good listener : demonstrate you understand tinnitus
- Being perceived as a Knowledgeable Professional
- Provide a clear therapy plan
- Patient and sympathetic: listen; follow up;
- Ability to talk clearly, openly and honesty
- Self-awareness
- Sense of humour
- Positive self-esteem
- Emotional stability



thank you