

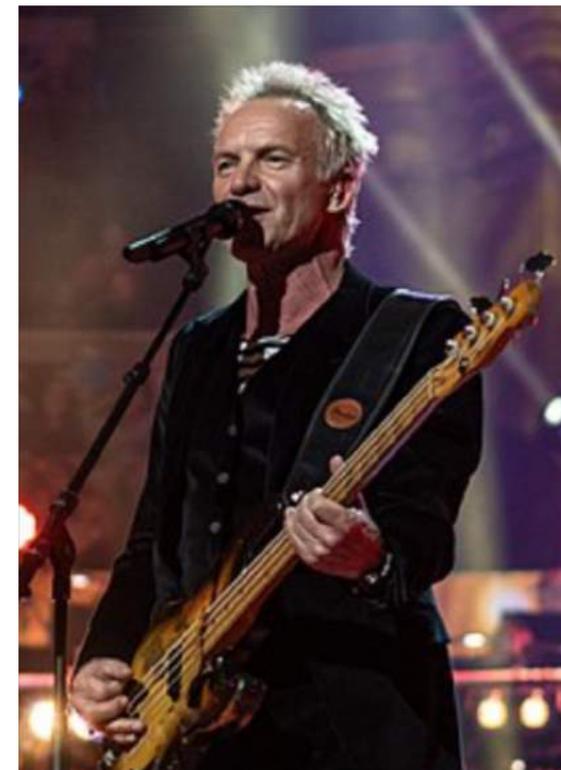
Managing the Patient with Tinnitus and Sound Sensitivity

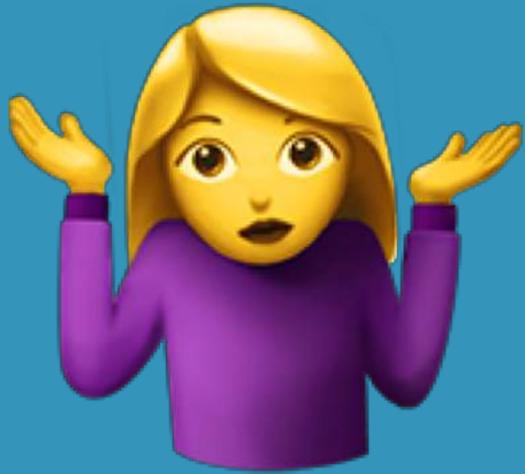
Natalie Phillips, Au.D.

Senior Audiologist, Advanced Otolaryngology and Audiology



WHO IS OUR PATIENT?





WHY

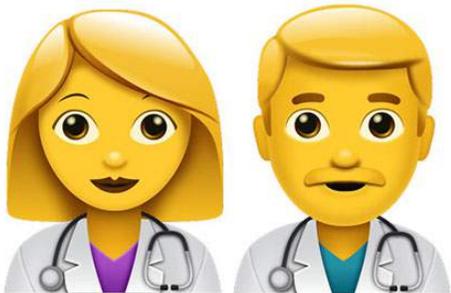
do you want to start
tinnitus management
and/or treatment?



WHAT
types of options
would you like to
provide?

Is there a market
for tinnitus and/or
sound sensitivity
management in my area?

Do I have resources in my
area for appropriate
referrals?





The BASIC Evaluation



- Audiogram
- Tymps/Reflexes
- OAEs (optional)



- Tinnitus Consult and/or HA Consult

My Experience

- Consult (~ 60 minutes)
 - Audiology Consult code – 90032
 - Paid for your time spent
 - Narrows down who needs amplification vs who is a TRUE tinnitus patient
- Evaluation (90 minutes)
 - Tinnitus Evaluation - 92625
 - Loudness Balance Test - 92562
 - SN Acuity - 92575
 - Directive Counseling - 92626 (First hour)
 - Paid for your time spent
 - Order devices at this appointment IF the next step

Tinnitus Consult (~ 60 minutes)



Tinnitus/Sound Sensitivity Initial Interview Form

Name: _____ Date: _____ Referred by: _____

TINNITUS:

RE / LE / Both / Head Intermittent / Constant Fluctuations in volume: Y / N
Onset: Gradual / Sudden "Bad Days": Y / N Frequency: Cause:
When did T start: Who do you live with?
Work? Hrs/Week:
Increased Stress?
Description of T sounds: Recent Colds/Viruses/Surgeries?
Recent changes in medications?
Exposure to loud sounds?
Activities T prevents/affects: Concentration / Sleep / QRA / Work / Restaurants / Sporting Events / Social / Other
Use ear overprotection: Y / N % Time Use:
% T awareness: _____ % T disturbance: _____ TRQ: _____

Specific T treatments:

Why is T a problem:

HYPERACUSIS:

Oversensitivity: Y / N Physical Discomfort: Y / N

Description of troublesome sounds:

Activities H prevents or affects: Concerts / Shopping / Movies / Work / Restaurants / Driving / Sporting Events / Church / Housekeeping / Childcare / Social / Other

Specific H/ST treatments:

Why is H/ST a problem:

HEARING:

Known hearing loss: Y / N

When last audiogram:

- Questionnaires
 - TRQ, THI, TFI
 - Depression/Anxiety Scale
- Patient Case History
- Make sure to look at ALL including:
 - Hearing Loss
 - Tinnitus
 - Sound Sensitivity
- Important to RANK to lay out strategy for therapy



Case History Questions

for

The Patient with TINNITUS

BASIC QUESTIONS:

RE/LE/Both/Head?

Intermittent/Constant?

Fluctuate in Volume?

Gradual/Sudden Onset?

When did it start?

How would you describe sounds?

Bad vs Good days?

% Awareness?

% Disturbance?

Does it affect sleep patterns?

Underlying medical conditions?

ADDITIONAL QUESTIONS:

Does T affect...

- Concentration? QRA? Work?
- When you leave loud area, is it worse?

Who do you live with?

What do you do for work?

How many hours do you work?

Any increased stress levels?

Recent colds/viruses/surgeries?

Recent changes in medications?

Exposure to loud sounds?

Do you use ear protection?

What treatments have you tried?

WHY is T a problem?

Case History Questions

for

The Patient with SOUND SENSITIVITY

Oversensitivity to sounds?

Physical discomfort?

When did it start?

What types of sounds?

All sounds or certain ones?

Do you use ear protection?

Does SS affect or prevent or affect you from normal everyday activities?

Have you tried anything specific to treat your SS?

Directive Counseling



- Statistics and Definitions – Tinnitus and Sound Sensitivity (Hyperacusis, Misophonia, Phonophobia)
- Heller and Bergman – tie in hearing loss
- Neurophysiological Model of Sound
- Management and Treatment available
- Give CPT Codes, ICD-10 Codes to have patient check on insurance coverage
- Give Pricing range for device(s) and therapy
- Further appointment(s) if agreed upon

The Tinnitus Evaluation (~90 minutes)

- Questionnaires
 - TRQ
 - THI
 - TFI
- Tinnitus Evaluation (add to BASIC Evaluation)
 - Ultra high-frequency thresholds (up to 12 kHz)
 - OAEs
 - LDLs
 - Tinnitus/Sound Sensitivity parameters
 - TLM
 - BBN MML
 - NBN MML
 - Residual inhibition
- Directive Counseling with spouse and/or family members
- Discuss options and strategy for management and treatment specific to patient's needs

Tinnitus Parameter Testing

- Tinnitus Loudness Match (TLM)
- BBN MML
- NBN MML
- LDL
- Residual Inhibition

The Tinnitus Evaluation (~90 minutes)

Treatment Considerations

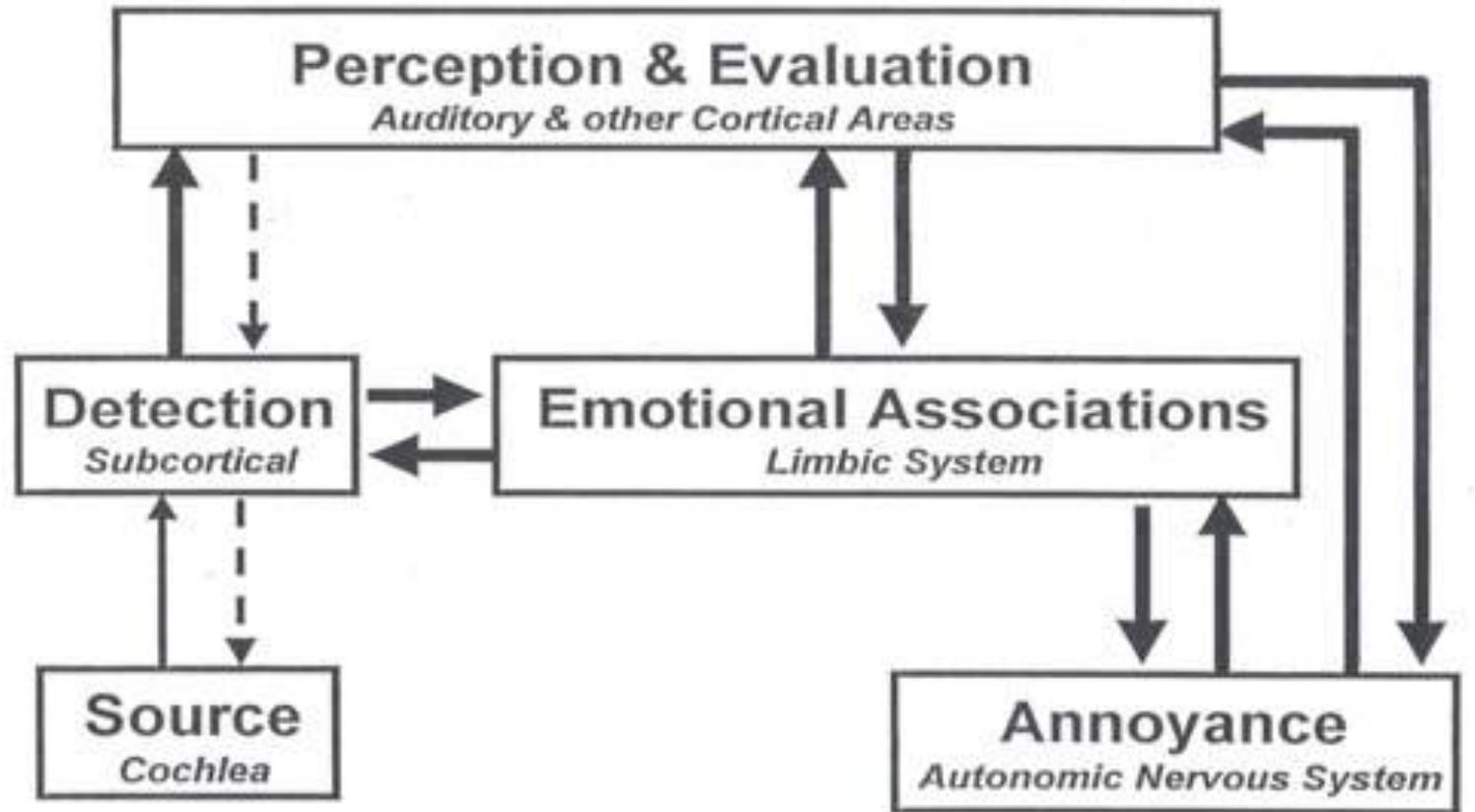
- What are you treating?
 - Tinnitus
 - Hearing loss
 - Sound sensitivity
- Financial considerations
 - Insurance coverage and reimbursement
 - V5261 – binaural behind-the-ear instruments
 - E1399 – durable medical equipment
- Patient motivation and lifestyle
 - TRQ, % awareness and % disturbance
 - THI
 - TFI
 - TLM and MML
 - Ability to reduce medications and/or stress
 - Patient compliance (scale)

Office Visits



- Time/Visits
 - Consult – 1 hour
 - Evaluation – 1 ½ hours
 - Fitting – 1 hour
 - Follow-up appts
 - 1 week, 2 week – 30 min
 - 1 month, 3 month, 6 month, 12 month – 1 hour
 - Repeat benchmark testing of TLM, BBN MML, NBN MML, LDLs, residual inhibition
- Reimbursement
 - Services
 - Consult – out of pocket
 - Evaluation – average reimbursement ~ \$481.34
 - Devices
 - sound generators/combination devices – insurance coverage applies
 - durable medical equipment
 - usually self pay, no ins coverage
 - ave insurance \$1800-2000, one insurance paid \$4800

Neurophysiological Model of Sound



Resource: Pawel Jastreboff, Sc.D.

Tinnitus Sound Therapy based on the Neurophysiological Model of Sound



Tinnitus Retraining Therapy

- Ear-level sound generators (ELSG)
- Table-top sound generators (TTSG)
- 24 hours – sound enriched environment
- 12-18 months of therapy
- >80% success rate in reducing T awareness/disturbance
- Set devices to where still can hear T – do NOT mask T
- Sounds from sound generators should never evoke annoyance (may need to adjust during therapy)
- Sounds should have no meaning and no patterns
- Set it and forget it

Neuromonics

- Oasis device with 2 phase treatment*
- Phase 1: Training phase
- Phase 2: Active treatment phase
- Music embedded w/ BBN
- Music works w/ limbic system and autonomic nervous system to relax the system
- 4 tracks
- 2-4 hours a day
- 6-8 months of therapy
- >90% success rate in reducing at least 40% of T awareness/disturbance
- Set device so can still hear T

IMPORTANT POINTS to Remember for TINNITUS Sound Therapy

- Consider ALL: Hearing loss, Tinnitus, Sound Sensitivity – dictates how you START and strategize therapy
- Pt should NEVER strain to hear
- Sounds should NEVER evoke annoyance
- Sounds should be easy to ignore and not engage the cortical level of the brain – therefore, NO patterns and NO meaning
- Sounds should NOT sound like their own tinnitus
- Set it and Forget it - for Tinnitus protocol ONLY
- Sound Sensitivity protocol may be different*

Sound Sensitivity Therapy based on the Neurophysiological Model of Sound

Hyperacusis

- Ear-level sound generators
- Table-top sound generators
- 24 hours – sound enriched environment
- 3-6 months of therapy
- Set devices to where it is comfortable
- Do NOT worry about T at this time – it may change
- Sounds from sound generators should never evoke annoyance (ABLE to adjust during therapy)
- Sounds should have no meaning and no patterns
- If need to protect ears from sounds, use earmuffs OVER
- Do NOT take out ELSG

Misophonia

- Music therapy
- Different phases dependent on patient need
- Can couple with other DST therapy
- Give patient control of environments
 - Controlled environment
 - Pick OWN music
- 3-week cycle and repeat
- Should NEVER be annoying
- Other phases may include a significant other

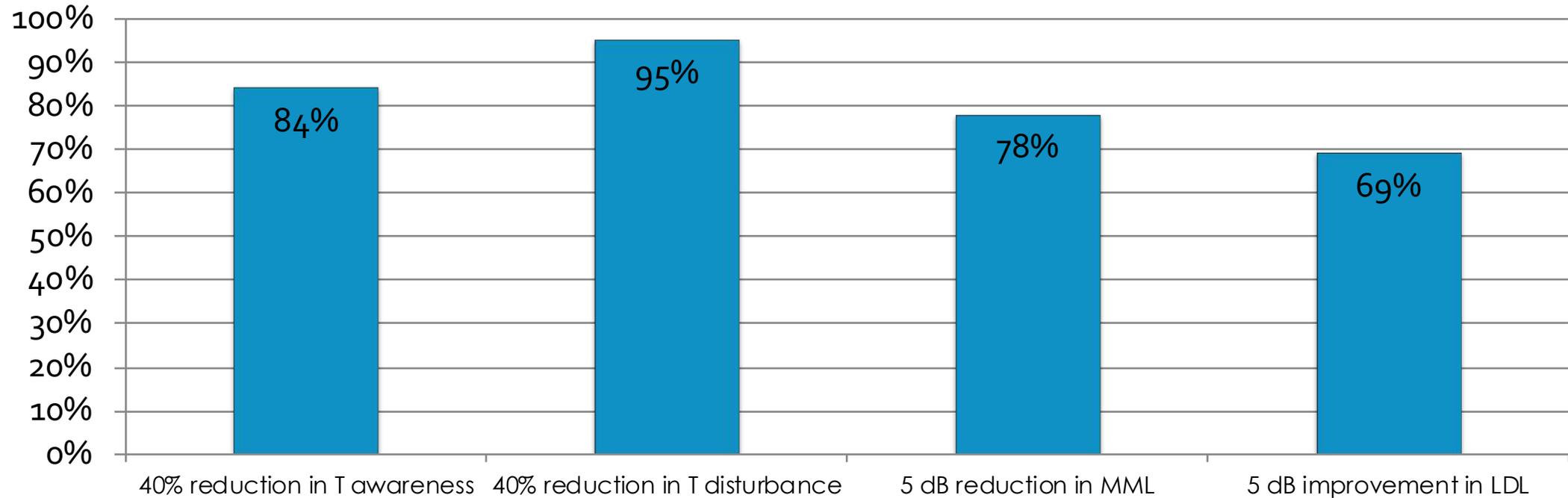
Patient Therapy Scenario: Hearing Loss (1st), Tinnitus (2nd)



- Make sure to check numbers reported on questionnaires
- Set up for amplification with a device that can be used for tinnitus therapy (back-up)
 - Fit as you would for amplification
 - Tinnitus OPTION: (can start whenever you need to)
 - Give as 2nd program to use as needed
 - Set up T sounds to be used – recommend BBN
 - Make sure pt can hear sounds on default ON
 - Make sure sounds you choose is NOT annoying to pt
 - Instruct to use as needed
 - Make sure do NOT mask tinnitus
 - Make sure VC on this program is ONLY for T sounds

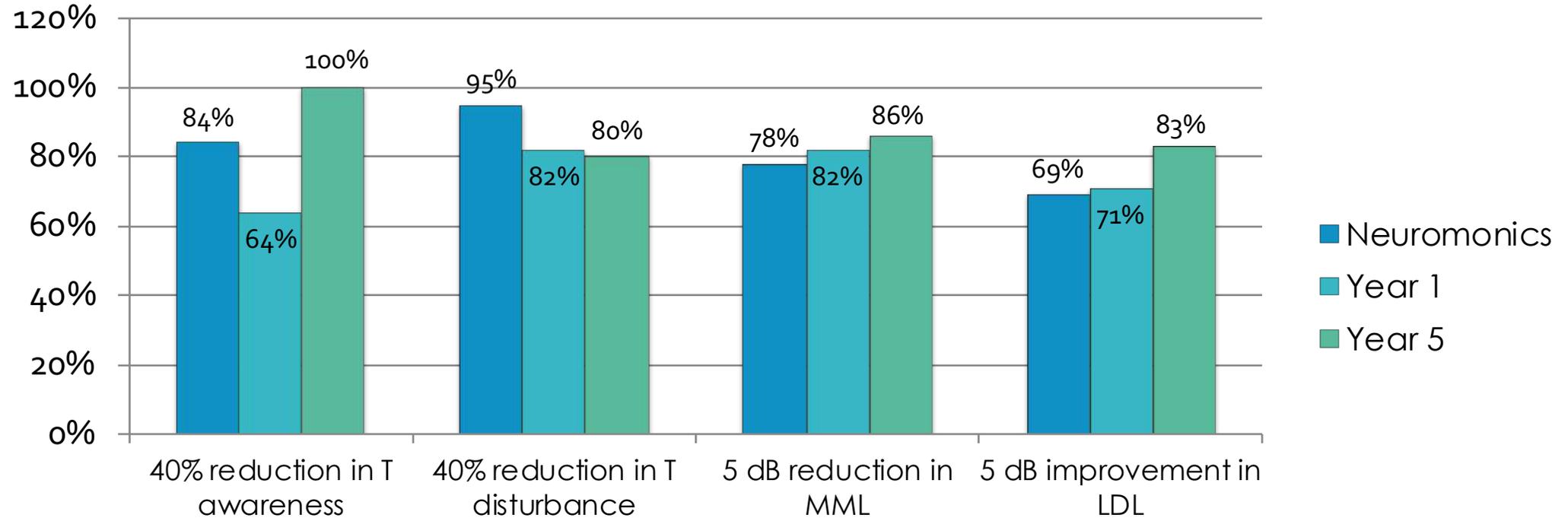
Tinnitus Management Success Rates

Neuromonics Oasis Published Clinical Success Outcomes



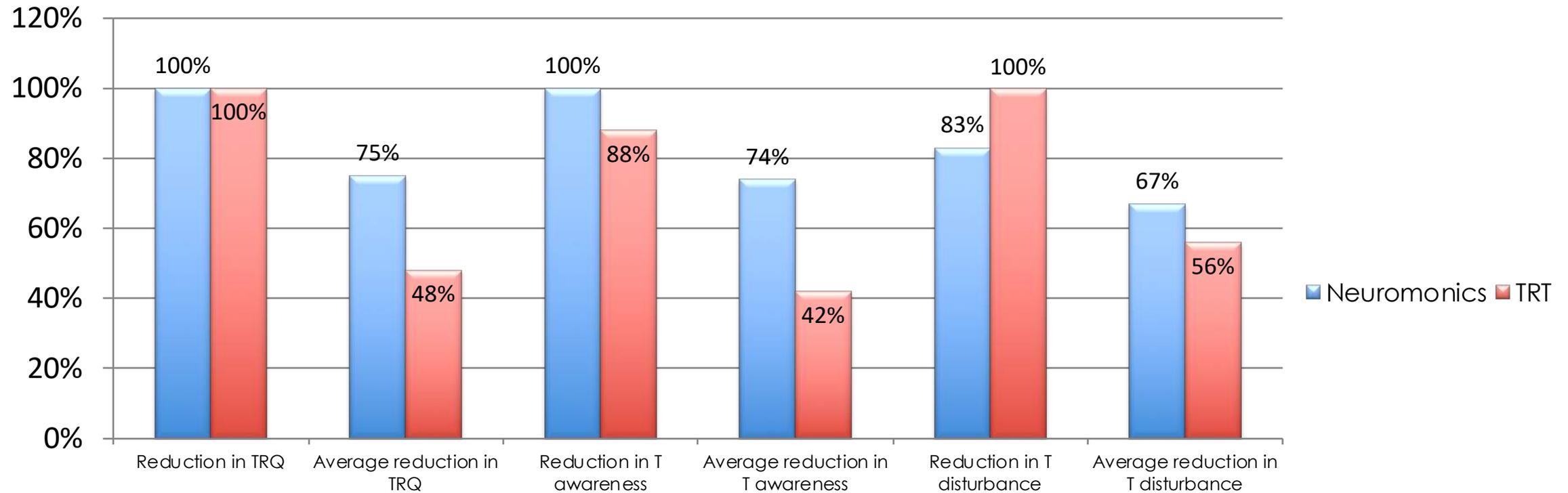
Tinnitus Management Success Rates

Neuromonics Oasis Published Clinical Success Outcomes compared to 1st year and 5th year in multi-specialty clinic



Tinnitus Management Success Rates

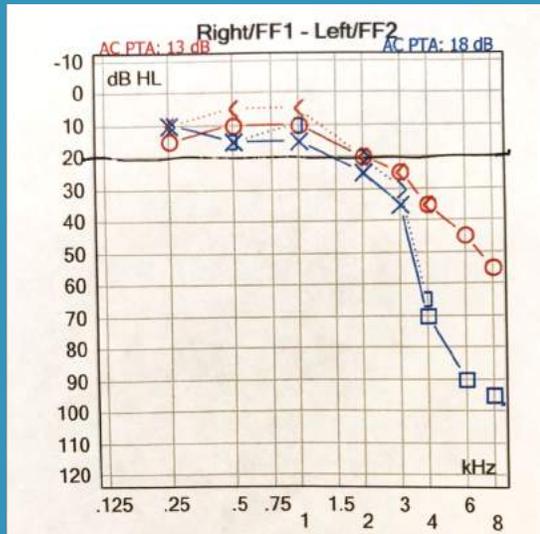
Neuromonics Oasis compared to TRT in Clinic



Case Studies



J.G. – Workman's Comp Tinnitus



- 60 yo male fireman referred by WC – injury on the job 2 years prior, hit his head, choked, and loss oxygen for about 1 minute
- Pt has T, headache, eye problems, vestibular issues since
- Seen by outside clinic – ENT/Audiology practice
 - MRI of IAC - normal
 - Fit with Oticon Ria 2 Pro Ti Mini RITEs to help with his T, but it is not helping
 - (NOTE: with Mini RITE style – no toggle switch, would have to make sure to un-sync binaural sync to adjust ears independently)
- Pt currently working with brain injury specialist and neuropsychologist

J.G. – Workman's Comp Tinnitus



- Tinnitus Consult: +T, +SS, +HL
- T for both ears L>R – Constant, fluctuates in volume
- Bad days when pt is more tired
- Affects concentration and sleep – takes Trazodone

- Pt has SS and physical discomfort to wife's hairdryer, fan at home/bathroom, noise from oven
- Pt has to leave the room or turn on radio
- Describes sounds "like a knife to the ears"
- Avoids shopping, attending church, does not drive often

- TRQ = 42
- T awareness = 90-100%, T disturbance = 75-80%
- THI = 44
- TFI = 60.8 (T is a BIG problem)

J.G. – Workman's Comp Tinnitus

- Wrote letter to get NEW devices approved from WC
- Fitting (6 months after evaluation)
 - Fit Widex Evoke 440 Fusion 2 RIC 312
 - Added Zen+ (toggle) to allow volume of Zen ONLY
 - Pt to use Evoke App and Tinnitus app for TRT
- TRQ = 41 (T eval = 24)
- T awareness = 90% (T eval = 100%)
- T disturbance = 100% (T eval = 80-90%)
- THI = 52 (T eval = 44)
- TFI = 68.4 (T is a big problem) (T eval = 60)
- *NOTE: numbers are higher at fitting than evaluation*

J.G. – Workman's Comp Tinnitus

- 1 Week f/u visit:
 - Pt VERY happy to be able to hear wife/children
 - Using T app and playing directly from phone at night
 - Adjusting Zen throughout day if he does not hear it
 - RECOMMENDATION: Set it and forget it

- TRQ = 36 (HAF = 41)
- T awareness = 90-100% (same)
- T disturbance = 50-60% (HAF = 100%)
- THI = 28 (HAF = 52)
- TFI = 58 (HAF = 68.4)

- 2 Week f/u visit:
 - Pt turning Zen up to limits – no head room
 - Increased Zen noise, pt NOT straining to hear
 - *Numbers are about the same*

J.G. – Workman's Comp Tinnitus



- 1 Month f/u visit:
 - Pt had nerves in neck ablated to help w/ severe pain
 - At top of Zen noise so turned up for more head room
- 2 Month f/u visit:
 - Pt states has to switch to Universal (amplification ONLY) to communicate with family at home
 - Disadvantage is NO therapy during that time and brain has to focus to re-set devices
 - RECOMMENDATION: On weekends and weekday evenings w/ family – set Zen lower than usual and set it and forget it
- TRQ = 27 (2 week ck = 34)
- T awareness = <50% (2 week ck = 100%)
- T disturbance = 20-30% (2 week ck = 70-80%)

J.G. – Workman's Comp Tinnitus

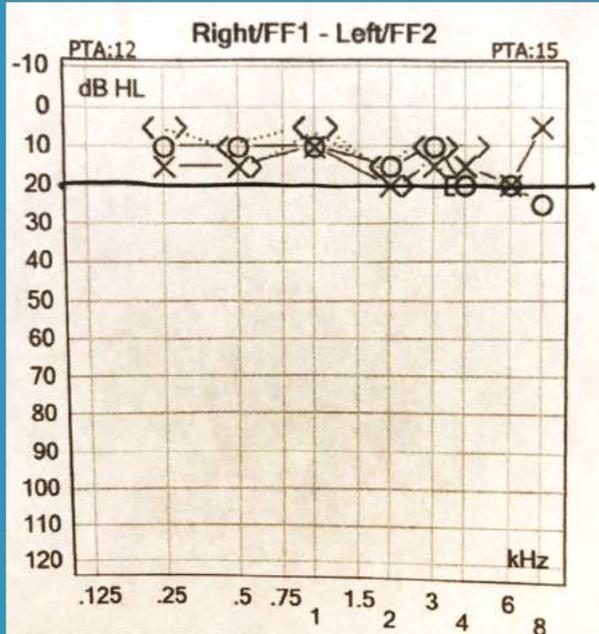


- 3 Month f/u visit:
 - Had 2nd nerve ablation for neck (on other side) – no help with neck pain
 - LOVES his devices and being able to hear – states other devices he was fit with only had sounds w/o amplification – he states devices are a “joy” to wear and he can hear his family
 - Turning down Zen when he needs to and during the day notices he does not hear his T
 - Waking up 3-4x/night, uses TTSG and lies in bed
 - TRQ = 22 (2 mo ck = 27)
 - T awareness = 50% (2 mo ck = <50%)
 - T disturbance = 50% (2 mo ck = 20-30%)
 - THI = 12 (HAF =52, 1 week = 28)
 - TFI = 25.6 small problem (HAF=68.4, 1 wk=58)

J.G. – Workman's Comp Tinnitus

- 6 Month f/u visit:
 - Pt still LOVES his devices and being able to hear and take phone calls with HAs
 - Pt currently has a sinus infection and his T has increased as his ears feel plugged
- TRQ = 29 (3 mo ck = 22)
- T awareness = 20-30% (3 mo ck = 50%)
- T disturbance = 20-30% (3 mo ck = 50%)
- THI = 40 (HAF = 52, 1 week = 28)
- TFI = 29.2 small problem (HAF=68.4, 1 wk=58)

K.N. – Tinnitus and Sleep



- 64 yo woman c/o T following URI
- Difficulty sleeping due to T
- No c/o HL, dizziness, + fullness – ECoG – RE abnormal, started on Lasix
- After 2 Lasix pills, pt noticed T spiked
- Tried acupuncture, T spiked
- Tried using sound machine at home at night
- T Consult:
 - T affects concentration, QRA, work (editor – works 3-4 hrs/day reading in quiet), sleep (takes Ambien)
 - NO increased stress, NO recent colds, NO loud sounds
 - +T, no SS, no HL
 - TRQ = 48
 - T awareness = 75%; T disturbance = 75%
 - THI = 60, TFI = 57.2 (T is a big problem)

K.N. – Tinnitus and Sleep

- T Evaluation
 - Returned 4 months later for evaluation
 - Pt admits she went to local “tinnitus clinic” who told her she was doing “TRT”. She was fit with Oticon devices and using them her waking hours; set w/ 2 sound patterns and used a remote to control volume of BOTH ears at the same time)
 - Pt interested in trying Neuromonics
 - NOTE: Pt broke left shoulder/arm 5 weeks prior – she has been on Vicodin which has made her T worse
- TRQ = 58 (T consult = 48)
- T awareness = 100% (T consult = 75%)
- T disturbance = 90-95% (T consult = 75%)
- THI = 70 (T consult = 60)
- TFI = 63.2 (T consult = 57.2)

K.N. – Tinnitus and Sleep



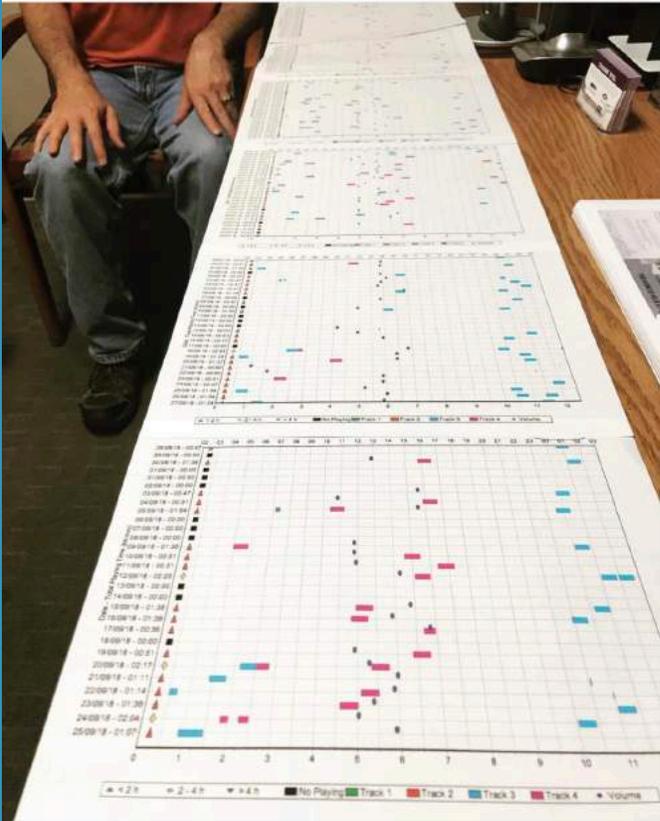
- Fitting
 - Neuromonics Oasis II Device
 - Desired tx goals: sleep & peace/quiet
 - Good expectations based on questionnaire
- *Numbers dropped a little at Fitting visit from Eval*
 - TRQ = 44 (T consult = 48)
 - T awareness = 80% (T consult = 75%)
 - T disturbance = 80% (T consult = 75%)
 - THI = 54 (T consult = 60)
 - TFI = 57.6 (T consult = 57.2)

K.N. – Tinnitus and Sleep



- 1 Week f/u visit:
 - Downloaded device to check on usage
 - 7 days TOTAL: 5 days used 2-4 hours, 1 day of no use
 - Hours during day anywhere b/n 10am-8pm
 - Volume Level = 4-5
 - Checked on setting to interaction levels
 - Pt concerned about sleep and wonders when ANS will decrease – reviewed expectations and to try to use closer to 4 hours and to use when trying to fall asleep
- *Numbers increased from Fitting*
 - TRQ = 48 (T consult = 48)
 - T awareness = 98% (T consult = 75%)
 - T disturbance = 98% (T consult = 75%)
 - THI = 42 (T consult = 60)
 - TFI = 58 (T consult = 57.2)

K.N. – Tinnitus and Sleep



- 2 Week f/u visit:
 - Pt traveling and did not use her device for 4 days of last week
 - Put device on and after 2 hours, "T is worse than ever"
 - Downloaded device, verified 3-4 days of use, no nighttime use
 - Discussed nighttime/sleep patterns – she sleeps in 1-2 hour increments, wakes up 3x/night
 - RECOMMEND: use device at night on T₃/T₄
- *Numbers dropped a little from 1 week visit/consult*
 - TRQ = 41 (T consult = 48)
 - T awareness = 75% (T consult = 75%)
 - T disturbance = 75% (T consult = 75%)
 - THI = 38 (T consult = 60)
 - TFI = 59.6 (T consult = 57.2)

K.N. – Tinnitus and Sleep



- 3 Week f/u visit:
 - Using device at night, but falls asleep before it ends
 - NOT covering her T
 - Sleep patterns ~ same
 - Reports awareness on a Saturday that T was gone, but only for 30 min
- *Numbers dropped a little from 2 week visit*
 - TRQ = 29 (2 wk visit = 41, T consult = 48)
 - T awareness = 70% (2 wk visit/consult = 75%)
 - T disturbance = 70% (2 wk visit/consult = 75%)
 - THI = 36 (2 wk visit = 38, T consult = 60)
 - TFI = 47.2 - moderate (2 wk visit = 59.6, T consult = 57.2)
- Pt would like to work on improving sleep – gave Clinical Psychologist referral

K.N. – Tinnitus and Sleep

- 4 Week f/u visit:
 - Pt noticing periods of silence and “improvement”
 - Did not see clinical psychologist as of yet
 - Using device at night on T₃/T₄
- *Numbers dropped*
 - TRQ = 26 (T eval = 58)
 - T awareness = 50% (T eval = 100%)
 - T disturbance = 75% (T eval = 90-95%)
 - THI = 32 (T eval = 70)
 - TFI = 39.6 (T eval = 63.2)

 - TLM = 2 dB (same)
 - BBN MML = 8 dB (T eval = 18 dB)
 - NBN MML = 16 dB (T eval = 24 dB)

K.N. – Tinnitus and Sleep



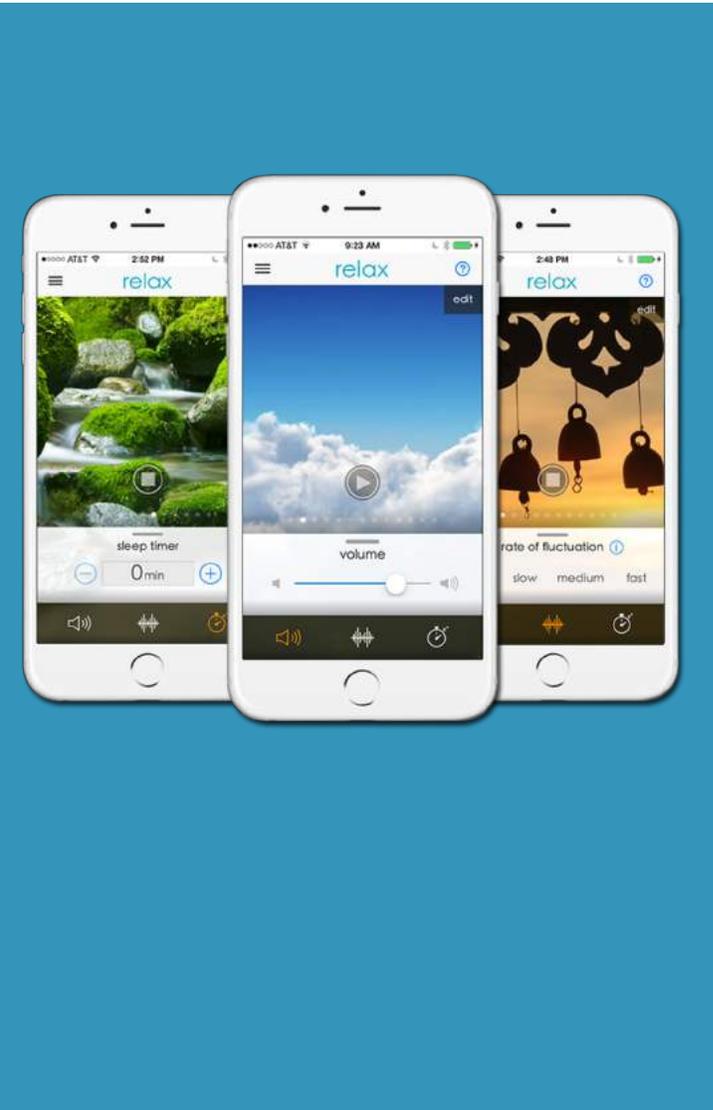
- 1 ½ Month f/u visit:
 - Downloaded device – usage GOOD
 - Pt saw Clinical Psychologist – working on sleep hygiene and meditation exercises to improve relaxation/sleep
 - Pt on vacation – used device less during this time
 - Decreased caffeine
- *Numbers dropped*
 - TRQ = 10 (T eval = 58)
 - T awareness = 50% (T eval = 100%)
 - T disturbance = 40% (T eval = 90-95%)
 - THI = 18 (T eval = 70)
 - TFI = 35.6 (T eval = 63.2)

K.N. – Tinnitus and Sleep



- 2 ½ Month f/u visit:
 - Pt feels Clinical Psychologist does not have much to offer her
 - Cousin who is Psychologist in Rhode Island recommends hypnotherapist - offered to discuss TRT
 - Sleeps now 5-6 hours/night, waking every 1-2 hours - PCP recommended sleep study
- *Numbers dropped slightly*
 - TRQ = 10 (T eval = 58)
 - T awareness = 65% (T eval = 100%)
 - T disturbance = 50% (T eval = 90-95%)
 - THI = 16 (T eval = 70)
 - TFI = 31.6 (T eval = 63.2)

K.N. – Tinnitus and Sleep



- 3 ½ Month f/u visit:
 - Pt feels T₃/T₄ at night keeps her up – recommend for pt NOT to use at night
 - Helped pt download tinnitus app for use at night
 - RECOMMEND pt transition to Phase II, but pt would like to continue to work on sleep issues first
- *Numbers dropped*
 - TRQ = 7 (T eval = 58)
 - T awareness = 60% (T eval = 100%)
 - T disturbance = 30% (T eval = 90-95%)
 - THI = 18 (T eval = 70)
 - TFI = 26.4 (T eval = 63.2)

K.N. – Tinnitus and Sleep

- 4 ½ Month f/u visit:
 - Pt still on Phase I
 - Pt has NOT had sleep study yet
 - Pt currently remodeling home, involved in gardening, book club, volunteering, has to undergo breast implant revision surgery, paralyzed vocal cord
- *Numbers dropped slightly*
 - TRQ = 5 (T eval = 58)
 - T awareness = 60% (T eval = 100%)
 - T disturbance = 75% (T eval = 90-95%)
 - THI = 16 (T eval = 70)
 - TFI = 28.8 (T eval = 63.2)
- RECOMMENDATIONS:
 - Get sleep study done
 - Look into vocal cord surgery for possibilities

K.N. – Tinnitus and Sleep



- 6 Month f/u visit:
 - Pt still on Phase I
 - Finally saw sleep specialist – scheduled sleep study
 - Pt off of anti-anxiety/depression meds
- *Numbers dropped slightly*
 - TRQ = 3 (T eval = 58)
 - T awareness = 40% (T eval = 100%)
 - T disturbance = 50% (T eval = 90-95%)
 - THI = 14 (T eval = 70)
 - TFI = 24.8 (T eval = 63.2)
- RECOMMENDATIONS:
 - Stay on Phase I during sleep study

K.N. – Tinnitus and Sleep

- 8 Month f/u visit:
 - Sleep study DONE – pt dx with mild sleep apnea, normal “sleep architecture”
 - Sleep provider recommended a dental device to bring jaw out, C-pap machine, Body pillow)
 - Breast implant leaking again
 - Numbness in legs – working with PT
 - Pt feels T is at “bottom of list”
 - Left on Phase I
- *Numbers dropped slightly*
 - TRQ = 3 (T eval = 58)
 - T awareness = 60% (T eval = 100%)
 - T disturbance = 20% (T eval = 90-95%)
 - THI = 14 (T eval = 70)
 - TFI = 22.8 (T eval = 63.2)

K.N. – Tinnitus and Sleep

- 10 Month f/u visit:
 - Pt upset about sleep study results – now says she has NO apnea by technician, nurse calls and says she HAS apnea
 - NO hypnotherapy yet
 - Not taking anti-anxiety meds
 - Had 3 teeth extractions
 - Using TTSG
- *Numbers dropped slightly*
 - TRQ = 2 (T eval = 58)
 - T awareness = 60% (T eval = 100%)
 - T disturbance = 50% (T eval = 90-95%)
 - THI = 8 (T eval = 70)
 - TFI = 24.8 (T eval = 63.2)

K.N. – Tinnitus and Sleep

- 1 Year f/u visit:
 - NOTE: pt's device had to be replaced at 1 year mark – black screen – can't reset
 - Still on Phase I
 - Pt had MRI to look an numbness in legs
 - Did not start c-pap machine yet
- *Numbers are higher than 10 month visit*
 - TRQ = 7 (T eval = 58)
 - T awareness = 75% (T eval = 100%)
 - T disturbance = 50% (T eval = 90-95%)
 - THI = 16 (T eval = 70)
 - TFI = 37.6 (T eval = 63.2)
- RECOMMENDATIONS: f/u and check-in every 3 months and continue to work on sleep issues

K.N. – Tinnitus and Sleep

- 15 Month f/u visit:
 - Pt using device as needed
 - Still on Phase I
 - Did not pursue c-pap, MRI indicated “severe spinal stenosis”
 - Pt on soft food diet for dental implants
- *Numbers are higher than 10 month visit*
 - TRQ = 1 (T eval = 58)
 - T awareness = 50% (T eval = 100%)
 - T disturbance = 60% (T eval = 90-95%)
 - THI = 18 (T eval = 70)
 - TFI = 21.2 (T eval = 63.2)
- 18 Month f/u visit: *Numbers decreased further*
TRQ = 2, aware = 50%, disturb = 30%, THI = 6
TFI = 14
- 2 year “Spot check”: TRQ = 0, aware = 25%, disturb = 10%, THI = 4,
TFI = 12

L. F. – Sound Sensitivity



- 16 yo comes in with parent – slouches in my chair, no eye contact
- Pt reports sound sensitivity to pencils, scratching noises, and people breathing and eating
- Uses headphones with white noise at home (no problems as school)
- Still eat together as a family, but have to have TV on in addition to headphones with noise
- Evaluation:
 - Hearing WNL AU, no otalgia, pressure, T, dizziness
 - LDLs indicate decreased sound tolerance AU (70-90 dB)
- RECOMMENDATIONS:
 - Music therapy – 3 week cycle, no headphones, controlled environment
 - Consider sound therapy for DST

L. F. – Sound Sensitivity



- 6 Week f/u visit:
 - After two 3-week cycles
 - Pt looks different – he is sitting up and making eye contact, **EXCITED** to share his progress
 - His face lit up as he shares that he has been doing well with his music
 - He looks forward to doing his therapy – 40 min listening to music in his room, choosing OWN music – including country to rock
- Notices his reactions to disturbing sounds are not as bad
- He has a longer fuse and does not have to get up and “bolt” from the room

L. F. – Sound Sensitivity

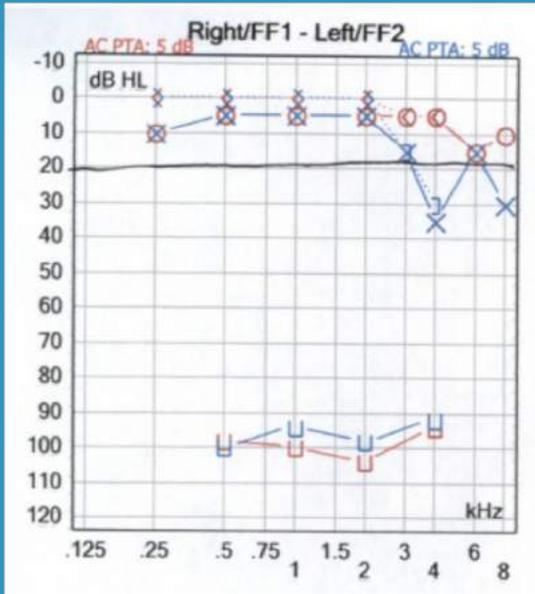


A.B. – Workman's Comp Tinnitus TOC



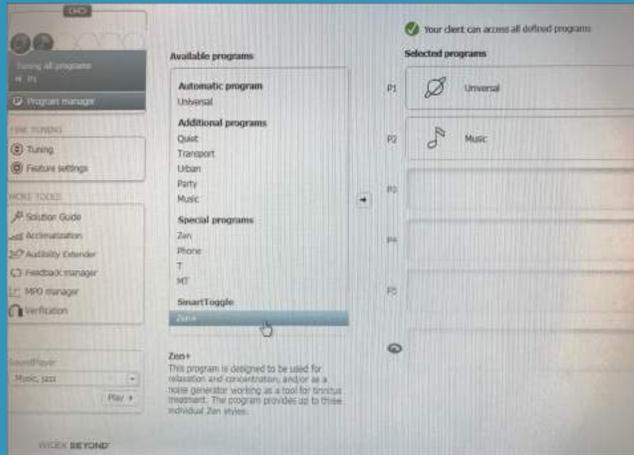
- 37 yo referred by WC in another city to have T therapy
- Pt had sudden hearing loss following an incident on shooting range – given prednisone, hearing improved, T lingered
- Pt seen by outside, local Audiology practice and was fit with Widex Beyond 330 RIC for LE only – instructed pt to “listen to fractal tones and use multiple zen programs”
- After 6 months, T is not improving per pt
- MY RECOMMENDATION: to fit both ears for T therapy for better habituation – approved by WC

A.B. – Workman's Comp Tinnitus TOC



- T Consult/Eval Appt/Hx:
 - T is constant, does not fluctuate, sudden onset working as a range safety officer at a firing range with exposure and sudden HL for LE
 - Pt lives at home with husband and 2 teenagers, works safety/security at highschool, 40 hrs/week
 - T affects concentration, sleep, pt carries earplugs to use if around loud noise
- + T, no SS, + HL
- TRQ = 40
- T awareness = 75%
- T disturbance = 50%
- THI = 48
- TFI = 52.4 (T is a moderate problem)

A.B. – Workman’s Comp Tinnitus TOC

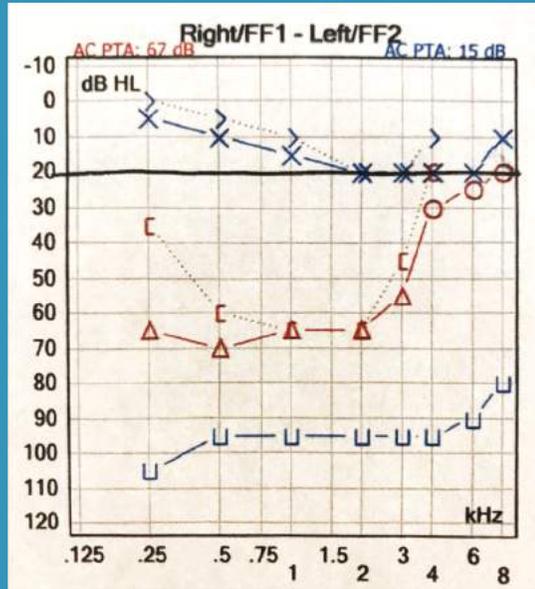


- Fitting:
 - Widex Evoke 440 Fusion 2 RIC 312
 - Set w/ Zen+ (toggle) – can set VC to zen noise only
- RECOMMENDATIONS:
 - ELSG on Zen program all the time
 - TTSG at night
 - Do NOT mask T
 - Choose sounds with no patterns/meaning
 - Sounds should not evoke annoyance

A.B. – Workman's Comp Tinnitus TOC

- 2 Week f/u visit:
 - Pt is doing well with devices, but Zen sounds are different in each ear, so distracting – changed to Zen noise shaped and used filtered noise to match/balance
 - TRQ = 42 (T eval = 40)
 - T awareness = 50% (T eval = 75%)
 - T disturbance = 45% (T eval = 50%)
 - THI = 38 (T eval = 48)
 - TFI = 48.4 (T eval = 52.4)
- 1 Month f/u visit
 - Zen is more tolerable, no adjustments made
 - TRQ = 14
 - T aware = 30%, T disturb = 20%
 - THI = 34, TFI = 28.4
 - TLM dropped 4 dB, BBN MML dropped 6 dB

K.P. – Reactive Tinnitus



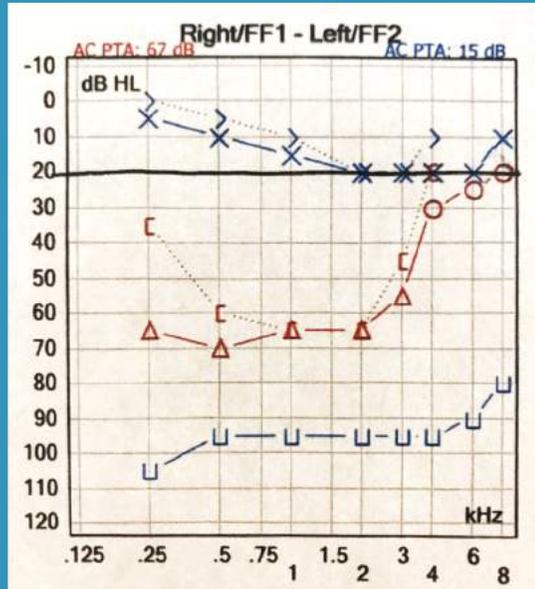
- 46 yo w/ RIGHT sudden HL following sinus infection
- T and SS for RIGHT
- dizziness and nausea – episodes are random, sometimes with a light headache
- When dizzy, T is louder
- When T is triggered, SS is worse
- Pt w/ hx of head/neck injury
- Some blurred vision, visual difficulties
- VNG indicated mild fixating UBN in certain positions

K.P. – Reactive Tinnitus



- Pt lives at home with his wife and 9 kids
- Some increase stress at home building addition to new home
- No colds, viruses; tries to keep nose clear w/ Neti-pot
- CURRENTLY: wears soft, foam, fully attenuating earplug for RE – by his report – he does not like the feeling of vibration of his eardrum
- Pt has sensitivity to clinking dishes, metal on metal, he has to leave or plug ears
- Outside clinic fit him w/ CROS with NO sound therapy
- Pt could not tolerate

K.P. – Reactive Tinnitus



- T consult:
 - +T, +SS, +HL
 - TRQ = 63
 - T awareness = 80-90%
 - T disturbance = 80-90%
 - THI = 90
 - TFI = 77.6 (T is a BIG problem)

K.P. – Reactive Tinnitus



- TOC Appt:
 - Phonak Audeo V70 HA for LE, CROS for RE w/ full shell
 - Pt not wearing device after a year
 - Pt uses earplug for RE
 - Talked about importance of NOT using plug for RE b/c:
 - Plugging up residual hearing
 - Quiet-er environment, possibly making T worse
 - Tricking brain possibly creating more SS
- RECOMMENDATION:
 - Music therapy
 - Try CROS HA w/ open dome on RE
 - Gave pt options: large closed dome w/ slit vents and double dome as back-up instead of full shell EM
 - Use industrial earmuffs OVER devices if need to reduce level of sounds

K.P. – Reactive Tinnitus



- 1 Week f/u visit:
 - Pt doing well with open dome on CROS side – noticing more high frequencies he was missing out
 - Attended a Ziggy Marley concert and had no problems
 - Used earplugs and earmuffs OVER when using loud equipment (construction going on at home)

- 1 Month f/u visit:
 - SS is not getting better and T is still there
 - Pt not doing music therapy - “too busy”
 - Adjusted HA mic side to reduce ALL the way down (unable to mute mic)

K.P. – Reactive Tinnitus



- 4 Month f/u visit:
 - “No change”, still SS and T, ranking SS as 1st
 - TRQ = 64 (Consult=63), T awareness = 60-70% (C=80-90%), T disturbance = 90-100% (C=80-90%), THI = 80 (C=90), TFI = 68.8 (C=77.6)
 - RECOMMEND to start SS/T protocols
 - DO NOT use CROS unit
 - Looked at Phonak device for LE only, but unable to turn OFF mic, only push button for VC
 - Fit Demo Signia 7 Primax for LE only w/ T sounds w/ Brownian noise (NOTE: gave pt option of using Widex w/ fractal tones but pt did not want tones and did not want a BTE Fashion size to use toggle switch)
 - Went over H and misophonia protocol
 - Use ELSG during day, TTSG at night

K.P. – Reactive Tinnitus

- 1 Week f/u visit (from start of SS protocol):
 - “Tinnitus is worse” but SS is not worse
 - TRQ = 42 (Consult=63, start of SS protocol =64)
 - T awareness = 70-90% (C=80-90%, SS protocol=60-70%)
 - T disturbance = 90% (C=80-90%, SS protocol=90-100%)
 - THI = 66 (C=90, SS protocol=80)
 - TFI = 66 (C=77.6, SS protocol=68.8)
- Reviewed day with patient to tweak usage
 - Pt NOT adjusting sounds throughout day
 - Pt NOT putting in devices until after morning routine (1-2 hours in silence)
 - Pt NOT doing misophonia exercises
- RECOMMENDATIONS:
 - To use devices in morning before shower
 - Try to do music exercises

K.P. – Reactive Tinnitus

- 2 Week f/u visit:
 - Pt stated over the holidays, hard to do music exercises and use his devices
 - He noted the “teen chatter” in the kitchen was ok and he did not have to leave as he usually does
 - TRQ = 50, T awareness = 90%, T disturbance = 85%, THI = 62, TFI = 69.6 (*NOTE: numbers are stable, pt did not want to make any adjustments*)
 - RECOMMENDATION: Try to use devices and exercises for a solid month and return.
- 4 Week f/u visit:
 - Pt states T and SS is the same
 - Talked to pt re: options:
 - Demo to lease program (financial issues)
 - Try Neuromonics
 - Do Nothing – no protocol, no exercises

H.R. – Special Case



- 51 yo service officer - accident w/ brain injury 11/23/09
- SS issues during 9 years following, not getting better
- Married 28 years, lived on quiet, wooded property – wife does not talk on the phone around him, saw mill across the street of the house 2 acres away but can hear high-pitched sounds from inside the home
- Pt is sensitive to all sounds, but no physical discomfort
- Currently wears OTC earplugs whenever outside of house, sometimes at home
- 3 years after accident, seen by Audiologist – Dx with some HL and hyperacusis – tried a SG, but sound was too distracting (brain injury)

H.R. – Special Case



Thanksgiving



Christmas Shopping!

- Initially, would not come into office – stood by the door with his backpack on to ready to “make his escape”
- Wife went over Case Hx
- Wanted to do Audio, LDLs, and directive counseling of SS and neurophysiological model

- Slowly eased him into the booth – recommended it was quieter to sit inside while I talked to his wife
- Pt able to remove earplugs so I could explain how LDL testing was measured
- Obtained 17 points of data from 125-16,000 Hz for BOTH ears
- Worked with a group of student engineers (Eargineers) and a private donor to create customized filtered headphones

QUESTIONS & DISCUSSION

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