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- Restart your computer/device

Still having issues?

- Call 800-753-2160 (M-F, 8 AM-8 PM ET)
- Email customerservice@AudiologyOnline.com



continued

continued®

Best Practices for Music Industry Patients: Recommendations and “Real World” Care

Heather Malyuk, AuD

continued®

Time Ordered Agenda

- Introduction 0-5
- Evidence on musicians/literature review 5-15
- Education and case history 30-45
- Best case scenario recommendations 15-30
- Adapting to real world scenarios 45-55
- Summary 55-60

continued®

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Learning Outcomes

After this course, participants will be able to:

1. Create a comprehensive case history for a music industry patient.
2. Outline a framework for best practices in a clinical setting.
3. Outline a framework for best practices in an on-site setting.

continued®

Introduction

-Life in the Music Industry

continued®

continued

Introduction

- Featured lecturer, published author, interviewed for music industry publications
- Former clinical Director of Sensaphonics Hearing Conservation in Chicago (musicians' clinic)
- Researcher
- **Wellness Committee member for the College Music Society**
- On the American Academy of Audiology committee for best practices in working with musicians
- **On the executive council for National Hearing Conservation Association**
- Former planning committee for the Audio Engineering Society's conference on Music Induced Hearing Disorders

continued

Literature Review

- The purpose of hearing conservation for musicians:
 - Prevention of Music-Induced Hearing Loss
 - Can be variable in configuration and degree
 - Prevention of Music Induced Hearing Disorders
 - Tinnitus
 - Hyperacusis
 - Distortion/Dysacusis
 - Diplacusis

continued®

continued

Risk of MIHL

- 109 orchestral musicians + 110 music students (219)
- Screened for other causes of NIHL (questionnaires)
- Audiometric data & OAEs collected
- Over 50% had a music-induced injury
- The older musicians had more injury at 3 kHz-6 kHz
- Predominantly left ear injuries for strings

(Emmerich, et al, 2008)

continued

Risk of MIHL

- Chicago Symphony Orchestra
- Violinists had more injury at 3 kHz-6 kHz in left ear than in right ear
 - Sound levels 6-8 dB higher in left ear
 - Head shadow effect/distance

(Royster, et al, 1991)

continued®

continued

Risk of MIHL

- 44 pop/rock/jazz participants
- Positive correlation between exposure to amplified music and 3 kHz-6 kHz thresholds

(Halavi-Katz, et al, 2015)

- Review of 41 papers:
- 38.6% of professional musicians have MIHL
- Some limitations mentioned

(Di Stadio, et al, 2018)

continued

Risk of MIHL

- Study done on over 2,200 professional working musicians
- Results
 - Fourfold higher adjusted risk for NIHL
 - 57% higher adjusted risk for tinnitus

(Schink, et al, 2014)

continued®

continued

Risk of MIHL

Role	N	Median Age (years)
Audio Engineers	205	32
DJs	40	29
Jobbers	296	31
Live Performers	524	31
Music Educators	27	30
Studio Workers	233	31
Control Group	165	30

(Malyuk, et al, 2017)

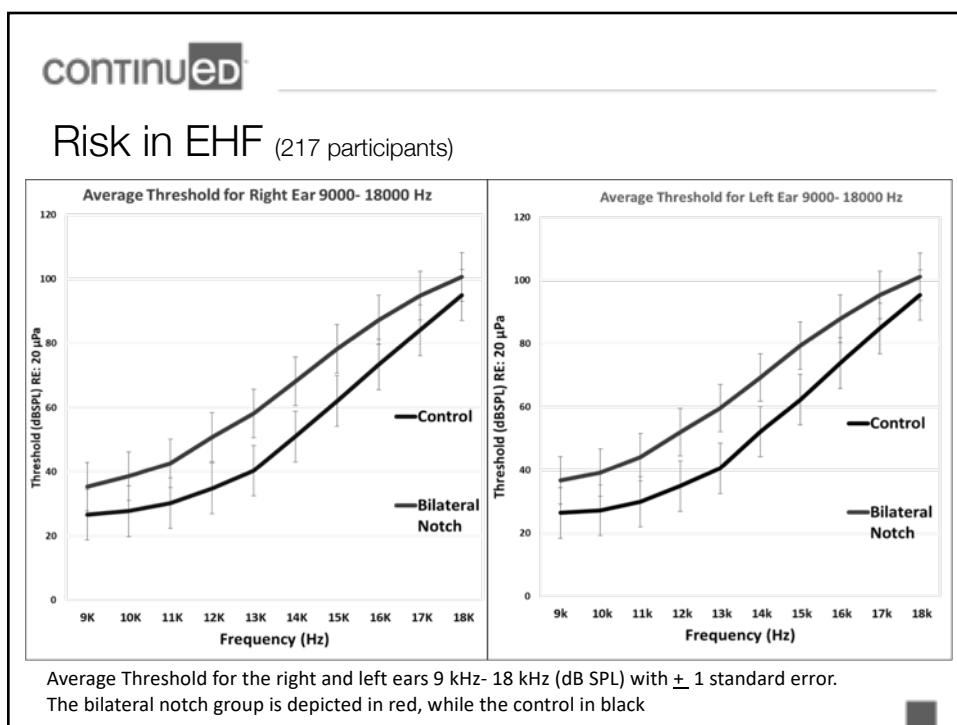
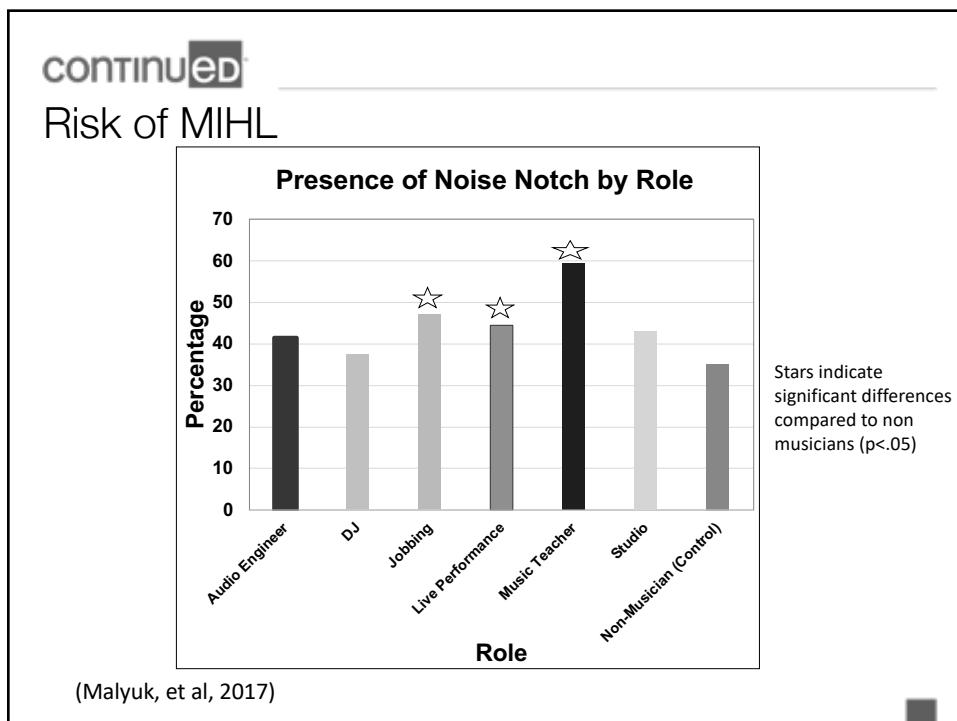
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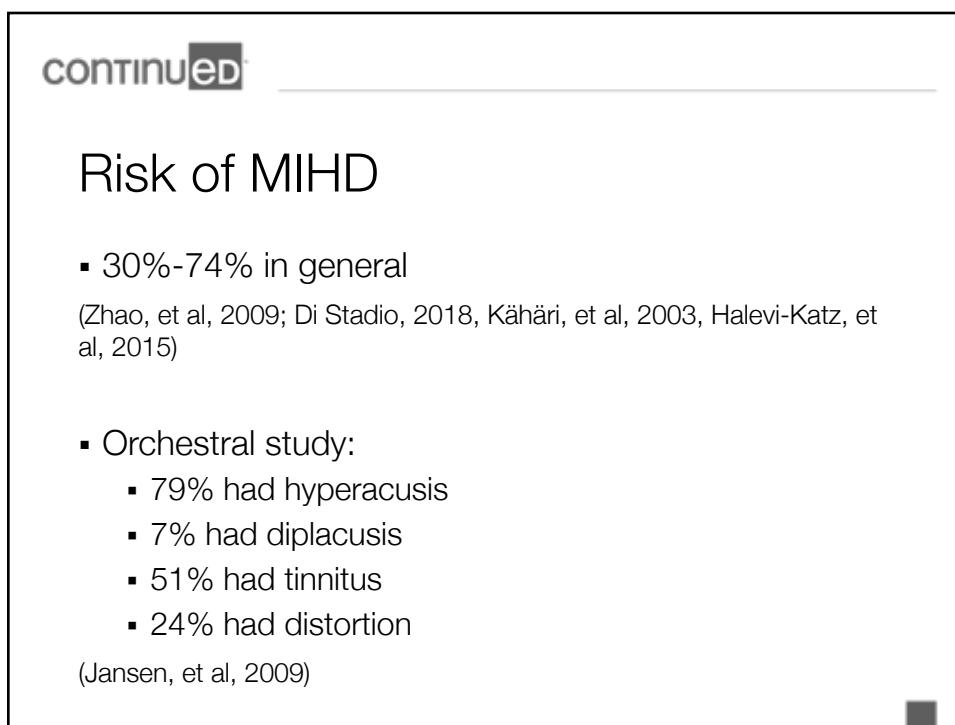
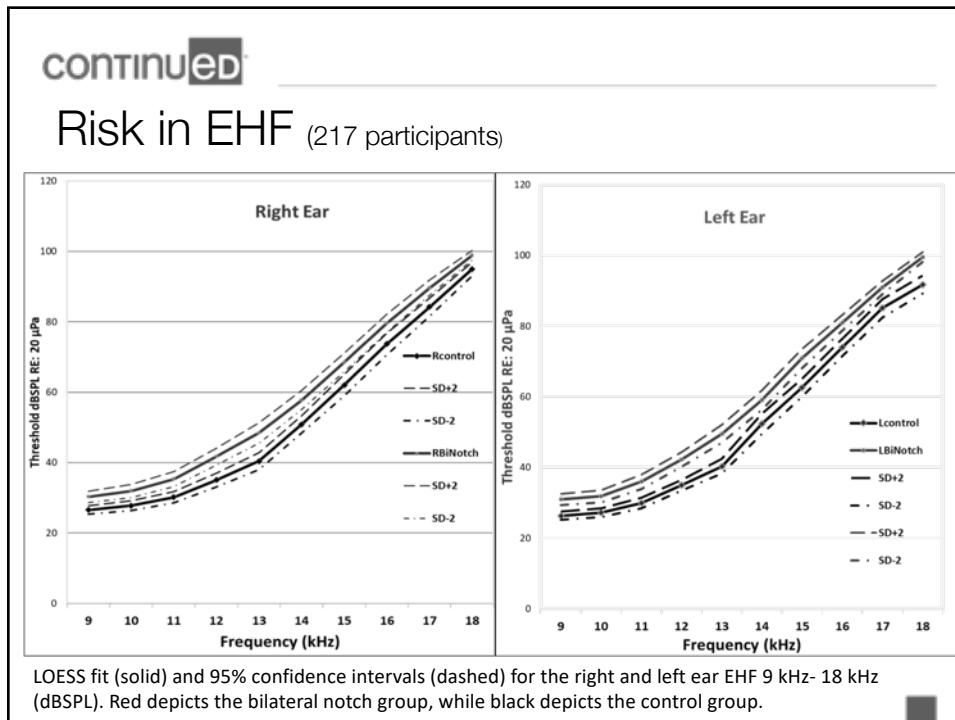
Risk of MIHL

Role	Percentage With Audiometric Notch
Audio Engineer	41%
DJ	37.5%
Jobbing	47%
Live Performance	44.4%
Music Teacher	59.2%
Studio	42.9%
Control Group	35%

(Malyuk, et al, 2017)

continued





continued

Risk of MIHD

- Can we be sure?
- Musicians fear admitting issues with hearing when directly asked, especially in classical world

(Jansen, et al, 2009)

continued

Education

- Most important part!
- Without proper education, gear purchases will always come before actual care (for lack of knowledge)
- *Any HCP that overlooks this phase of the program will find other phases failing*

(Suter & Franks (CDC), 1990)

continued®

continued

Survey of audiologists

- 87.1% of audiologists felt confident working with musicians
- 80.7% *felt they lacked/needed knowledge and additional training*
- 35% actually did some kind of hearing test with a musician
- **26% educated on exposure and hearing conservation practices**
- 3% tested additional frequencies

- Disclaimer “When considering the results of this study the potential for response bias should be taken into account. *The sample of audiologists who completed the survey included a high proportion of musically experienced audiologists.*”

(McGinnity, et al, 2017)

continued

[REDACTED] have used them all...11 dB for flutes and violins, 17 for guitarist and all singers, 27 for drummers. Why? I can put on regular plugs and cannot tune my guitar...put on flat freq response and tune easily because I can hear the harmonics. I use Starkey...fast and can return for credit if needed.

Like · Reply · 34w

2

[REDACTED] This is for a rock band musician!

Like · Reply · 34w

[REDACTED] 17 or 27 dB for the drummer. This should really not be used onstage since he has to hear onstage and needs In Ears. Practice is what I am talking about. Be careful not to share too much info with musicians...they have their own thoughts on what they need to do. Lots of audiologists try to recommend things to them and are not musicians themselves and get the patient to just walk away from you.

Like · Reply · 34w · Edited

[REDACTED] She wants it for on stage. She is afraid that she is losing her hearing and so she wants to wear something on stage. Is this not recommended?

Like · Reply · 34w

[REDACTED] It is recommended but she would do better and have better quality of sound using monitors instead of filtered plugs.

Like · Reply · 33w

1

continued

continued



Heather Malyuk [REDACTED], I've seen practices all over the board with clinical protocol for musicians. It's certainly something we don't learn in school or, currently, have much guidance on from our academy. Just for the sake of me getting to know what other AuDs do in their clinic, do you include a hearing test with the impressions?

Like · Reply · 2y



[REDACTED] Heather Malyuk I only test hearing if the patient asks or if they have concerns. Otherwise we just schedule quick 30 minute appointments to take impressions.

continued



[REDACTED] Usually the musician already knows what company they're going to use. They just want you to take the impressions. Most of these patients will come with the instructions on specifics for the impressions .

Like · Reply · 8w



[REDACTED] I have a lot of friends that are professional musicians that use 1964 monitors. We also get a fair amount of locals coming in for impressions to send to them. We don't actually sell them, they buy from 64 Audio- they just do impressions here. Which frankly takes a lot of pressure off of me knowing how they work 😊 [https://www.64audio.com/...](https://www.64audio.com/)



[REDACTED] I would advise the patient to look online and then you just do the impressions. Some companies want different things, cotton vs foam blocks, open mouth vs natural facial expressions while performing, etc. I've worked with Westone, but my musician friends prefer the sound quality of JH Audio or Sensaphonics. Most of the impressions I do any more are for JH Audio.

continued®

continued

Education

- Anatomy/physiology
 - For musicians, learning about the “instrument”
- Causes of hearing loss
 - For musicians, causes of injury and disorders
- Understanding decibels and exposure
- Proper selection and insertion of protection
 - For musicians, achieving proper fit and make, ear training
- How to read a hearing evaluation results and motivation for annual hearing testing (not regulated)
- Other sources of sound exposure, other types of gigs (use of IEMs, etc) and how to protect in those varying environments

continued

Education

- Earplug attenuation level based on exposure level and length
- Safe use of IEMs
 - Binaural summation
 - Encouragement to consciously reduce volume
(Federman & Ricketts, 2008)

continued®

continued

Case History

- All IN ADDITION to general case history
- What is their motivation to see you?
 - Typically for ear impressions
- When was their last hearing test?
- Were they exposed within 16 hours of the visit?

continued

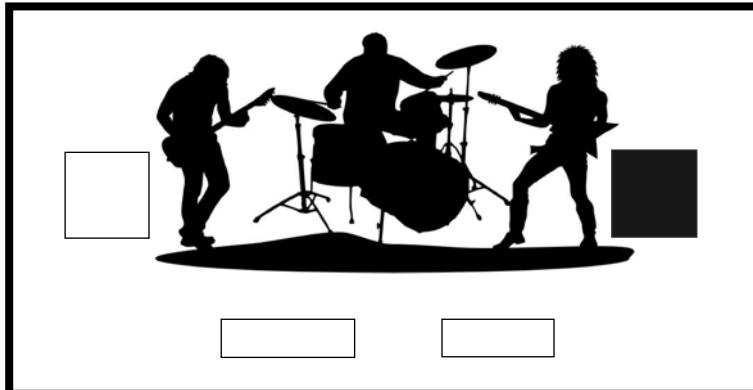
Case History

- Ask about:
 - Genre
 - Instruments
 - Number of years playing
 - Length of typical exposure
 - Do they feel they are too loud/not loud/just right

continued

Case History

- Location of sound exposure:



continued

Case History

- Are they already using earplugs or IEMS?
 - Use of these
 - What kind
 - Number of drivers
- Have they ever taken a SLM or do they know how loud they are running the IEMs?

continued®

Case History

- Do they have any MIHD or notice any hearing loss?
- Any loud hobbies or other loud jobs?
 - Is hearing protection used/required?

continued®

Best case scenario

- In the clinic
- Onsite

continued®

continued

In the clinic

- 1 person
- Prep beforehand
 - When scheduling, ask which instrument, tell patient to bring instrument (mouthpiece), etc.
- Ample case history and education
 - 20-30 minutes
- Earwax removal if needed and within scope
- Diagnostics
- Counseling
- Selection of devices
- Ear impressions
- Fitting appointment

continued

Diagnostics

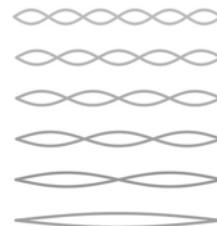
- At minimum .25 kHz-8 kHz (include 3 kHz and 6 kHz)
- EHF
- Speech in Noise
- Immittance (use your judgement)
- OAEs
- Electrophysiology

continued®

continued

EHFs

- Can be a more sensitive test for injury
(Mehrparvar et al, 2014)
- Can show statistically significant differences between musicians and control groups
(Kazkayasi et al, 2006; Malyuk, 2018)



continued

Are EHFs used in music?

- One example:
- Recording taken in sound treated chamber with a 20-20,000 Hz response mic
- Violinist played expressing different timbres/attitudes
- Spectral analysis shown without character and with
- Differences exist in Hzs above 8,000 Hz!

(Yokoyama, et al, 2016)

continued®

continued

OAEs & Electrophysiology

- Counseling tool
- Tracking discrete changes over time

continued

Counseling

- “Your hearing is within the normal range” (even when injury is present)
 - “You don’t have diagnosable hearing loss, but I am seeing signs of mild injury”
- “Your hearing looks normal for your age”
 - “There is a reason for your hearing loss, let’s figure out what it is to keep you stable and working”
- “It looks fine for a musician”
 - “I know these results are tough, but we can work with this, there’s hope”

continued®

continued

Selection of devices

- Choosing attenuation level for hearing protection
 - Not according to instrument but safety scales
- IEMs
 - Informed opinions are ok
 - Heavy counseling on usage

continued

If you can....Sound Level
Measurements on site

continued®

continued

Ear impressions

- According to company, if necessary
 - Full helix, long canal, movement of jaw (mimicking movements while wearing earplugs or in ears)
 - Past the second bend
 - High viscosity material
- (Lerner, 2015)

continued

Fitting appointment

- Fitting of devices:
 - Insertion
 - Removal
 - Cleaning
 - Reminder of proper usage
 - Verification
 - Seal test for IEMs
 - In-situ probe mic measures
 - REAT measurement

continued®

continued

Onsite

- Maybe some prep ahead
- Ample time (at least 20 minutes)
- Quiet space
- Full attention of the artist or crew member

continued

Education/Case history

- Likely not a paper form
- Start chit chatting!

continued®

continued®

Diagnostics

- Portable audiometer/OAEs/Portable electrophysiology
- Where can this be done?
 - Dressing room
 - Bathroom
 - Tour bus
 - Backstage, if quiet
 - Another room in the venue
 - Anywhere that's quiet!

continued®

Counseling

- Take time to talk about test results and recommendations

continued®

continued

Ear impressions

- Same technique as before



continued

Fitting appointment

- Likely can't happen
- Can be done with creativity



continued®

continued

Real-world, worse case scenario

- “Can you come take molds?”

continued

On-site

- Be an advocate and explain that you do appointment
- If they say no, “sneak attack”

continued®

continued

On-site

- Take all gear with you in the car
- If possible, turn it into a “best case scenario”

continued

Can you take levels for counseling?

continued®

On-site

- If you have to adapt...
 - EDUCATE, EDUCATE, EDUCATE

continued®

Impressions only? Never.

continued®

continued®

While taking impressions

- Ask when last hearing test was
- Talk about prevention of MIHD
- Ask about use of IEMs
 - What kind are they getting?
 - Have they used them before?
 - Do they know they aren't safety devices?

continued®

Summary

- Music audiology is a specialized branch of hearing conservation
- Education/case history is key

continued®

continued

Summary

- For best case, clinical scenarios, the appointment should not lack anything
- For best case, on-site scenarios, the appointment should lack very little
- For worst case, on-site appointments, educate and advocate

continued

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Questions

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