



CAA FAST FACTS FOR PRIMARY CARE

Hearing and Streaming Music From Our Phones

Humans have some amazing abilities and one of them is our ability to discern small differences in frequency or pitch—we instantly know when a song is sharp or flat, and are quick to dismiss a singer as being “pitchy”. However, humans are quite poor at discerning issues in loudness—true of all mammals. And then there are individual differences—listening to loud music for one person may be enjoyable for one person but maybe too loud for another.

And when we take our music outside and stream it from our phones, background noises such as trucks driving past or walking past construction sites can mask out what we are listening to. The first thing that anyone does in these circumstances is to turn up the listening volume. But the ear doesn't know how intense the music is; just that it's comfortable. A volume control of 5 out of 10 can be comfortable in a quiet room, but 7 or 8 out of 10 may be desired in a noisy place. And it's the volume setting that can be potentially damaging to hearing, and not whether you feel that it may be “comfortable”. Comfortable in quiet can be quite safe, but comfortable in noise can be much more damaging.

We measure the music output, or sound level, at any one volume setting in decibels or dB. One hundred years ago, the unit was the Bel but scientists realized that this was too large of a measure so it was divided up into 1/10th parts, or a decibel. Average music listening in a quiet place is only around 60-70 dB but in noise with the volume turned up, can be 90-100 dB.

But what is potentially damaging? It turns out that anything quieter than 85 dB will not damage one's hearing so listening to music in a quiet place is quite safe. But once the music becomes “portable” all bets are off. Sound levels of 100 dB can certainly be a potential hazard.

There is actually a relationship between how damaging sound is between the decibel level and how long you are exposed- called the “3 dB exchange rate”. Simply stated, 85 dB for 40 hours each week is the same as 88 dB for only 20 hours, 91 dB for only 10 hours, and so on- an exposure of 100 dB may not be damaging if one is only exposed for 1 hour. It's not just the sound level, but also the duration.

A question such as “is 95 dB a damaging level?” is meaningless unless we also ask for how long was the exposure. As a result, it is best to talk about the dose. Exceeding 100% of the “dose” can be problematic. “100% dose” can be an exposure of 85 dB for 40 hours, or an exposure of 100 dB for 75 minutes. There are commercially available sound dosimeters and also some apps such as that from the National Institutes for Occupational Health and Safety and can be obtained for free at the Appstore for iOS Smartphone devices at “NIOSH Sound Level Meter”.

A good rule of thumb is the “80/90 rule”: 80% volume setting for 90 minutes a day is 50% dose. If your favourite song comes on, turn it up and enjoy; but when the song is done, reduce the volume level again.

Strategies to minimize the potential risk of loud music; streamed or otherwise:

- Like all things in life, moderation is the key. If you attend a rock concert on Friday night, don’t mow your lawn on Saturday.
- Investing in hearing protection for live events will be well worth it- there are now both custom and one-size-fits-all forms of hearing protection that can make the listening experience both enjoyable and safe. These can be obtained from your local audiologist and some music stores.
- Annual assessments with an audiologist can detect early signs of music exposure (similar signs as industrial noise exposure).
- If you need to raise your voice while listening to streamed music, its probably too high.

Prepared by:

Marshall Chasin, AuD, Doctor of Audiology

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Reviewed by: Steven Aiken, Ph.D

