ASSOCIATED AUDIOLOGISTS

# PhysicianUpdate on Hearing and Balance Disorders

A Clinical Newsletter for Physicians

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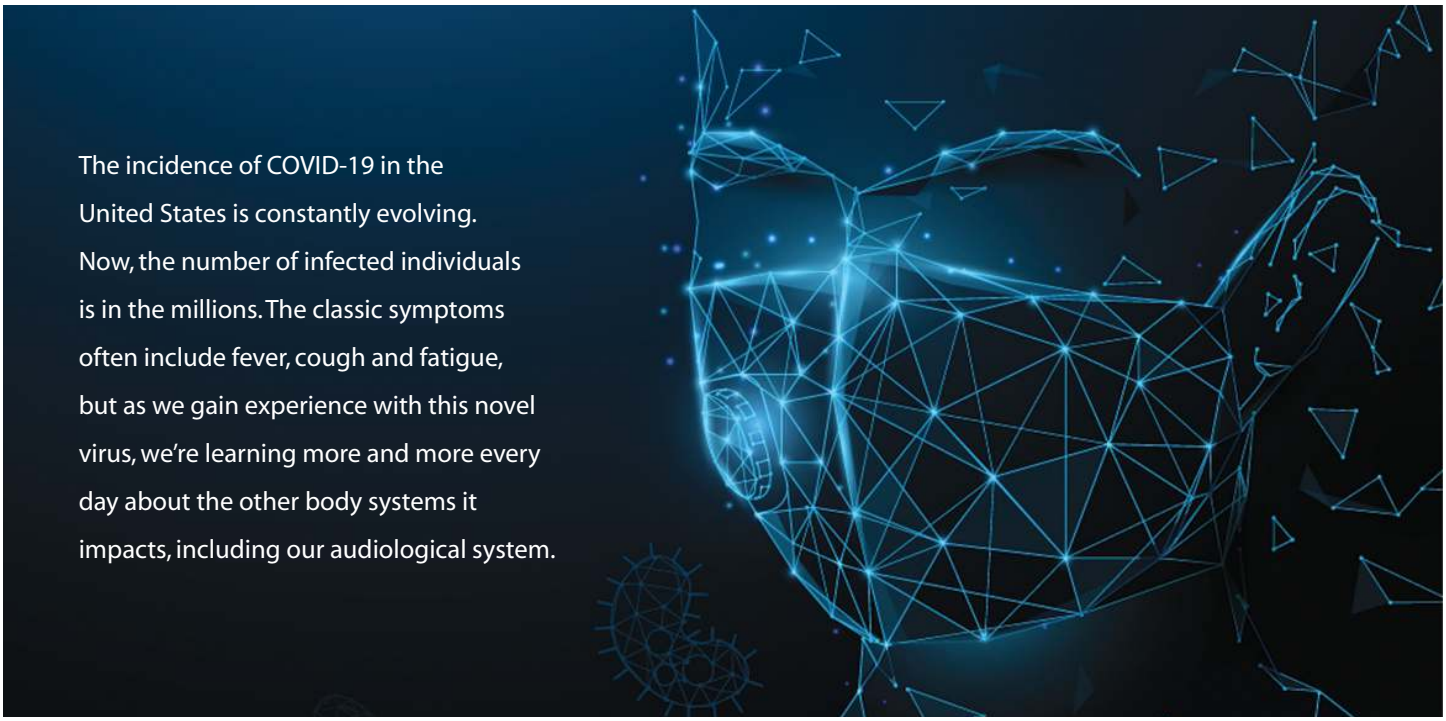
# COVID-19 and Hearing Loss



The incidence of COVID-19 in the United States is constantly evolving. Now, the number of infected individuals is in the millions. The classic symptoms often include fever, cough and fatigue, but as we gain experience with this novel virus, we're learning more and more every day about the other body systems it impacts, including our audiological system.

## COVID-19 May Impact Cochlear Hair Cells

According to an article published in the American Journal of Otolaryngology, even asymptomatic carriers of COVID-19 may experience detrimental effects to their cochlear hair cell function. Researchers from South Valley University in Egypt analyzed 20 confirmed positive cases of patients with COVID-19 who did not present with the known symptoms. They compared this group (ages 20-50, so as to exclude participants with possible age-related hearing loss) with a control group of non-infected participants.[1]

The study measured participants' hearing sensitivity and hearing function via pure-tone audiometry and transient evoked otoacoustic emissions (TEOAE) over a two-week period. At the end of the two weeks, results showed that for the COVID-infected group, high-frequency pure-tone thresholds, as well as the TEOAE amplitudes, were significantly worse in the test group, indicating damage to outer ear hair cells. This could be attributed to the damaging effects of the viral infection on the outer hair cells, but more study is needed.

In the meantime, please be aware that COVID-19 could be responsible for hearing loss in patients who were otherwise asymptomatic. If you suspect this, please refer them for a comprehensive hearing evaluation including immittance/tympanometry and acoustic reflexes with a doctoral-level audiologist who provides diagnostic hearing evaluations and TEOAEs.

## Mask Challenges with Communication

The more likely aspect of COVID-19 that may impact your medical practice is caring for patients who already have hearing loss unrelated to the virus. When providers and patients are both required to wear a mask or cloth face covering to reduce virus transmission, effective communication can be a challenge.

Obviously, wearing a face mask covers

your mouth, making it hard for the patient to receive speech reading cues from you.

These cues, like lip movements, provide patients with hearing loss with important information when trying to interpret what you are saying. In fact, research has shown that those with hearing loss have significant improvement in accuracy of interpreting the spoken word when visual cues are present. Visual cues also may improve hearing in backgrounds of noise.

In addition, masks muffle speech energy. It's no secret that face masks can reduce the speech sound intensity from the wearer. Researchers have found that a simple face mask can reduce volume of speech from 3 to 4 dB, and an N95 mask can decrease the high frequencies by 12 decibels. A surgical mask also can reduce sound by 12 dB at certain speech frequencies. As a frame of reference, a whisper registers about 20 dB.

Someone with normal hearing could easily experience about a 30% decrease in audibility when wearing a properly fitted N95 mask. Add background noise and the lack of visual cues, and it becomes obvious that mask use can present some unique challenges for all patients, especially those with hearing loss.

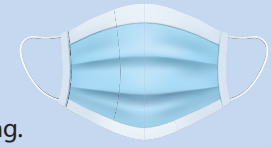
Further complicating this problem is that most conversation takes place at about a 3-foot distance. Social distancing recommendations advise keeping at least 6 feet apart. Though this is a necessary mandate to help reduce the spread of the virus, doubling the distance in which normal conversations take place reduces the speech signal your patient receives even more.

The result is patients with hearing loss may have legitimate frustrations and more problems than usual understanding important health instructions from you and your staff.

Advanced hearing aids can be adjusted to accommodate the mask effect. Spouse and remote mics also can stream a conversation partner's voice directly to the wearer's hearing aids. If mask use is presenting a significant burden, you might suggest your patient see a doctoral-level audiologist to discuss these options; or if they demonstrate communication difficulty because of mask use, a comprehensive hearing evaluation may be in order.

In many cases, high-frequency hearing loss and/or presbycusis (hearing loss due to age) have existed in patients for some time, but additional variables, such as mask use which obstructs visual cues and reduces high-frequency speech information, reveals underlying hearing loss that may have previously gone undiagnosed and untreated.

## TIPS FOR COMMUNICATING WHEN WEARING MASKS



How can you accommodate for the combination of mask use and social distancing as the "new normal" in clinical practice? Here are a few important tips:

- **Stand 6 feet apart,** but face your patient when talking.
- **Consider wearing a CDC-approved clear face mask** to maximize lip/facial cues or have them available to use with patients who are struggling. There are clear face masks now available, and these can be very helpful if you have patients who have hearing loss.
- **Speak slowly and clearly.**
- **Rephrase rather than just repeat** what was not heard.
- **Minimize environmental noises** like machines, fans, etc., when possible. These sounds can drown out or degrade speech even further.
- **Be prepared to write answers down** to your patient's questions. This helps minimize communication errors and frustration for both parties.
- **Remind your patients of the importance of good hearing** and communication. It may be an appropriate time for them to have their hearing assessed, which might be beneficial to patients and their families who are spending more time together.

## References


1 Audiological profile of asymptomatic Covid-19 PCR-positive cases. M.W.M. Mustafa. Am J Otolaryngol. 2020 Apr 10 : 102483. doi: 10.1016/j.amjoto.2020.102483 [Epub ahead of print].



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