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The priority of audiological procedures during the COVID-19 pandemic

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Abstract

Since the discovery of coronavirus disease 2019 (COVID-19), which started in Wuhan, China, the epidemic has not only swept through China but also spread throughout the world in spite of the concerted attempts from the governments to contain it. Thus, prevention and control of COVID-19 infection is very effective in ensuring the safety of medical specialists, health care workers, and patients. Audiology clinics are also crucial in the fight against the infection epidemic, as audiologists provide their diagnostic and rehabilitative services in an environment with different contaminated objects that come in either direct or indirect contact with multiple patients. The current article explains the importance of infection control in audiology and priority setting for audiologic evaluation in COVID-19 pandemic.

Keywords: COVID-19, Coronavirus, Audiology, Audiometry, Protection

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Introduction

Coronavirus disease 2019 (COVID-19) encompasses a wide range of manifestations that can range from mild asymptomatic disease to severe respiratory disease leading to respiratory failure, shock, multiorgan dysfunction and death. The disease was announced in March 2020 by the World Health Organization for a pandemic situation. The coronavirus can survive 3 hours in aerosol and hours and days on surfaces (72 hours on plastic, 48 hours on steel, and shorter on cardboard and copper objects) (1-3). Virus particles reside with extremely high concentrations in the nasal cavity and nasopharynx. Infection is transmitted to the health care staff through large droplets generated during coughing and sneezing by symptomatic patients. However, it can also occur in asymptomatic people and before the onset of symptoms. The virus is transmitted by inhalation of droplets in the air, eye contact, and contaminated surfaces. The most considerable risk in COVID-19 is transmission to health care workers (4, 5).

The COVID-19 pandemic is a challenging situation for health care professionals. Keeping yourself and your clients safe is challenging at all indirect and direct contact points. Prevention and control of infection are not limited to the use of personal protective equipment but are based on clear and precise strategy, risk classification, appropriate usage of personal protective equipment, and selective decision-making for patients at high risk for COVID-19 (6, 7).

Audiology is a branch of medical sciences that studies balance, hearing, and related disorders. Audiologists are health care professionals who deal with the evaluation and management of hearing and balance disorders. According to the Center for Disease Control (CDC) and Prevention guidelines, audiological services have a medium to high risk for COVID-19 infection, regarding the test setup, proximity, and length of appointment (8).

Recently growing evidences have demonstrated that the COVID-19 pandemic may lead to a number of otologic and audiologic complications, including sudden hearing loss, tinnitus, or vertigo (9, 10). Saki et al (11) also reported cochlear implant failure in 2 hearing-impaired children following COVID-19 and emphasized the importance of COVID-19 screening in individuals with sudden sensorineural hearing loss.

The aim of the current commentary is to raise awareness

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among audiologists regarding clinical considerations and precautions in the COVID-19 pandemic.

Why Are Audiologists among The Risk Population for COVID-19?

The hearing-impaired patients who refer to audiology clinics usually include geriatric patients with underlying noncommunicable chronic disorders (eg, diabetes, high blood pressure, and cardiovascular diseases) or pediatric patients with immature immune systems, which can increase the risk of catching COVID-19. Audiological care is typically a high-touch service with various face-to-face appointments in limited sound-proof spaces for basic assessments (eg, pure tone audiometry), hearing aid fittings, follow-up troubleshooting, and vestibular rehabilitation exercises (8). More important than keeping a distance of 1 to 1.5 m, the droplets are contagious in a 3-dimensional space, and the limited cubic meters of a sound booth together with the fact that the virus can reside in the air for several hours after a cough puts an audiologist at great risk.

The mental health status of hearing-impaired patients in this pandemic situation is also an important issue. It has been indicated that psychological consequences of hearing loss (eg, anxiety, loneliness, and depression) can influence the human immune system. Furthermore, when the people in the community cover their faces with a medical mask to prevent virus infection, the hard-of-hearing individuals will lose visual cues on facial expressions and will experience more communication difficulties (12). These findings suggest that hearing-impaired populations are susceptible to ubiquitous microorganisms, and therefore may be at considerable risk of developing opportunistic infections such as COVID-19.

The Importance of Infection Control in Audiology

From a general perspective, infection control can be defined as procedures and policies used to minimize the risk of spreading infections, particularly in hospitals and human health care facilities. In fact, the purpose of any infection control program is to decrease or eliminate opportunities for direct or indirect transmission of microorganisms from person to person. Nowadays, infection control is an important health care issue that influences many aspects of clinical practice (13).

Infection control in audiology practice is an important issue because the audiologists are exposed to various contaminated clinical equipment. This contamination can be transmitted through tympanometer probe, otoacoustic emission probe tip, auditory electrophysiological test electrodes, otoscope specula, earmolds and/or hearing aids, real-ear measurement probe tubes, and earmold impression syringes (14). Generally, contact transmission constitutes the most common route of infection transmission in audiology practice that may occur through "direct" (eg, when the audiologist touches the patients' ear with unwashed hands) or "indirect" (eg, when the audiologists are putting on and removing the hearing aids from patients' ears with a bare hand) transmission moods (14).

However, audiological diagnostic and rehabilitative services are also sought by different patients with different age ranges, disorders, and socioeconomic status, all of which have different impacts on their immune systems' resistance against various infectious microorganisms (2).

Infection Control Guidelines for Audiologists to Prevent the Spread of COVID-19

All infection control programs begin with an attitude that supposes all patients are potential carriers or probable hosts of an infectious disease. An effective infection control is composed of the processes of cleaning, disinfecting, and sterilizing objects and surfaces. The main standard precautions are as follows (15-17):

1. Wear gloves, masks, eye protection, or other personal barriers
2. Wash the hands often with soap and water for at least 20 seconds or use hand-held

ethanol alcohol solutions (at least 30 seconds) before and after patient appointments and after glove removal.

3. Clean and sterilize headphones or patients signal after each audiometry test
4. Clean and sterilize any instrument that is inserted in the ear canal
5. Clean and disinfect surfaces, such as tables and armrests, with an effective solution after each patient appointment (eg, 60% alcohol).
6. Infectious waste must be disposed of appropriately
7. Ensure a certain time between visiting 2 patients in the same cabin.
8. Use of larger sound proof booths is advised

COVID-19 and Clinical Recommendations for Audiologists

1- Stay Educated: Audiologists must update their knowledge about the COVID-19 and its impacts and consider implementing the CDC guidelines, particularly "Keeping the Workplace Safe." (18, 19). Precaution measurements usually change on a daily basis because of more and more insights into the disease and pandemic. The CDC website also offers the most up-to-date authoritative information on COVID-19 and its mitigation (18,19). These guidelines are straightforward and could be easily integrated into the clinical audiology setting.

2- Minimize Waiting Room Time: If you are in a single-person practice, you may want to schedule an in-person visit in a way to minimize patients spending any time in the waiting room or interacting with other patients. Remember to disinfect the seating and common surfaces in the waiting area.

Table 1. Priority Setting for Audiologic Evaluation in COVID-19 Pandemic

Priority: As Soon As Possible
• Assessment of sudden sensorineural loss patients
• Assessment of post meningitis patients
• Monitoring for ototoxicity
• Idiopathic facial palsy
Priority: Delay Up to 2 Weeks May Seem Safe for
• Acute mastoiditis
• Acute otitis media
• Trauma to Facial nerve (eg, acoustic reflex test or electroneuronography)
• Follow-up of bilateral newborn screen referrals (initially by telephone, then managed on a case-by-case basis)
• Hearing aids or cochlear implants programming or troubleshooting

3- Limit Nonessential Physical Interactions: It is highly recommended to decrease the number of patients, particularly those who are in high-risk groups (age >65 years old and patients with comorbidities) visiting the office for noncritical follow-up care. In such a public health-threatening situation, it is advised to conduct a phone screening and encourage new patients who do not have a new condition to come to the clinic later in the year. Many face-to-face appointments can also be replaced with telephone consultations. Under particular situations, do not allow any accompanying person inside the test room.

5- Consider Hearing Aid "Drop-Off" Service: Consider an alternative pick-up or drop-off facility for hearing aids in need of repair. This helps decrease the number of patients congregating in your waiting room or clinic.

6- Consider Remote Care: Many hearing aid companies provide the capability of making hearing aid response and programming adjustments remotely. It is advised to activate the telepractice (telecare) option for your patients. It is a beneficial feature for hearing aid programming, follow-up, orientation, counseling, and aural rehabilitation.

Table 1 proposes a possible timeline for audiological evaluation in the COVID-19 pandemic situation. Indeed, maintaining access to good hearing for the hearing-impaired individuals on these critical days, particularly for those in self-isolation, is an important issue. The audiologist must support their patients following a sudden sensorineural hearing loss, or post-meningitis conditions. Obviously, given that there is no full knowledge of the coronavirus, no specific treatment or vaccine has been discovered yet, and given the dynamics of the situation, this guide should be reviewed at various intervals.

Disclaimer

These guidelines are meant to serve patients based on estimates of risk for average patients (in terms of clinical condition, patient health, hospital resource availability) associated with each strategy. Then, these should not be regarded as rigid guidelines and are not intended to supplant clinical judgment or the development of consensus regarding institutional approaches to treatment. Furthermore, it is possible that the strategies expressed in this document could be replaced as our understanding of the unique challenges that COVID-19 poses within each country, state, and healthcare environment evolves.

Conflict of Interests

The authors declare that they have no competing interests.

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