



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.

# Pediatric Otolaryngology in the COVID-19 Era



Steven E. Sobol, MD, MSc, FRCS(C)<sup>a,\*</sup>, Diego Preciado, MD, PhD<sup>b</sup>, Scott M. Rickert, MD<sup>c</sup>

## KEYWORDS

• COVID-19 • Pediatric otolaryngology • Pediatric ear • Nose and throat

## KEY POINTS

- Families are afraid to leave their quarantined spaces and frequently delay needed care.
- Many system-based initiatives instituted in hospitals across the country have helped to mitigate risks and improve the patient experience.
- Otolaryngology has a unique set of conditions that make providers particularly vulnerable to upper respiratory pathogens.
- Managing children has several unique features, which potentially increase COVID exposure risk to the provider, including a high frequency of upper respiratory tract infections, asymptomatic carriage, and poor patient compliance with routine examination.
- Pediatric otolaryngology practices have been disproportionately affected by the financial fallout from COVID owing the specialty's elective nature and delays in receiving government financial relief made available to Medicare but not Medicaid providers.

## INTRODUCTION

Although the majority of attention to the health care impact of coronavirus disease-19 (COVID-19) has focused on adult first responders and critical care providers, the pandemic has had a profound effect on the entire health care industry, including the pediatric otolaryngology community. As a result of resource limitations and social distancing measures, the day-to-day practice of pediatric otolaryngology has been abruptly altered, requiring rapid adaption to secure the health and financial viability of providers and their practices. The result of these adaptations has included the development of telemedicine, elaborate protective protocols to allow for limited

---

<sup>a</sup> Division of Otolaryngology, Department of Otorhinolaryngology–Head and Neck Surgery, Children's Hospital of Philadelphia, University of Pennsylvania, Perelman School of Medicine, 3401 Civic Center Boulevard, Philadelphia, PA 19104, USA; <sup>b</sup> Pediatric Otolaryngology, Children's National Health System, George Washington University School of Medicine, 111 Michigan Avenue Northwest, Washington, DC 20010, USA; <sup>c</sup> Division of Pediatric Otolaryngology, Department of Otolaryngology, Pediatrics, and Plastic Surgery, Hassenfeld Children's Hospital at NYU Langone, NYU Langone Health, 240 East 38th Street, New York, NY 10016, USA

\* Corresponding author.

E-mail address: [sobols@email.chop.edu](mailto:sobols@email.chop.edu)

Otolaryngol Clin N Am 53 (2020) 1171–1174

<https://doi.org/10.1016/j.otc.2020.08.005>

0030-6665/20/© 2020 Elsevier Inc. All rights reserved.

exposure to potential aerosol-generating procedures (AGP) or manipulations, and a national discussion regarding how to resume “normal” practice following the peak of the pandemic. The objective of this article is to highlight the unique ramifications of COVID-19 on pediatric otolaryngology, with a focus on the immediate and potential long-term shifts in practice.

### **CARE FOR THE PATIENT**

As the prevalence of COVID-19 increases throughout the United States, care for the patient in need becomes increasingly complex. Families are afraid to leave their quarantined spaces and frequently delay needed care. This practice may not only delay medical and surgical care, but also may cause a delay in developmental milestones. In the age of remote learning, apt medical care is an important component of keeping a child mentally and physically well. A child with unresolved chronic otitis media may have further speech delay. A child with chronic infections may be undertreated and not be able to perform at their best. Therefore, it is important that providers simultaneously help to protect patients from contracting COVID-19 and render essential pediatric otolaryngology expertise to those patients in need of it.

Many system-based initiatives instituted in hospitals across the country have helped to mitigate risks and improve the patient experience. Because each system is unique, the approaches have been unique to the individual system. The general concept of a better and safer patient experience is to screen patients before a visit to identify their medical needs as well as to screen patients for their and other patients’ safety.

Telemedicine can act as an adjunct to in-person visits and helps to initiate medical care and carefully plan a further treatment plan. Once telemedicine has been initiated, the decision to continue remotely or follow-up with in-person visitation can be determined at that time because examinations are limited in the remote setting.

If in-person visitation is needed, screening procedures aim to decrease the risks to patients and practitioners for those coming to the office or operating room. Nearly all pediatric otolaryngology practices screen symptomatology and temperature routinely. Many screen and objectively test (via polymerase chain reaction) before office-based AGP procedures or any operative surgical procedure to ensure a COVID-negative patient (within the error of the test). Any screening or objective test that is found to be positive typically warrants rescheduling, unless it is considered an emergency and unavoidable. This process allows for the office and the operating room to mitigate risks and protect both patients and practitioners.

Other endeavors, such as decreasing clinic volumes, social distancing in the waiting rooms, and allowing time for air circulation to adequately clear the examination rooms of potential contamination, help to keep the office setting safer to cross-contamination.

### **CARE FOR THE PRACTITIONER AND THE HEALTH CARE TEAM**

By its very nature, otolaryngology has a unique set of conditions that make providers particularly vulnerable to upper respiratory pathogens. After all, we are “ear, nose, and throat” specialists and we spend our entire work day literally in the faces of our patients. There is now an abundance of information suggesting that AGPs are a risk factor for exposure to a high viral burden, thus putting otolaryngologists at a high risk of contracting the infection. The unique risk of close patient contact and AGPs has resulted in the necessity to take immediate steps to mitigate risk to providers. In the pediatric otolaryngology community, this has meant the rapid adoption of

telemedicine for evaluating patients and the development of elaborate protocols to mitigate risk of exposure with AGPs.

There are several unique features of pediatric otolaryngology practice that have made these changes particularly challenging. First, children are inherently more susceptible to viral upper respiratory tract infections and their sequelae. Whereas it is easy to set criteria to avoid seeing adult patients with respiratory tract infection symptoms, this is impractical for children because it is often the reason why they need to be seen. It would be impractical to obtain COVID testing for all patients with a runny nose who need to be examined in the office and, even if that were possible, we know that COVID testing has a false-negative rate of at least 3% to 5% in the best case circumstances.<sup>1,2</sup> In addition, current scientific evidence suggests that children may be asymptomatic carriers of COVID, which would indicate that prescreening for illness would not help to mitigate any potential risk to providers.

An additional unique feature of pediatric otolaryngology practice is that children are often not willing participants in the examination process. This factor creates an additional risk to providers because even a basic oral cavity or nasal examination can turn into an AGP in a screaming, gagging, coughing, or spitting child. To make matters more complex, the examination process most often requires close contact with not only the child, but also their caregiver, creating an additional exposure risk to the provider.

As stated elsewhere in this article, the risks of COVID exposure have resulted in the rapid adoption of telemedicine and safety protocols when physical contact with the patient becomes necessary. Although telemedicine has for the most part become a great immediate solution for patient access,<sup>3</sup> it is significantly limited by the same challenges that practitioners face with an in-person office visit; the child is often not a willing participant and if they refuse to open their mouth, there is only so much that can be evaluated virtually. In addition, much of pediatric otolaryngology practice is focused on otologic complaints and at this point there is no uniformly available replacement for the in person otologic examination. Although this process is evolving, most institutions have developed protocols that incorporate screening with or without COVID testing, social distancing measures, and cleaning protocols to minimize the risk of exposure to health care providers. A more in-depth discussion of these measures is beyond the scope of this article and is discussed elsewhere.<sup>4,5</sup>

It is becoming apparent that what we at first anticipated to be short-term adaptations to practice are likely to be with us for the foreseeable future. Therefore, it is very likely that the practice of pediatric otolaryngology will permanently become a hybrid of virtual and in-person visits, even beyond the acute crisis. The hybrid model does offer several advantages to both the patient and the practitioner in this time of unease. Its widespread use helps families to obtain initial medical care and treatment despite trepidation. It allows a patient-doctor relationship to develop despite distance. It helps the practitioner to triage those with more serious issues and to streamline their care. Currently, its disadvantages are that it is time consuming and limited in its ability to elicit a quality examination of the patient. On a positive note, as we develop technologies to overcome the examination limitations of telemedicine, this may become an attractive alternative for many patients (and providers) because it will significantly decrease the time commitment and cost related to the visit.

## CARE FOR THE PRACTICE

The entire world has seen an economic contraction and the otolaryngology community has not been immune to this fact. Much of what we do is quality of life management,

rather than immediately necessary life preservation. This factor is even more apparent in general pediatric otolaryngology practice, where complex, life-threatening, and/or cancer diagnoses represent only a minority of cases and where the bread-and-butter management is largely geared to improve patient comfort (ear infections), hearing (ear fluid), or sleep (adenotonsillar hypertrophy). During the acute phase of the COVID pandemic, both office-based visits and elective surgical practice abruptly ceased, essentially arresting the financial pipeline of otolaryngology practices primarily treating children. Even as we reintegrate into the clinics and the operating room, volumes will be significantly lower for the foreseeable future for a variety of reasons, including enhanced safety protocols, parental fear of taking their child to the doctor and lost family income and/or insurance.

In addition to a significantly decreased revenue, pediatric surgical practices in the United States have largely been left behind their adult counterparts in receiving government financial relief made available to Medicare but not Medicaid providers. To make matters worse, the majority of pediatric otolaryngologists practice in hospital-based settings and have, thus, been unable to obtain the small business loans available to other specialists who practice in a private practice setting. The net result of these financial constraints have led to significantly reduced personal incomes for physicians, the necessitation of reducing cost by arresting new hires and/or furloughing employees, and the reduction of expenses related to nonessential activities (meetings, dues, etc).

In summary, although the post-COVID framework of pediatric otolaryngology practice is unknown, it is highly likely that the new reality will incorporate telemedicine, enhanced safety protocols, new indications for direct patient contact, and reduced patient volumes. Finally, the economic fallout from COVID may result in a sustained contraction of general pediatric otolaryngology practice nationwide.

## DISCLOSURE

The authors have nothing to disclose.

## REFERENCES

1. Parikh SR, Bly RA, Bonilla-Velez J, et al. Pediatric otolaryngology divisional and institutional preparatory response at Seattle Children's Hospital after COVID-19 regional exposure. *Otolaryngol Head Neck Surg* 2020;162(6):800–3.
2. Vinh DB, Zhao X, Kiong KL, et al. An Overview of COVID-19 testing and implications for otolaryngologists. *Head Neck* 2020;42(7):1629–33.
3. Ning AY, Cabrera CI, D'Anza B. Telemedicine in otolaryngology: a systematic review of image quality, diagnostic concordance, and patient and provider satisfaction. *Ann Otol Rhinol Laryngol* 2020. <https://doi.org/10.1177/0003489420939590>. 3489420939590.
4. Mukerji SS, Liu YC, Musso MF. Pediatric otolaryngology workflow changes in a community hospital setting to decrease exposure to novel coronavirus [published online ahead of print, 2020 Jun 5]. *Int J Pediatr Otorhinolaryngol* 2020;136:110169.
5. Francom CR, Javia LR, Wolter NE, et al. Pediatric laryngoscopy and bronchoscopy during the COVID-19 pandemic: a four-center collaborative protocol to improve safety with perioperative management strategies and creation of a surgical tent with disposable drapes. *Int J Pediatr Otorhinolaryngol* 2020;134:110059.