

# Financial impact of the COVID-19 pandemic on an academic otolaryngology department

Christina M. Yver | Tiffany N. Chao | Erica R. Thaler | Michael J. Ruckenstein |  
Ara A. Chalian | Gregory S. Weinstein | Bert W. O'Malley Jr. | Steven B. Cannady

Department of Otorhinolaryngology–Head and Neck Surgery, Perelman School of Medicine, University of Pennsylvania, Philadelphia, Pennsylvania, USA

## Correspondence

Christina M. Yver, Department of Otolaryngology–Head and Neck Surgery, Hospital of the University of Pennsylvania, 3400 Spruce St., 5 Ravdin/Silverstein, Philadelphia, PA 19104, USA. 817-925-2052. Email: [christina.yver@penncmedicine.upenn.edu](mailto:christina.yver@penncmedicine.upenn.edu)

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## Abstract

**Objective:** To quantify the financial impact of the coronavirus disease (COVID-19) pandemic on an academic otolaryngology department.

**Methods:** A year-over-year comparison was used to compare department revenue from April 2020 and April 2021 as a percentage of baseline April 2019 activity.

**Results:** At the onset of the COVID-19 pandemic in April 2020, total department charges decreased by 83.4%, of which outpatient clinic charges were affected to the greatest extent. One year into pandemic recovery, department charges remained down 6.7% from baseline, and outpatient clinic charges remained down 9.9%. The reduction in outpatient clinic charges was mostly driven by a decrease in in-office procedure charges.

**Conclusion:** Given that precautions to mitigate the risk of viral transmission in the health care setting are likely to be long-lived, it is important to consider the vulnerabilities of our specialty to mitigate financial losses going forward.

## KEYWORDS

COVID-19, finance, otolaryngology, revenue

## INTRODUCTION

The first case of coronavirus disease (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was reported in the United States on January 19, 2020.<sup>1</sup> To protect patients and providers and avoid overwhelming the health care system, most US hospital systems swiftly implemented measures to limit non-COVID-related services, including limiting in-person office visits and postponing elective surgeries.<sup>2</sup> These changes initially prompted concerns about the ability of hospitals, health systems, and physician practices to remain financially solvent amid major changes to billable services and revenue streams.<sup>2,3</sup> Preliminary evidence suggests that otolaryngology private practices incurred significant financial losses as a result of a decrease in office visits and operating room procedures in the early phase of the COVID-19 pandemic.<sup>4</sup>

However, to our knowledge, no literature exists to quantify the fiscal impact of the pandemic on an academic otolaryngology practice, or to provide longitudinal data a year into the pandemic.

To quantify the effect of the shutdown and subsequent pandemic recovery period on department finances, a year-over-year (YOY) comparison was utilized to compare the change in both April 2020 and April 2021 billing activity as a percentage of April 2019 activity, which was considered baseline. At our institution, all elective surgeries and clinic visits were deferred starting March 16, 2020, and elective procedures were not reinstated until May 2020; therefore, April 2020 represented the height of the pandemic-related shutdown on department operations. April 2021 was chosen as a marker of 1-year postpandemic recovery, when department operations had largely returned to prepandemic activity. The month of April was chosen for a YOY comparison to negate any seasonal variation in charges. Charges were considered a proxy for

revenue because charges are more representative of clinical volume over a defined period of time than are collections, for which there is a significant time lag. For the purposes of this study, all charges are expressed either as a percentage of a total or as a YOY comparison. The percentage of charges that translated directly into revenue is assumed to remain consistent throughout this time period.

## PANDEMIC EFFECTS ON OTOLARYNGOLOGY CLINIC REVENUE

At baseline, outpatient clinic charges represent the largest component of department revenue, making up 52% of all department charges in 2019 (Table 1). However, to protect patients and staff from the risk of viral transmission at the onset of the COVID-19 pandemic, clinic visits were restricted to emergency in-person or telemedicine visits only. Charges from the outpatient clinic subsequently dropped 89.5% YOY in April 2020. One year into the pandemic, department revenue had not yet fully rebounded to prepandemic levels, and clinic-related charges and office visits were slowest to rebound, remaining down 9.9% YOY in April 2021 compared to 2019.

Otolaryngology clinic revenue is largely driven by in-office procedure charges, which made up 81.3% of all clinic charges in April 2019 (Table 2). Nasal debridements represent the single largest driver of clinic procedure-related charges at baseline. Routine in-office otolaryngology procedures, which also include nasal endoscopy and flexible nasopharyngeal laryngoscopy, are considered critical components of the otolaryngology exam but tend to be nonemergent and expose the provider and office staff to aerosolized droplets, increasing the risk of viral transmission.<sup>5</sup> In April 2020, charges for in-office procedures were down by 94% YOY, and all of the top 5 clinic procedures were down by >90% YOY. One year into the pandemic, charges for in-office procedures had rebounded significantly but remained down 13% compared to their 2019 baseline. While charges associated with nasal endoscopy, flexible laryngoscopy, and cerumen removal all rebounded to baseline or above-baseline levels by April 2021; charges for nasal debridements remained down by 36.7% YOY in April 2021 compared to 2019.

## PANDEMIC EFFECTS ON OTOLARYNGOLOGY SURGERY REVENUE

Surgery represented the second-largest driver of total department charges in April 2019 and was impacted by the COVID-19 pandemic to a lesser extent than were clinic-related charges (Table 1). In our department, the head and neck division represents the largest driver of surgical volume at baseline. While surgical charges decreased by 72% across all subspecialties YOY in April 2020 (Table 1), the surgical volume of largely elective subspecialties, including general, laryngology, and otology, were most affected (>90% YOY). Head and neck cases were affected to a lesser extent, down by 57% YOY in April 2020. At our institution, time-sensitive oncologic surgeries continued through the peak of the COVID-19 pandemic with appropriate precautions. Moreover, we noted that clinics more oriented toward general otolaryngology sustained greater losses than did clinics with a higher proportion of subspecialty and head and neck patients.

## IMPLICATIONS FOR PRACTICE

Taken together, our findings indicate that reliance on in-person clinic visits and office procedures represented our department's greatest financial vulnerability at the onset of the COVID-19 pandemic. In the acute phase of the pandemic, our department observed a more marked decrease in revenue from clinic visits and clinic procedures than what has been reported by private otolaryngology practices,<sup>4</sup> possibly due to more restrictive policies on the delivery of elective care at an institution-wide level. These trends have persisted 1 year into pandemic, as clinic revenue has yet to rebound to its prepandemic baseline. Conversely, surgical volume at our institution has been affected to a lesser extent than what has been reported in the private practice setting,<sup>4</sup> likely due to the tertiary nature of operative care and the disproportionate percentage of cancer care provided in an academic setting.

Measures to mitigate the risk of viral transmission in the health care system, which include social distancing, the shift toward

**TABLE 1** Department charges, April 2019, April 2020, and April 2021

Item	% total department charges, 2019	% Δ YOY charges, 2020/2019 <sup>a</sup>	% Δ YOY charges, 2021/2019 <sup>b</sup>
Otorhinolaryngology, clinic (office visits [incl. allergy], in-office procedures, telemedicine)	52.0	-89.5	-9.9
Otorhinolaryngology, surgery	44.0	-72.1	-3.9
Audiology (office visits, audiograms, balance function testing)	3.6	-96.1	+7.8
Speech-language pathology (office visits)	0.4	-109	-17.8
Total	100	-83.4	-6.7

Abbreviation: YOY, year-over-year.

<sup>a</sup>Percent change in YOY charges, compares the change in April 2020 charges as a percentage of April 2019 charges (baseline).

<sup>b</sup>Percent change in YOY charges, compares the change in April 2021 charges as a percentage of April 2019 charges (baseline).

**TABLE 2** Clinic charges, April 2019, April 2020, and April 2021

Encounter	% total clinic charges, 2019	% Δ YOY charges, 2020/2019 <sup>a</sup>	% Δ YOY charges, 2021/2019 <sup>b</sup>
All office visits <sup>c</sup>	18.7	-70.1	+3.4
Clinic procedure (CPT code), top 5 listed			
Nasal debridement (31,237)	30.6	-92.8	-36.7
Nasal endoscopy (31,231)	29.0	-96.3	+0.8
Flexible laryngoscopy (31,575)	11.8	-95.1	-0.7
Endoscopic procedure of the larynx (31,579)	1.9	-100.0	-28.9
Cerumen removal (69,210)	0.9	-95.5	+13.2
All clinic procedures <sup>d</sup>	81.3	-94.0	-13.0
Total clinic charges	100	-89.5	-9.9

Abbreviation: CPT, Current Procedural Terminology; YOY, year-over-year.

<sup>a</sup>Percent change in YOY charges, compares the change in April 2020 charges as a percentage of April 2019 charges (baseline).

<sup>b</sup>Percent change in YOY charges, compares the change in April 2021 charges as a percentage of April 2019 charges (baseline).

<sup>c</sup>Include telemedicine encounters, but does not include charges for postop visits, which are included under surgical volume.

<sup>d</sup>Clinic procedure totals exclude audiology, drugs, and allergy testing.

telemedicine, and the ongoing use of advanced personal protective equipment for aerosolizing procedures will likely persist for the long term. Given the persistence of COVID-19 community transmission and the risk of future pandemics, it is important to consider the vulnerabilities of our specialty to mitigate financial losses going forward.

#### AUTHOR CONTRIBUTIONS

**Christina M. Yver:** Project design; data collection; data analysis; manuscript preparation; editing; approval; accountability. **Tiffany N. Chao:** Project design; data collection; data analysis; manuscript preparation; editing, approval; accountability. **Erica R. Thaler:** Project design; editing; approval; accountability. **Michael J. Ruckenstein:** project design; editing; approval; accountability. **Ara A. Chalian:** Project design; editing; approval; accountability. **Gregory S. Weinstein:** project design; editing; approval; accountability. **Bert W. O'Malley Jr.:** Project design; editing; approval; accountability. **Steven B. Cannady:** Project design; data analysis; manuscript preparation; editing; approval; accountability.

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#### CONFLICT OF INTEREST

The authors declare no conflict of interest.

#### DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reason-able request.

#### ETHICS STATEMENT

No patient-specific data or information was included in this paper. The study was reviewed by the University of Pennsylvania Institutional Review Board and was determined to be IRB-exempt.

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