

ORIGINAL RESEARCH

Trends in otolaryngology consult volume at an academic institution from 2014 to 2018

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Abstract

Objective: To evaluate changes in emergency department and inpatient consult volumes of an otolaryngology service at an academic medical center from 2014 to 2018.

Methods: A retrospective review of all otolaryngology consults in the electronic medical record from March 2014 through December 2018 was completed. The total number of consults was recorded to determine changes in consult volume over time. Additional parameters were analyzed including volume of weekday, night and weekend, adult, pediatric, emergency department, and inpatient consults.

Results: From 1 March 2014 to 31 December 2018, a total of 8806 consults were seen by the otolaryngology service. In the first year, a total of 990 consults were seen. In the final year of the time period, a total of 2416 consults were seen. This represents a 144% increase in consults over the examined time period. Similar increasing trends were seen when consults were analyzed by weekday, night/weekend, pediatric, adult, emergency department, and inpatient consults.

Conclusions: This is one of the first studies examining trends in otolaryngology consult volumes at an academic medical center in the United States. Our data show that the volume of consults has increased by 144% in a 4-year time period, predominantly due to an increase in emergency department consultations. This study demonstrates the increasing burden of emergency department consultations on an otolaryngology service at an academic medical center and highlights a potential role for increasing and improving provider availability.

Level of evidence: 4.

KEYWORDS

academic, consults, general otolaryngology

1 | INTRODUCTION

Subspecialty consultations are an integral component of providing complete medical care in the hospital setting. Their availability in the

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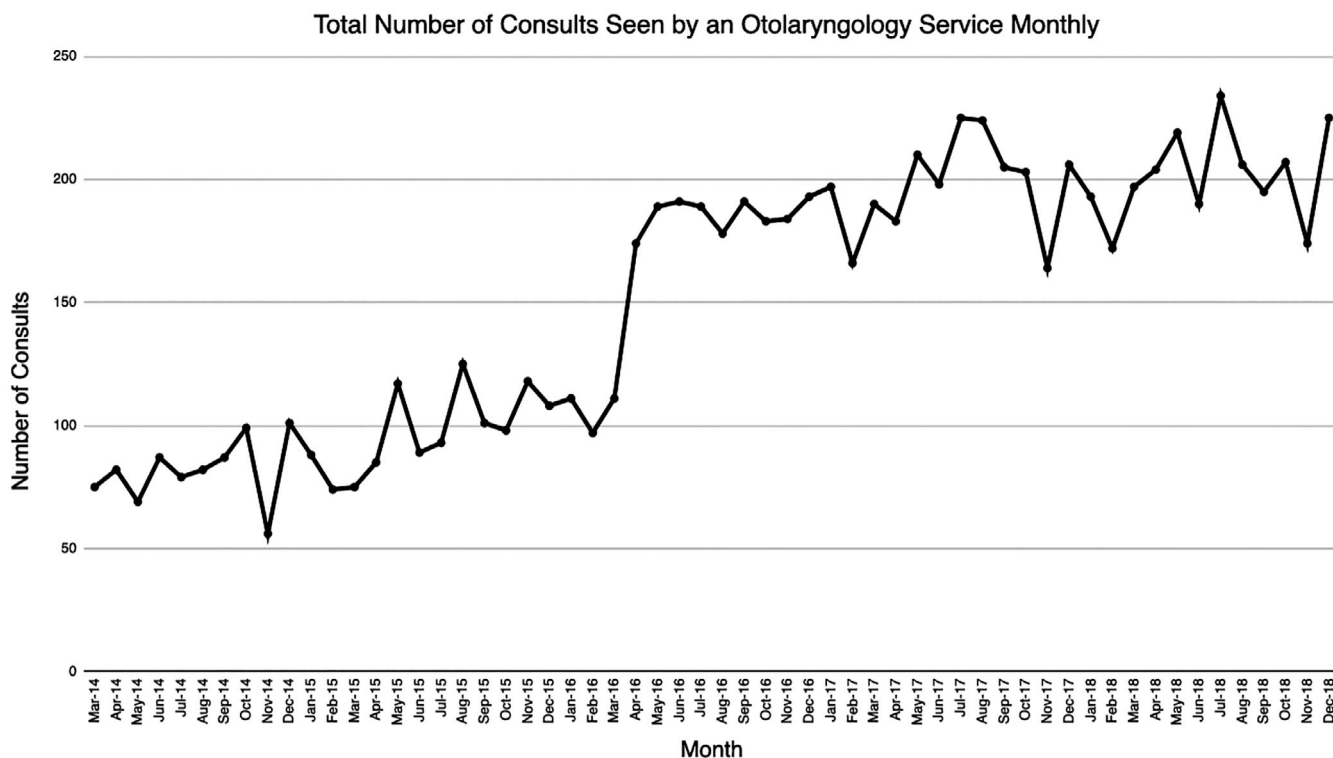


FIGURE 1 Number of consults seen monthly from March 2014 to December 2018

TABLE 1 Average monthly otolaryngology consults

	2014-2015	2017-2018	P value
Total consults	81	201	<.001
Emergency department	71	186	<.001
Inpatient	11	14	.030
Adult	20	54	<.001
Pediatric	62	146	<.001
Daytime	29	70	<.001
Night and weekend	52	131	<.001

emergency department and hospital allows for comprehensive evaluation and treatment of patients. However, they can significantly increase the workload of the consulting service. As a result of the heavy workload, the consulting service may experience increases in work stress, resulting in physician burnout.^{1,2} Rates of physician burnout have been increasing with time and affect both practicing physicians and physicians in training. This can result in negative effects on both patient care and the physician's own physical and mental care.³ The increasing workload of consultations may also adversely affect patient satisfaction as providers are able to spend less time with each patient as their workload increases.⁴ Due to these reasons, it is important to evaluate the growing workload of the otolaryngology service and explore methods to mitigate its growth.

Previous studies have thoroughly evaluated the consultation patterns of other subspecialty services including orthopedics and vascular surgery.^{5,6} Few studies have specifically reviewed patterns and volume of otolaryngology consultations. The few studies previously

addressing this in our country have looked at consult volume seen over a short time period (1 year) as well as the most common consults seen.^{7,8} One previous study has examined otolaryngology consult volume trends outside of the United States and found a 120% increase in consult volume over a 5 year time period within a five hospital health region.⁹ In this study, we investigate how the volume of otolaryngology consults has changed over a 4-year time period at a single institution in the United States and specifically examine trends based on the location and time of the consultations.

2 | MATERIALS AND METHODS

A retrospective review of all otolaryngology consults was designed to evaluate trends over time. Following IRB exemption from the SUNY Upstate institutional review board, we reviewed all otolaryngology consults seen at SUNY Upstate Medical University and Upstate Golisano Children's Hospital from 1 March 2014 to 31 December 2018. Using the electronic medical record, all consults that had an otolaryngology consult order placed and fulfilled during this time period were counted. Further data were extracted from the electronic medical record for each of these encounters including patient age, time consult was placed, and if the consult was seen in the emergency department or on an inpatient floor. The total number of consults for each of these parameters was calculated and reported.

The hospitals of interest in this study, while separate in name, are combined in the same building. The adult and pediatric emergency departments remain in the same building but are separate entities.

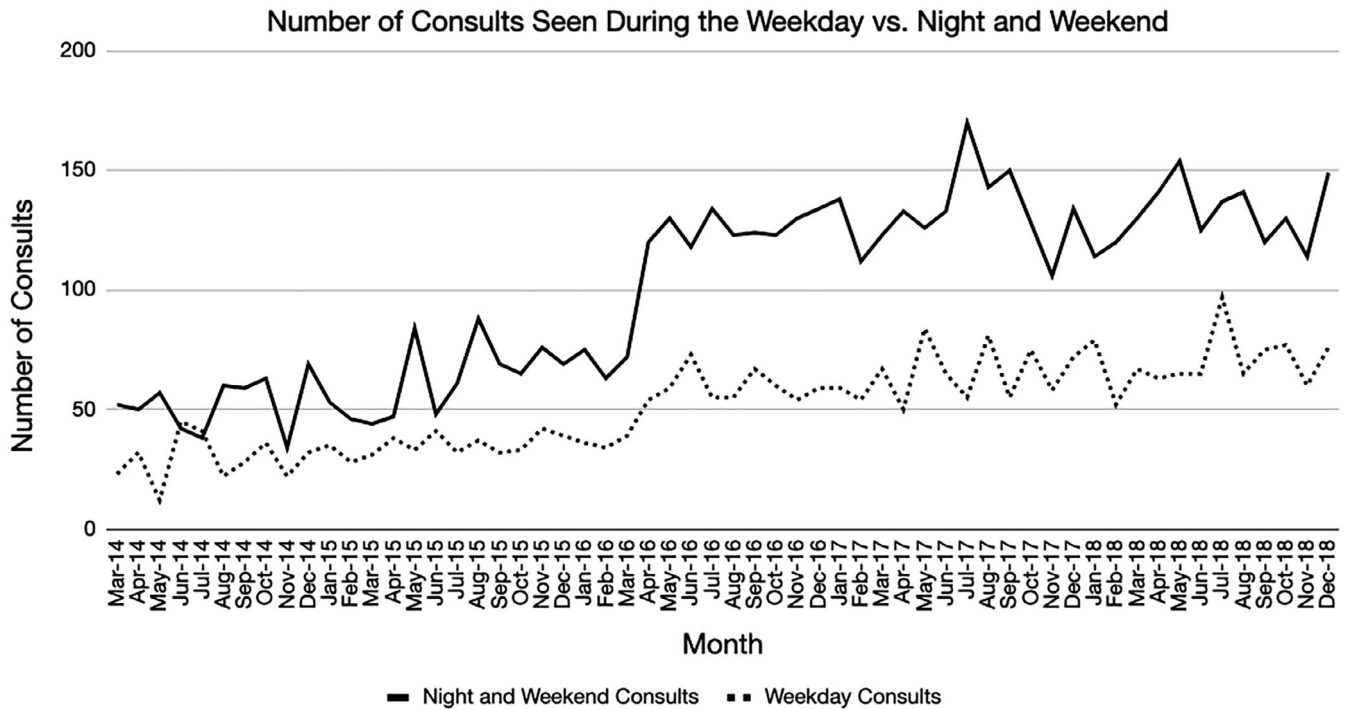


FIGURE 2 Number of consults seen during the weekday vs night and weekend

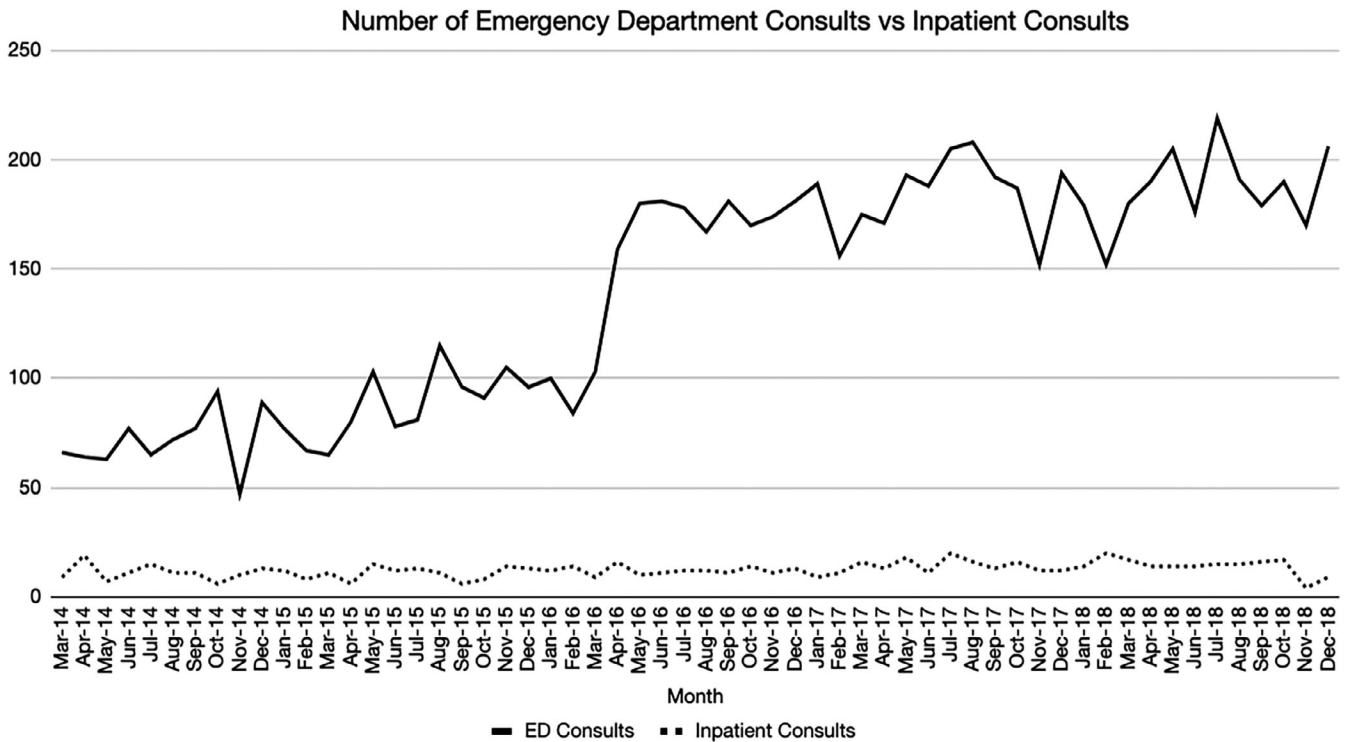


FIGURE 3 Number of emergency department vs inpatient consults

The hospital serves as the only academic medical university in Central New York. It serves a catchment area of 19 counties. The adult emergency department sees over 70 000 patients per year while the pediatric emergency department sees about 27 000 patients per year.

The primary outcome was the total number of consultations seen for the test period. Secondary outcomes included origin of the consultation, time of day of the consultation, and the patient age for the consultation.

Statistical analysis was performed using IBM SPSS software. Comparative statistics were performed using the appropriate test based on the distribution of the results and the sample size.

3 | RESULTS

From 1 March 2014 to 31 December 2018, a total of 8806 consultations were seen by the otolaryngology service. In the first year, a total of 990 consults were seen while in the final year of the study a total of 2416 consults were seen by the otolaryngology service, a 144% increase. The total number of consults seen in 1 month ranged from 56 consults to 234 consults (Figure 1). The average number of consults seen per month during the first year was 81, while the average number of consults seen per month in the final test year was 201 ($P < .001$) (Table 1). Sixty-five percent of all consults during this time were seen during the night (between 5 PM and 7 AM) or on the weekend. The number of weekday consults ranged from 12 consults per month to 97 consults per month while the number of night or weekend consults ranged from 34 consults per month to 170 consults per month (Figure 2). The average number of weekday consults seen per month in the first year was 29, while the average number of weekday consults seen during the final year was 70 ($P < .001$). The average number of night and weekend consults seen per month during the first year was 52, while the average number of night and weekend consults seen in the final year was 131 ($P < .001$) (Table 1). Of the total consults seen, 92% were seen in the emergency department while only 8% were inpatient consults. In the

first year, a total of 858 emergency department consults were seen by the otolaryngology service while in the final year 2237 emergency department consults were seen by the otolaryngology service. The number of emergency department consults ranged from 47 consults per month to 219 consults per month, while the number of inpatient consults ranged from 4 consults per month to 20 consults per month (Figure 3). The average number of emergency department consults seen per month during the first year was 71, while the average number of emergency department consults seen per month in the final test year was 186 ($P < .001$). The average number of inpatient consults seen per month during the first year was 11, while the average number of inpatient consults seen per month in the final test year was 14 ($P = .030$) (Table 1). The number of pediatric consults ranged from 13 consults per month to 69 consults per month, while the number of adult consults ranged from 43 consults per month to 176 consults per month (Figure 4). The average number of pediatric consults seen per month during the first year was 20, while the average number of pediatric consults seen during the final test year was 70 ($P < .001$). The average number of adult consults seen per month during the first year was 62, while the average number of adult consults seen per month during the final test year was 146 ($P < .001$) (Table 1).

4 | DISCUSSION

This is one of the first studies evaluating trends in otolaryngology consult volume over time in the United States. Our investigation shows

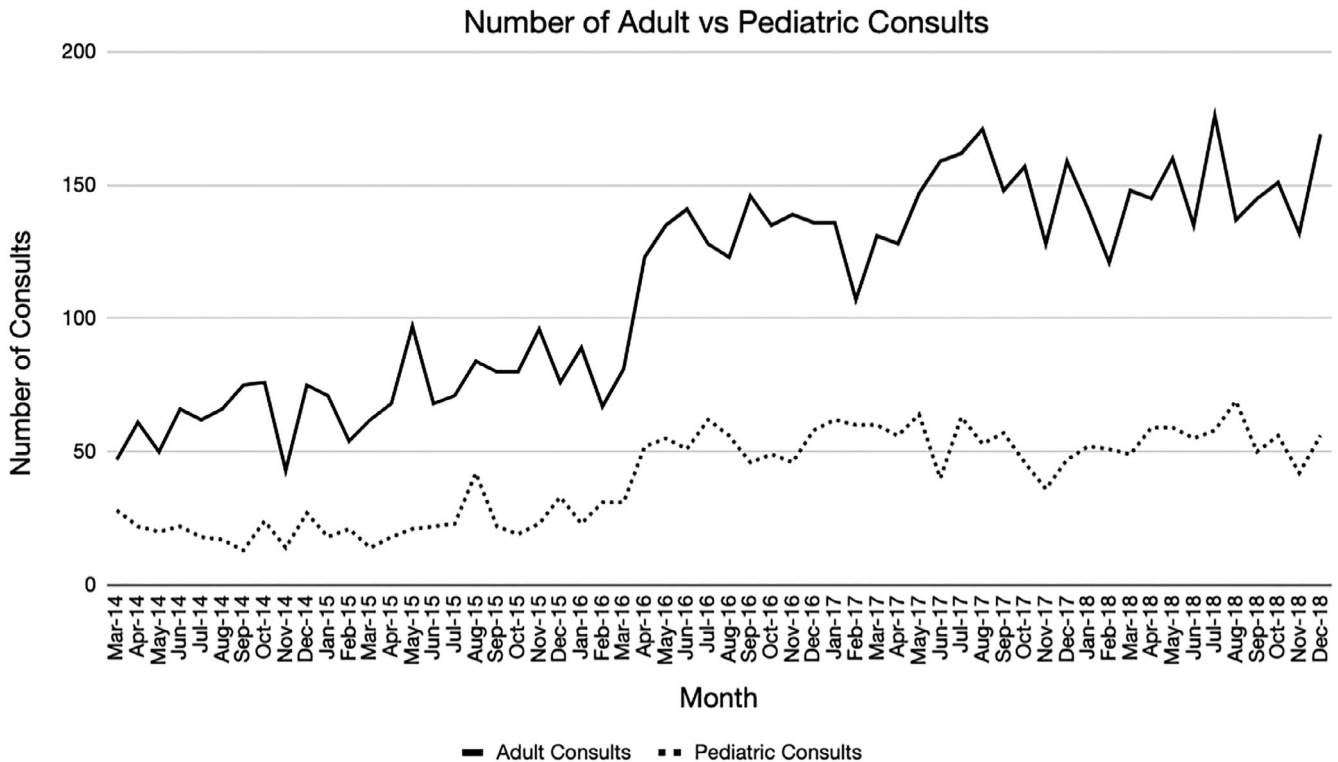


FIGURE 4 Number of adult vs pediatric consults

the overall volume of consults increasing by 144% over the 4-year time period. The majority of these consults were seen during the night or on the weekend. Of the total number of consults, 92% of these were generated from the emergency department. All categories of consults increased over the 4-year time period. The largest increase of consults occurred in June of 2016. There were no known policy changes, medical record changes, or hospital changes to account for this. Both the adult and pediatric emergency rooms were updated in August of 2016 to increase the capacity of both by 12 patients.

Emergency department (ED) visits are on the rise nationwide. From 2001 to 2008, ED visits throughout the country increased by 1.9% per year.¹⁰ At our medical center, overall ED visits also increased during the test period. Over the entire research period, the local ED visits increased by 3.9% (averaging 1.9% increase per year).¹¹⁻¹³ However, the increase in otolaryngology consults far outpaced those numbers. These trends are important to consider when managing an otolaryngology service as the increasing consult burden can become difficult to manage. They become particularly important in an academic setting where increasing care burdens may result in difficulty adhering to resident duty hour restrictions.

Different models have been proposed for the management of inpatient consults. A previous paper has described the utility of a dedicated otolaryngology hospitalist to manage the hospital consults.¹⁴ Our department utilizes a dedicated otolaryngology resident consult service to continue to see this growing number of consultations in a timely fashion. This allows us to provide excellent care to the consultations without taking away from the other experiences of the residency.

Some of these consults may also be appropriately managed in a different setting. A 2010 study of emergency department visits suggested that 13.7% to 27.1% of all ED visits may be managed at an alternative site, such as an urgent care.¹⁵ A previous evaluation of inpatient otolaryngology consults found that a large portion (45.5%) were minor issues that could be managed as an outpatient.¹⁶ By shunting these patients to alternative sites, we may decrease the hospital consultation burden.

Telemedicine has also recently increased in popularity as a method to improve access to otolaryngologic care. Previously published papers have reviewed the utility and applications of telemedicine in otolaryngology.¹⁷ These have found good concordance between face-to-face exam and telemedicine assessments.¹⁸ This suggests that telemedicine may be a way to provide accurate outpatient otolaryngologic care to underserved areas, resulting in reduced patient reliance on the emergency departments for care and decreased hospital consultations for the otolaryngology service.

There are a few limitations to this study. The number of consults was determined by the presence of a consult order placed in the electronic medical record. However, consults may be called and requested without the presence of an electronic order. As such, the total number of consults may be underreported in this study. There were no changes to the electronic medical record over the study timed period, however, that would account for large differences in the number of consult orders electronically entered. Additionally, this is more likely

to occur with inpatient consults rather than emergency department consults, where a secretary calls the consult based on the presence of the order. Therefore, not only is the true number of consults that was seen by the otolaryngology service likely to be higher than what is reflected in the data, it may be significantly underestimating the number of inpatient consults seen.

5 | CONCLUSION

This is one of the first studies examining trends in otolaryngology consult volumes at an academic medical center in the United States. Our data show that overall consult volume has increased by 144%, predominantly due to an increase in adult emergency department consultations. This can create a large burden for the otolaryngologist and makes providing timely subspecialty care difficult within the hospital. This study demonstrates the increasing burden of emergency department consultations on an otolaryngology service at an academic medical center and highlights a potential role for increasing and improving provider availability.

CONFLICT OF INTEREST

The authors declare no potential conflict of interest.

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