Improving Access to Head and Neck Cancer Surgical Services through the Incorporation of Associate Providers

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Abstract

Objective. The urgent nature of head and neck cancer referrals often results in overbooked schedules, access delays, and patient, physician, and staff dissatisfaction. The goal of this study is to examine how incorporation of associate providers (APs) into a head and neck tumor clinic (HNTC) can improve access.

Methods. Scheduling data for the Dartmouth-Hitchcock HNTC 2 years prior (January 2011 to December 2012) and 2 years subsequent (January 2013 to December 2014) to program initiation were abstracted, including number of new patients seen per month, third available for new and established patients, overbooked hours, surgeon productivity, and patient satisfaction scores.

Results. New patients seen per month increased from 44 ± 4 to 60 ± 5 (P < .001). Third available for new patients decreased from 56 ± 4 to 27 ± 2 days and from 43 ± 3 to 35 ± 2 days for follow-ups (P < .001). Overbooked hours decreased from 14.7 ± 3.1 to 8.6 ± 1.7 hours (P < .001). Surgeon productivity remained stable (109% ± 11% vs 113% ± 6%, P = .56). Patient satisfaction in seeing APs versus surgeons was comparable (94 ± 2 vs 94 ± 3, P = .79).

Discussion. Incorporation of APs into the HNTC increases the number of new patients seen by the surgeon, decreases wait times for all appointments, and decreases overbooking while maintaining patient satisfaction and surgeon productivity.

Implications for Practice. AP incorporation significantly improves access to head and neck surgical services. With improved access, new cancer patients could start treatment sooner, potentially affecting outcome.

Keywords

head and neck cancer, associate provider, access, head and neck surgery

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Despite calls for increased incorporation of APs in otolaryngology and evidence suggesting that APs improve access in pediatric otolaryngology, the incorporation of APs in the outpatient setting appears limited. We hypothesize that the partially independent incorporation of APs into a busy head and neck surgical oncology practice—that is, one in which the AP works independently, seeing routine follow-up patients, postoperative checks, and urgent patient visits with the physician present and supervising—will significantly improve access for both new and follow-up patients. In this report, we present the results of a pilot study that we conducted in which APs were so incorporated in the Dartmouth-Hitchcock HNTC. To our knowledge, there have been no studies examining the role of APs in a head and neck surgical oncology practice.

**Methods**

**Incorporation of APs**

Two APs, a PA and NP, were each assigned to work exclusively with 1 of the 2 head and neck surgeons in the Section of Otolaryngology in the weekly Dartmouth-Hitchcock HNTC. Both APs were already employees of the Section of Otolaryngology and were experienced in the evaluation and management of patients with common otolaryngologic conditions—the PA with >15 years of otolaryngology experience and the NP with 7 years. They were proficient in performing nasopharyngolaryngoscopy and simple biopsies as well as other minor office-based procedures. Prior to initiating this pilot study, the APs worked more independently, seeing new and follow-up patients with general otolaryngology conditions on their own, occasionally consulting with the attending otolaryngologist if questions arose or surgical management was required. For the pilot study, the surgeon and AP worked in a partially independent practice model—that is, working together in clinic but seeing patients independently. Patients could be “flexed” between providers depending on their needs. The APs were assigned to see postoperative patients as well as those who had completed treatment and required routine follow-up for cancer surveillance. These appointments were coordinated according to a standard follow-up “grid” specific to each patient, his or her treatment regimen, and place of residence. Figure 1 provides a sample follow-up grid for combined surgeon and AP management of a patient presenting with oral tongue cancer requiring surgery and adjuvant therapy.

**Study Methodology**

This study was designated as “exempt” from approval by the Dartmouth-Hitchcock Committee for the Protection of Human Subjects. The pilot study was initiated on January 1, 2013, when both APs were fully incorporated into the HNTC. Data abstracted for this study were acquired from the Dartmouth-Hitchcock Data Reporting System—a data repository and comprehensive reporting scheme providing informational support for such tasks as utilization management, quality assurance, performance monitoring, market analysis, analytic projections, clinical program design, and executive decision making. Scheduling data were retrospectively abstracted for each head and neck surgeon seeing patients in the HNTC from 2 years prior (January 2011 to December 2012) to 2 years subsequent (January 2013 to December 2014) to program initiation—including the
number of new patients seen per month, third available for
new and established patients, and overbooked hours.

The third available appointment was defined as the time in
days from the time when a request for an appointment with a
physician was made to the third available slot for a similar-
type appointment. The third available metric is commonly
used because it is considered a sensitive reflection of true
appointment availability, since chance occurrences (eg, last-
minute cancellations) are minimized. Overbooked hours repre-
sented the total number of extra patient contact hours over the
normally scheduled clinic hours. This included the sum of
double- and triple-booked hours, as well as patient contact
hours outside the assigned clinic block time (eg, seeing
patients during lunch, between operating room cases, during
administrative or research time, or after clinic hours). Patient
satisfaction scores for the surgeons and APs were also
recorded for this period. The satisfaction surveys used by
Dartmouth Hitchcock are administered by a national survey
company, and they examine a number of domains, including
overall visit rating, clinical care, satisfaction with the facility
and clinic, ancillary services, and billing. Survey data are
reported on a quarterly basis. The specific satisfaction scores
examined were “overall rating of provider” for the APs and
the head and neck surgeons, “ease with getting an appoint-
ment” with the head and neck surgeons, and “satisfaction
with wait in waiting room” for the head and neck surgeons.
Satisfaction scores were based on a 5-item Likert scale, with
each item assigned a value in the range of 0 to 100 (eg, strongly
agree = 100, neither agree nor disagree = 50, slightly agree = 75,
strongly disagree = 0). Average scores for each provider group per quarter were
examined. Work RVU (relative value unit) production as a
percentage of the established institutional benchmark for oto-
laryngology was examined for each head and neck surgeon.
Statistical analysis was performed with the paired t test. P
values < .05 were considered statistically significant.

Results
During the 4-year study period, there was no change in the
practice, scheduling, or referral patterns for either head and
neck surgeon, nor was there a change in clinical effort (ie,
percentage full-time equivalent). Clinic staffing and space
were also constant over this period, although there was turn-
over in individual medical assistant staff assigned to the
different providers.

Overall, there was significant improvement in access to
the head and neck surgeons. A summary of the clinical and
productivity results is shown in Table 1. The number of new
patients seen by the 2 head and neck surgeons increased by
36%, from 44 ± 4 to 60 ± 5 patients per month (P < .001).
There was a reduction in number of days to a third available
appointment to see the head and neck surgeon by > 51%,
from 56 ± 4 days to 27 ± 2 for new patients (P < .001); for
follow-up appointments, the reduction was 19%, from 43 ±
3 days to 35 ± 2 (P < .001). Overbooked hours dropped by
42%, from 14.7 ± 3.1 hours to 8.6 ± 1.7 (P = .002).
Surgeon productivity remained stable (109 ± 11 vs 113 ±
6%, P = .56) despite the reduction in overbooked hours.

Patient satisfaction was not negatively affected by the addition
of APs, as shown in Table 2. The average satisfaction score
for the surgeons increased by 4 points, from 90 ± 4 to 94 ± 3,
although this was not statistically significant (P = .002). Satisfac-
tion scores for the APs were also high and did not differ
significantly from those of the surgeons (94 ± 2 vs 94 ± 3, P
= .79). Patients rated the ease of getting an appointment with
the surgeon after initiation of the pilot study more highly, but this
was not statistically significant (82 ± 3 vs 85 ± 4, P = .22).
However, patients did report a significant increase in satisfaction
with the wait in the waiting room, suggesting improved clinic
flow and efficiency (70 ± 4 vs 77 ± 5, P = .02).

Discussion
This study examined the role of APs in improving access
for patients with head and neck cancer. Bilimoria et al
reported an increase in wait times for surgical cancer care
for organs sites such as the breast, colon, prostate, lung and
esophagus, particularly at academic medical centers and
National Cancer Institute–designated cancer centers.15 The
reasons are not entirely clear but likely multifactorial, includ-
ing a shift of cancer surgical care to specialized high-volume

Table 1. Clinical and Productivity Data for the 2 Head and Neck Surgeons before and after Incorporation of the Associate Provider into
the Head and Neck Tumor Clinic.

<table>
<thead>
<tr>
<th>Sister</th>
<th>Before</th>
<th>After</th>
<th>Difference, %</th>
<th>P Value</th>
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<tbody>
<tr>
<td>New patients seen per month, n</td>
<td>44 ± 4 (29–58)</td>
<td>60 ± 5 (36–80)</td>
<td>+36</td>
<td>.001</td>
</tr>
<tr>
<td>Third available for new patient consultation, d</td>
<td>56 ± 4 (16–87)</td>
<td>27 ± 2 (13–45)</td>
<td>−51</td>
<td>.001</td>
</tr>
<tr>
<td>Third available for established patients, d</td>
<td>43 ± 3 (21–70)</td>
<td>35 ± 2 (17–56)</td>
<td>+19</td>
<td>.001</td>
</tr>
<tr>
<td>Overbooked hours per month</td>
<td>14.7 ± 3.1 (4–27)</td>
<td>8.6 ± 1.7 (3–17)</td>
<td>−42</td>
<td>.002</td>
</tr>
<tr>
<td>Mean work RVU productivity of head and neck surgeon as a percentage of benchmark, %</td>
<td>109 ± 11</td>
<td>113 ± 6</td>
<td>.56</td>
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Abbreviation: RVU, relative value unit.
centers\textsuperscript{16} and a contracting physician workforce.\textsuperscript{17} Although the Bilimoria et al study did not specifically examine head and neck surgery—given the multidisciplinary nature and complexity of head and neck cancer treatment as well as the contracting otolaryngology workforce\textsuperscript{18}—it is likely that similar delays occur with the surgical management of patients with head and neck cancer. Delay in head and neck cancer diagnosis and treatment is associated with poorer overall survival and outcomes.\textsuperscript{1-3}

In this study, we hypothesized that incorporation of APs into the HNTC would improve patient access. The APs practiced in a partially independent model as defined by Norris et al.\textsuperscript{10} seeing postoperative patients and established patients presenting for routine cancer surveillance, thereby off-loading this clinical work from the head and neck surgeon. This model allowed “flexing” as defined by Shulman, in which patient care could transition from AP to surgeon and vice versa as patient needs dictated.\textsuperscript{11} By incorporating APs as such, the number of new patients seen by the head and neck surgeon, as well as the time to getting an appointment, significantly improved. This also resulted in a significant drop in the number of overbooked hours—a source of perceived patient, physician, and staff dissatisfaction. The incorporation of APs did not detract from the productivity of the head and neck surgeons, as measured by the ratio of work RVU output to the institutional benchmark for otolaryngology. Likewise, patient satisfaction scores remained high, in line with other studies finding that use of APs does not negatively affect patient satisfaction.\textsuperscript{10} Improvements in patient satisfaction with wait times in the waiting room suggest improved clinic efficiency and flow. We did not examine differences in the NP and PA, as the scope of practice for both types of APs within the otolaryngology section is equivalent. Given that the level of experience, practice style, and overall skill set of these APs may be more related to the individual rather than their specific training, a comparison of such a small cohort would not lead to meaningful conclusions with regard to any potential benefits that incorporation of one type of provider may have over the other.

PAs and NPs do have similar conditions for entry as an AP: graduate-level training and degree from an accredited program and passing of their respective national certifying examinations. Licensure for APs is regulated at the state level—usually through the state medical board for PAs whereas the state nursing board for NPs. The degree of practice autonomy and the scope of practice for APs vary according to state law and institutional policies. The American Academy of Physician Assistants recommends “six key elements”\textsuperscript{20} that should be part of state scope-of-practice laws for PAs: “licensure” as the regulatory term, full prescriptive authority, scope of practice determined at practice level, adaptable collaborative requirements, chart cosigning determined at the practice level, and number of PAs supervised by physician determined at the practice level. The degree to which these elements are met varies by state.\textsuperscript{21} Depending on state law, the degree of supervision varies and does not necessarily require the physician to be physically present at the location where care is rendered; it does require the physician and the PA to be in contact.\textsuperscript{22} Scope of practice for NPs also varies by state, with ranging degrees of practice autonomy, ability to practice as a primary care provider, and ability to prescribe independently.\textsuperscript{23} Currently, in 21 states and the District of Columbia, NPs are able to practice independently under the exclusive licensure authority of the state nursing board and without physician supervision.\textsuperscript{24} For scope of practice specific to otolaryngology, the Society of Physician Assistants in Otorhinolaryngology—Head & Neck Surgery does provide an outline for PA scope-of-practice and practice protocols.\textsuperscript{25} Compensation for NPs and PAs is roughly equivalent. According to the American Association of Nurse Practitioners, the average base salary for NPs across all specialties in 2015 was $97,083.\textsuperscript{26} The average salary for certified PAs in 2014 according to the National Commission on Certification of Physician Assistants was $98,387.\textsuperscript{27}

Despite calls for increased use of APs in otolaryngology,\textsuperscript{12} the level of penetration of APs based on current data appears to be low. In an examination of the National Ambulatory Medical Care Survey for years 2008 to 2009, Bhattacharyya found that an AP was involved in only about 6.3% of outpatient otolaryngology visits.\textsuperscript{14} According to the National Commission on Certification of Physician Assistants (the certifying organization for PAs in the United States), the number of PAs reporting a primary clinical position in otolaryngology in 2014 was only 536, or 0.9% of the total PA workforce.\textsuperscript{27} This lack of penetration may be partly due to insufficient postgraduate training opportunities in otolaryngology for APs. Of the 58 postgraduate specialty fellowships

Table 2. Average Patient Satisfaction Scores.

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<th>Before</th>
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<tr>
<td>Rating of associate providers</td>
<td>—</td>
<td>94 ± 2 (179)</td>
<td></td>
</tr>
<tr>
<td>Rating of surgeons</td>
<td>90 ± 4 (181)</td>
<td>94 ± 3 (172)</td>
<td>.092</td>
</tr>
<tr>
<td>Ease of getting an appointment</td>
<td>82 ± 3 (181)</td>
<td>85 ± 4 (172)</td>
<td>.22</td>
</tr>
<tr>
<td>Satisfaction with wait in</td>
<td>70 ± 4 (181)</td>
<td>77 ± 5 (172)</td>
<td>.02</td>
</tr>
<tr>
<td>room</td>
<td></td>
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\textsuperscript{a}Ratings are measured on a 5-item Likert scale, with each item assigned a value of 0 (strongly disagree), 25, 50, 75, or 100 (strongly agree). Values are presented in mean ± SD. Values in parentheses indicate number of returned surveys. Before: January 2011 to December 2012. After: January 2013 to December 2014.
programs listed by the Associate of Postgraduate PA Programs, only 1 program, Mayo Clinic Arizona, is specific to otolaryngology.28

There are limitations to this study. The main question was whether incorporation of APs would improve access. Although productivity in the form of surgeon RVU production was examined, we did not specifically examine the return on investment gained from this model. It is a retrospective study based on administrative data; therefore, additional parameters were not measured other than those generated by the scheduling system and general patient satisfaction survey. Confounding factors were not examined, such as changes in insurance carrier contracts, shifting population demographics, and the impact of economic forces that may influence a patient’s ability to seek care. Specific satisfaction questions pertaining to patient attitudes regarding seeing an AP could not be ascertained. The quality of care delivered by the AP as compared with the head and neck surgeon could not be measured. Additional research is needed to examine how incorporation of APs affects the quality of care delivered—for example, does improved access result in more timely initiation of treatment?

As we seek ways to improve access to subspecialty services such as head and neck surgery in a cost-effective fashion while maintaining quality care delivery, it is important to examine creative solutions to this vexing problem. Our initial experience with incorporation of APs into the Dartmouth-Hitchcock HNTC has resulted in significant improvements in patient access without compromising patient satisfaction or surgeon productivity. Although questions remain to be answered—such as overall quality of care, return on investment, and oncologic outcomes—our preliminary results are highly supportive of this practice model.

Implications for Practice

APs, when incorporated in a partially independent fashion in a HNTC, can significantly improve access—and potentially influence treatment outcomes—while maintaining surgeon productivity and patient satisfaction. The specifics of this incorporation may vary according to a number of factors—including the surgeon’s practice, the needs of the patients, the institutional policies, and the defined scope of practice for the type of AP and the state in which one is practicing—and should be considered when contemplating this practice model.

Author Contributions

Joseph A. Paydarfar, study design, data acquisition and analysis, manuscript preparation, final approval; Benoit J. Gosselin, study design, data acquisition, critical revision of manuscript, final approval; Annette M. Tietz, study design, data analysis, critical revision of manuscript, final approval.

Disclosures

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References


